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PAO-1

Two cases of Fanconi-Bickel syndrome - first report from China
Zhe Su; Hua-mei Ma; Pi-mei Zheng
The First Affiliated Hospital of Sun Yat-Sen University, Pediatric Department, Guangzhou, China

Background: Fanconi-Bickel syndrome (FBS) is a rare autosomal recessive disorder of carbohydrate metabolism caused by mutations in Glut2. To date there is no case has been reported from China.

Objective and hypotheses: To summarize the clinical characteristics of FBS by reviewing the 2 cases and published literature.

Methods: The both cases presented similar manifestations as reported, including severe short stature, hypoglycemia, hepatomegaly secondary to glycogen accumulation, severe glycuoremia secondary to proximal renal tubular dysfunction. And more points may help to differentiate FBS and type 1 glycogen storage disease(GSD I) including glucose intolerance with normal lactic acid and uric acid, possible and slightly glucose response to glucagon stimulation without accumulation of lactic acid, severe symptoms of hypophosphatemia and rickets, and metabolic acidosis caused by type II renal tubular acidosis. After receiving symptomatic treatment both children presented catch-up growth.

Conclusions: FBS is a rare inherited disease caused by mutations in Glut2. It should be carefully differentiated from GSD I and diabetes mellitus in clinical practice. Symptomatic treatment can be helpful.

PAO-2

Final height outcome of boys with central precocious puberty treated with gonadotropin-releasing hormone analogue
Pi-mei Zheng; Hua-mei Ma; Qiu-l Chen; Zhe Su
First Affiliated Hospital of Sun Yat-Sen University, Pediatric Department, Guangzhou, China

Background: Data on the final height outcome of boys with central precocious puberty treated with gonadotropin-releasing hormone analogues (GnRHa) are far less than those in girls.

Objective and hypotheses: To report the final adult height of 20 boys with central precocious puberty treated with gonadotropin-releasing hormone analogue (GnRHa).

Methods: Twenty boys with central precocious puberty treated with GnRHa at a dose of 60–80 µg/kg every 4 weeks for (20.5 +/- 6.7) months. At the beginning of therapy, mean chronological age and bone age was (11.2 +/- 1.0) y and (13.0 +/- 0.4) y, respectively. GnRHa was discontinued when the boys reached the chronological age and bone age of (13.2 +/- 1.1) y and (13.7 +/- 0.6) y, respectively. At the conclusion of the study, all the boys had been followed up for (3.3 +/- 1.5)ys and had achieved adult height. Comparisons were made among their final adult height (FAH), target height (THt), predicted adult height(PAH) at the start and the end of GnRHa treatment (PAHt and PAHe).

Results: Final height was similar to the target height [(168.6 +/- 5.6)cm versus (167.8 +/- 4.6)cm] with no significant difference from the predicted adult height( PAHt) [(169.8 +/- 6.0)cm versus (169.8 +/- 6.0)cm] based on the Bayley-Pinneau method, using a table for average bone age at the beginning of GnRH analogue therapy. Predicted adult height (PAHe) at discontinuation of GnRHa therapy was significantly higher than predicted adult height at the beginning of GnRH analogue therapy [(172.5 +/- 7.6)cm versus (168.6 +/- 5.6)cm, P<0.05]. Ninety percent (90.0%) of the boys reached target height range (FAH>/=THt-1SD). The height gain in comparison with predicted adult height before the start of treatment was (-1.2 +/- 3.3) cm, with the residual growth capacity of (10.6 +/- 4.3)cm.

Conclusions: GnRHa treatment can improve final height into the range of target height in boys with central precocious puberty.

PAO-3

Prevalence of impaired glucose tolerance and insulin resistance among obese children and adolescents
Robabeh Ghergherehchi; Nazanin Hazhir; Ali Tabrizi
Tabriz University of Medical Sciences, Pediatric Endocrin, Tabriz, Islamic Republic of Iran

Background: Obesity is one of the most important nutritional disorders in the world which has an obvious relationship with the incidence of metabolic diseases. Obesity prevalence has increased among children and adolescents during recent decades, leading to a rise in Type 2diabetes mellitus (DM II) prevalence in these two age brackets. Hence, the aim of this study was to assess impaired glucose tolerance and insulin resistance, and gather metabolic findings in obese children and adolescents.

Methods: We studied 110 obese children and adolescents (body mass index, 95th percentile for age and gender) 4–18 years of age referred to the endocrine clinic of the Children’s Hospital at Tabriz University in a descriptive cross-sectional study. Fasting glucose, insulin, and lipid profile in all subjects were determined. Oral glucose tolerance test after eating 1.75 g/kg glucose was performed. Homeostatic model assessment was used to estimate insulin resistance.

Results: Impaired glucose tolerance and insulin resistance prevalence in 68 obese adolescents was 14.7% and 31.8%, respectively. Impaired glucose tolerance and insulin resistance was not seen in 23.8% of 42 obese children. No case of DM II was seen. There was a significant statistical difference in glucose (P = 0.003) and insulin (P , 0.001) level at minute 120 in individuals with impaired glucose tolerance compared to obese children and adolescents without impaired glucose tolerance. Rate of insulin resistance in patients with impaired glucose tolerance was greater and had a significant statistical difference (P = 0.03).

Conclusions: Obesity has a close relationship with increased risk of impaired glucose tolerance and insulin resistance in children and adolescents. Oral glucose tolerance test, unlike fasting glucose test, is a benefit test to predict impaired glucose tolerance. With prompt identification and treatment of obese children with impaired glucose tolerance, we can prevent it from progression towards DM II.
Introduction: In this study, we investigated the changes of serum levels of Free T4 and T3, T3 resin uptake (T3RU) and TSH in epileptic children during chronic treatment with anti-epileptic drugs (carbamazepine, Primidone, phenobarbital and valproate) and 3 months later than prescription.

Material and method: This study consisted of four case-series comparisons, accomplished on 115 (in 4 same groups) epileptic children who were involved 37 girls and 78 boys with ages between 2 months up to 15 years (mean: 62.06 ± 44.97 months), who were taking either phenobarbital (n=29), PRM (n=28), CBZ (n=29), or VPA (n=29) for at least 3 months were evaluated. T3, T3 resin uptake (T3RU), T4 and thyroid-stimulating hormone (TSH) levels in start and end of study.

Results: All patients were in euthyroid state, there were no clinical findings or laboratory results of hypothyroidism. In collation with thyroid hormones before of prescription in all bundles (Phenobarbital, CBZ, VPA and primidone), there was no significant distinctions in serum FT3, FT4, T3RU and TSH levels. No statistically meaningful relation were found between thyroid function and thyroid hormones levels variants and among AEDs receiving time and thyroid function and hormones levels, in any of 4 groups (P > 0.05).

Conclusions: Thyroid function should be evaluated intermittently in epileptic children using AEDs specially in long term prescriptions.

PAO-5

Influence of birth brain size on newborn serum insulin-like growth factor-I: role of birth size beyond the presence of intrauterine growth retardation and of preterm birth

Cesare Torzi1; Raffaele Viridi1; Werner F. Blum2; Sergio Zanetti3; Marco Riani4; Gabriele Tridenti5; Andrea Cerioli6; Elena Chesi7; Sergio Bernacchioni1; Giacomo Banchin8

1University of Parma, Department of Pediatrics, Parma, Italy; 2University of Giessen, Department of Pediatrics, Giessen, Germany; 3University of Parma, Department of Economics, Parma, Italy; 4S. Maria Nuova Hospital, Department of Obstetrics, Reggio Emilia, Italy; 5Saint Maria Nuova Hospital, Department of Pediatrics, Reggio Emilia, Italy; 6University of Parma, Department of Pediatrics, Parma, Italy

Background: The deviation from the proportionality between brain size and body size at birth has been related to fetal-neonatal stress.

Objective and hypotheses: We evaluated the possibility that preterm birth (PT) and intrauterine growth retardation (SGA) do not completely explain the birth size - related predictor role of birth brain weight (BRW) on serum Insulin-like Growth Factor-I (IG1) in the human newborn (NBW).

Methods: 78 NBWs 1) free of diabetes mellitus (DM)/life-threatening disease, 2) free of mother with DM and 3) with all of the following variables available were included in the study: gender (SEX), birth gestational age in completed weeks (GA), birth head circumference in cm and birth body weight in gr (resp. HC and BW), IG1 measured in ug/dL at one of the first 5 postnatal days (x), 5 days after x (y) and 10 days after x (z) by radioimmunoassay.

Results: Table 1 shows t value (t), partial correlation coefficient (r) and significance level (p) of partial correlations of BRW with IG1 measured in ug/dL at one of the first 5 postnatal days (x), 5 days after x (y) and 10 days after x (z) by radioimmunoassay and postnatal age in completed days at x (PNA)PT definition: GA<36; SGA definition: BW<10.th centile for GA and SEX; males, n=43; GA range=28-42; PT, n=46; SGA, n=20). BRW was calculated in gr according to the formula “ BRW= 0.037 x HC - 2.57 ” (McLennan JE, 1983; Lindley AA, 2000). An estimate of birth body size not represented by brain was obtained by subtracting BRW from BW (BW minus BRW, NBBW). BRW was divided by the chronologically corresponding IB3 measured in ug/dL at one of the first 5 postnatal days (x), 5 days after x (y) and 10 days after x (z) by radioimmunoassay and postnatal age in completed days at x (PNA)PT definition: GA<36; SGA definition: BW<10.th centile for GA and SEX; males, n=43; GA range=28-42; PT, n=46; SGA, n=20). BRW in gr was calculated according to the formula " BRW = 0.037 x HC - 2.57 " (McLennan JE, 1983; Lindley AA, 2000). An estimate of birth body size not represented by brain was obtained by subtracting BRW from BW (BW minus BRW, NBBW). BRW was divided by the chronologically corresponding IB3 measured in ug/dL at one of the first 5 postnatal days (x), 5 days after x (y) and 10 days after x (z) by radioimmunoassay and postnatal age in completed days at x (PNA) PT definition: GA<36; SGA definition: BW<10.th centile for GA and SEX; males, n=43; GA range=28-42; PT, n=46; SGA, n=20). BRW in gr was calculated according to the formula " BRW = 0.037 x HC - 2.57 " (McLennan JE, 1983; Lindley AA, 2000).

Conclusions: A direct BRW relation to IG1 was observed in studied NWBs after controls including PT and SGA, which could be in part explained by peripheral, i.e., not BRW-related, birth size.

Table 1 shows t value (t), partial correlation coefficient (r) and significance level (p) of partial correlations of BRW with IG1 measured in ug/dL at one of the first 5 postnatal days (x), 5 days after x (y) and 10 days after x (z) by radioimmunoassay and postnatal age in completed days at x (PNA)PT definition: GA<36; SGA definition: BW<10.th centile for GA and SEX; males, n=43; GA range=28-42; PT, n=46; SGA, n=20). BRW in gr was calculated according to the formula " BRW = 0.037 x HC - 2.57 " (McLennan JE, 1983; Lindley AA, 2000). An estimate of birth body size not represented by brain was obtained by subtracting BRW from BW (BW minus BRW, NBBW). BRW was divided by the chronologically corresponding IB3 measured in ug/dL at one of the first 5 postnatal days (x), 5 days after x (y) and 10 days after x (z) by radioimmunoassay and postnatal age in completed days at x (PNA)PT definition: GA<36; SGA definition: BW<10.th centile for GA and SEX; males, n=43; GA range=28-42; PT, n=46; SGA, n=20). BRW in gr was calculated according to the formula " BRW = 0.037 x HC - 2.57 " (McLennan JE, 1983; Lindley AA, 2000). An estimate of birth body size not represented by brain was obtained by subtracting BRW from BW (BW minus BRW, NBBW). BRW was divided by the chronologically corresponding IB3 measured in ug/dL at one of the first 5 postnatal days (x), 5 days after x (y) and 10 days after x (z) by radioimmunoassay and postnatal age in completed days at x (PNA)PT definition: GA<36; SGA definition: BW<10.th centile for GA and SEX; males, n=43; GA range=28-42; PT, n=46; SGA, n=20). BRW in gr was calculated according to the formula " BRW = 0.037 x HC - 2.57 " (McLennan JE, 1983; Lindley AA, 2000).

Conclusions: A direct BRW relation to IG1 was observed in studied NWBs after controls including PT and SGA, which could be in part explained by peripheral, i.e., not BRW-related, birth size.

Table 1. vs. A) IG1x-ln vs. B) IG1y-ln vs. C) IG1z-ln

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<th>BRW</th>
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Edema has been accepted as an uncommon complication occurring after initiating of insulin therapy in the absence of heart, liver or renal disease. In newly diagnosed type 1 diabetic children and adolescents insulin-induced edema should be considered after the initiation of insulin therapy.

Case report: A 13 year old boy was admitted with a one month history of polyuria, polydipsia, enuresis nocturna and also weight loss developed within last fifteen days. On admission, physical examination was normal except the case in our patients. Findings were of diabetes mellitus. Hemoglobin level was 10.8g/dl, haematocrit 33.7%, and white blood cells 4430/mm3. Glycosylated hemoglobin was elevated to 11.5%. He had keatonuria but no acidosis with arterial blood pH of 7.40. He was initially given an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose. Just before the oral feeding, we have initiated subcutaneous regular insulin for an intravenous infusion of insulin and 2/3 isotonic saline in 5% dextrose.
Results: The study revealed that according to the glucometer’s readings the minimum glycemia level was 6,72±1,31 mmol/l; CGMS displayed 3,46±0,44 mmol/l (p < 0,001). The maximum glycemia level was 14,93±1,15 mmol/l (glucometer) and 18,18±1,48 mmol/l (CGMS) (p < 0,01). The mean glycemia level was 9,76 mmol/l (glucometer) and 10,8 mmol/l (CGMS). According to the CGMS results the patients were in the normoglycemia conditions during the 73% of the whole research period, hyperglycemia was registered at 24,68%; and hypoglycemia was registered at 3,47%. The readings of the regular glucometer showed normoglycemia at the 52% of the whole period, hyperglycemia at the 48%; hypoglycemia wasn’t revealed. The initial HbA1C level was 7,95%; after the three month it decreased to 7,41%(p › 0,05). The lack of accuracy may be caused by the limited sampling.

Conclusions: CGMS is able to reflect the adequate ratio of the hyper- hypoglycemia and normoglycemia and helps to reveal the most serious latent hypoglycemics which are difficult to detect with the glucometer. CGMS helps to detect the actual glycemia variability in patients. CGMS shows more accurate results in the mean glycemia measuring and improves glycemic control quality.

PAO-12
Parental consanguinity among parents of infants with congenital hypothyroidism in Hamedan
Zahra Razei
Hamedan University of Medical Sciences, Paediatric Endocrinology, Hamedan, Islamic Republic of Iran

Introduction: Congenital hypothyroidism is inadequate thyroid hormone production in newborn infants. This can occur because of an anatomic defect in the gland, an inborn error of thyroid metabolism, or iodine deficiency. It is the most common congenital endocrine disorder. According to published studies the incidence of congenital hypothyroidism (CH) is high among Iranian population. The purpose of this study was to determine rate of consanguinity among parents of infants with congenital hypothyroidism.

Methods and materials: This descriptive study was conducted in infants diagnosed to have congenital hypothyroidism, between 1385-1389. All infants with biochemically confirmed CH (low T4, and TSH > 10 µIU/ml) were included in this study. A detailed record of the required information was made. The data was manually extracted and displayed in a descriptive manner. p-value less than 0.05 was defined as statistically significant.

Results: The study population consisted of 150 infants with CH (72(47%) females and 78(53%) males. Of the neonates with congenital hypothyroidism 28% had relative parents and in 72%, parents were not relative. In Control group, 20 neonates (14%) had relative parents and 86% parents were not relative. The difference between two groups was significant (p=0.005). There were no significant differences in sex ratio seasonality, order of birth and mean age of mother at delivery of infant with congenital hypothyroidism and control group (p=0.05).

Conclusion: The results of this study suggest infant of consanguineous parents are at greater risk for of congenital hypothyroidism than the rest of population.

PAO-13
Bone health and physical activity in Danish children, an intervention study
Malene Heidemanni1; Steffen Husted3; Anders Schou1; Niels Wedderkopp3; Christian Molgaard1
1Institute of Clinical Research, SNU, Department of Paediatric Research Unit, Odense, Denmark; 2H. C. Andersen’s Children Hospital, Odense University Hospital, Odense, Denmark; 3Hospital Lillebaelt, Spine Center of Southern Denmark, Middelfart, Denmark

Background: Peak bone mass is an important determinant of adult risk for osteoporosis. Factors, which determine bone mineral density (BMD) and bone mineral content (BMC) in children, are not fully understood. Studies indicate that both genetic factors and lifestyle, such as diet and physical activity during early childhood can contribute to optimal bone development.

Methods: Group 1 included 121 healthy children born in Italy or living in Italy since at least 1 year (78 females and 43 females, mean age 9,5±4,1 years). Group 2 included 168 adopted or migrant children living in Italy since less than 1 year (62 females, 106 males, mean age 5,45±3,1 years); the geographical area of origin were Sub-Saharan Africa (n=29), Latin America (n=36), Eastern Europe (n=37), Russia (n=24), Southeast Asia (n=25), Indian subcontinent (n=17).

Results: In group 1 mean serum level of 25(OH)D was 25.3±11.1 ng/mL; 34.7% of children was vitamin-D deficient and 39.6% was insufficient. In group 2 mean serum level of 25(OH)D was 29.0±17.9 ng/mL (significantly higher compared to group 1, P=0.04); 29.8% of children was vitamin-D deficient and 29.8% was insufficient. The subgroup from Southeast Asia had lower levels of 25(OH)D (40.2±24.3 ng/mL) compared to the other subgroups. Comparing group 1 versus group 2 without subgroup from Southeast Asia (n=143), mean 25(OH)D 27.0±15.9 ng/mL), we found no significant differences (P=0.05).

Conclusions: Vitamin D is highly prevalent in both Italian (74.3%) and adopted or migrant children (59.6%); we exclude subgroup from Southeast Asia the prevalence in group 2 raises to 65.7%. We have no explanation for the higher levels of 25(OH)D found in this subgroup (Philippines, Cambodia and Vietnam).
Serum leptin and adiponectin in relation to appetite grade, gender and puberty in children with obesity

Anzhalka Solntsaava1; Liudmila Viazava2; Elena Dashkevich3

1Belarusian State Medical University, Children Disease Department number 1, Minsk, Belarus; 2-nd City Children's Clinical Hospital, Out-patient Endocrinological Department, Minsk, Belarus; 310-th City Clinical Hospital, Hormonal Laboratory, Minsk, Belarus

Background: Leptin and adiponectin suspected to be potential markers of obesity, but the importance as metabolic risk factors is still discussed.

Objective and hypotheses: Our aim was to investigate gender differences of leptin and adiponectin concentrations in relation to appetite grade in obese children.

Methods: Children (n=300) with obesity (4,8 -17,8 years old) from Belarus were assessed for anthropometric parameters, pubertal stage, serum lipids, insulin, sex-binding globulin (SBG), leptin and adiponectin, appetite (A) grade (4-point assessment). Statistical analysis were performed by using SPSS 16.0 (p-0.05).

Results: Leptin levels were significantly different during puberty and increased especially in late pubertal girls (prepubertal - 27.7 ng/ml, p=0.002, early pubertal - 37.8, p=0.001, late - 54.7) versus adiponectin decreasing (prepubertal - 22.3 ng/ml, p=0.001, early pubertal - 14.2, p=0.001, late - 12.1). Peak leptin and adiponectin concentrations were shown in early pubertal boys - 47.6 ng/ml, p=0.021 and 26.8 ng/ml, p=0.02 with further decreasing in late puberty - 24.7, p=0.024 and 21.8, p=0.048 respectively that was connected with negative influence of high testicular androgen to leptin and adiponectin production. There were positive correlations between serum leptin and body mass index (BMI) (p=0.0001), waist circumflex (WC) (p=0.01) triglycerides (p=0.05), insulin (p=0.0001), low-density lipoproteins (LDL) (p=0.02) and negative with SBG (p=0.02) in children with obesity. Adiponectin had negative correlation with the same parameters: BMI (p=0.02), WC (p=0.03) triglycerides (p=0.03), insulin (p=0.02), LDL (p=0.03) and positive with SBG (p=0.01). The highest leptinemia was shown in children with risen afternoon appetite (A) grade (118.3 ng/ml, p=0.05). Conversely adiponectinemia were independent from rising A grade time (p=0.05).

Conclusions: Serum leptin increases with obesity grade, whereas adiponectin decreases, both are influenced by gender and puberty and correlate with metabolic dysfunction markers. Appetite grade has influence on leptinemia.

Effect of a large ventricular defect (VSD) on linear growth: a lesson from an affected baby who is one of triplets

Ashraf Soliman1; Amal Saff2; Ahmed Elawwa3; Haytham Yassin3

1Hamad Medical Center and University of Alexandria, Pediatrics, Doha, Qatar; 2Hamad Medical Center, Cardiology, Doha, Qatar; 3Hamad Medical Center, Cardiology, Doha, Qatar

Background: Large VSD may delay growth and compromise adult height.

Objectives: Study the effect of large VSD on linear growth in a girl with large VSD, who was a part of triplet and compare it with her siblings' growth.

Methods: This girl (C) was born as a part of triplet at 38 weeks of gestation. The other parts of triplet were a male (A) and female (B). The girl (C) was born with a weight = 1.82 kg, length = 41 cm. We compared girl C anthropometry, bone maturation and IGF-I level data with her normal siblings’ data.

Results: Clinical examination, CXR and echocardiography revealed a large-size VSD with cardiomegaly and lung congestion. There was no cyanosis, pallor, jaundice or dysmorphic features. The girl was treated with lasix and nutritional support. At the age of 3.5 years a complete corrective surgery was performed. At the age of 6.5 years the bone age of girl C was 5 years, girl B and boy A = 6 years. Their IGF-I were 85 , 125 and 185 ug/L respectively. Analysis of growth data of girl C before and after surgery in comparison to the other parts of the triplet reflected the effect of VSD on linear growth as followings:

a) The VSD prevented catch-up growth in girl C which occurred in her 2 siblings (3SDS) during the first 3 years,

b) Correction of VSD accelerated growth for 2 years with a significant (2.2 SDS) but incomplete catch-up growth (still 1 SDS below mid-parental HSDs),

c) catch-up growth stopped during the 3rd year after surgery,

d) in girl C, VSD was associated with delayed bone age (a year) and lower IGF-I versus her siblings.

Conclusions: In girl C, VSD prevented catch-up growth during the first 3 years of life with significant but incomplete catch-up growth for 2 years following surgical correction and lower IGF-I secretion. However, VSD was associated with a delay in bone age with a better potential for final adult height.
A three-week-old boy with normal male genitals presented with left inguinal hernia and cryptorchidism. The inguinal hernia surgery revealed an unusual anatomical situation. His free testosterone was normal (23.21 pg/ml). Peripheral blood karyotype was mos 45,X[25]/46,X[4](Y)p10, id(1) Y[11](DXZ3++) Y[6]. An SRY duplication was detected by FISH. Histological examination found an immature testis on the left, a dysgenetic gonad on the right side and a uterus-like organ. Based on the different degree of differentiation of the two gonads and the normal hormone production we hypothesized that the mosaicism -namely the ratio of Y chromosome- may vary from loci to loci, moreover in some tissues might be significantly different from that of the peripheral lymphocytes. To test this hypothesis blood, gonad and subcutaneous fibroblast samples were analyzed by FISH and QF-PCR.

Results: The X:Y ratio was normal in the tests and nearly 2:1 in the blood, fibroblast and a dysgenetic gonad samples by QF-PCR. However, FISH analysis in the tests have found one X centromere in 60% and presence of different mosaic SRY+ cell lines (with single or double SRY signals) in 40% of cells (inc. shr(DXZ1+)(SRY-)[201](DXZ1+)(SRY+)(68)(DXZ1+)(SRY++)(52](DXZ1++)(SRY+)[12]).

Conclusions: Our case underlines that peripheral blood lymphocyte karyotype might not provide a reliable representation of specific tissue karyotypes. Future studies may prove whether Y chromosome material present in the gonads would be completely absent or undetected in lymphocytes. Peripheral blood is an easy and reliable source of material for cytogenetic analysis, however, the interpretation of test results might require caution.

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Thrombocytopenia in a girl with idiopathic central precocious puberty treated with long-term gonadotropin hormone agonists (GnRHa)

Marina Krsteva-Konstantinova, Aleksandra Janchevska; Zoran Gucev
University Children’s Hospital Skopje, Endocrinology and Genetics, Skopje, Macedonia, FYrom

Background: Central precocious puberty (CPP) is a frequent endocrine problem in childhood. The idiopathic and organic etiology of CPP are most commonly treated with GnRH agonists. They have been considered in many studies to be safe and effective.

Case report: We present a 7-year-old girl with idiopathic CPP diagnosed by standard GnRH testing. She developed severe thrombocytopenia during GnRH treatment. The familial history showed that the mother has been treated 8 years for infertility. The pregnancy was controlled and uneventful. At the time of diagnosis her weight was at the 75th percentile and she was 130.5 cm tall on the 97th percentile. The Tanner stage was B3, A1, P1. The bone age was advanced to 8.5 years. Before the treatment she was otherwise healthy. All laboratory evaluations were normal from blood count to thyroid function and brain imaging techniques. After receiving her 9th month depot therapy of GnRH agonist, triptorelin acetate, 3.75 mg i.m., she developed bleeding of the injection site, bruises and rash on the skin all over her body. Her platelets were 27 x 10³/µl (150-300 x 10³/µl). The coagulation factors and myeloblasts were normal. She was hospitalized at the haematology department in our hospital for 5 days and treated with corticosteroids. Recovery was after one week and treatment with GnRH agonists was discontinued.

Conclusions: To our knowledge, thrombocytopenia has not been yet reported in children receiving GnRH agonist treatment. This may represent a possible serious adverse effect which needs further investigation.

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Peripheral blood karyotype poorly represents tissue mosaicism determined by FISH and QF-PCR - a case report

Dóra Török1; Ién Halbrich1; Bálint Nagy1; Zsuzsa Tóth1; Zsolt Jórász3; Andrea Luczay1
1Semmelweis University, 2nd Department of Pediatrics, Budapest, Hungary; 2Semmelweis University, 1st Department of Obstetrics and Gynecology, Budapest, Hungary; 3Bethesda Children’s Hospital, Department of Surgery, Budapest, Hungary

Background: Cytogenetic analysis in disorders of sexual differentiation is routinely performed on peripheral blood lymphocytes. The presence of Y chromosome material in the gonads is of major interest because of the risk of gonadoblastoma development. However, there is a lack of evidence whether the gonadal karyotype is congruent with lymphocyte karyotype.

Patient and methods: A three-week-old boy with normal male genitals pre-
58 children with DMT1 were included into this research and divided depending on gender and pubertal stage.

**Objective and hypotheses:** To assess nutritional stereotype and emotional stability in children.

**Background:** An 8 year old male with congenital hypotuitarism requiring hydrocortisone, growth hormone and thyroxine replacement had an episode of unresponsiveness whilst at school. There was a health care plan in place with appropriate advice suggesting an oral dose of hydrocortisone and if the patient remained unwell to call an ambulance so that intramuscular hydrocortisone could be administered. The patient was brought to hospital where it was evident that the ambulance team were unable to administer intramuscular hydrocortisone as the diagnosis was not that of Addison’s disease.

**Objective and hypotheses:** To review the pre hospital management of adrenal crisis.

**Methods:** The paediatric population of Swansea with conditions that require long term steroid dependence.

**Results:** There are currently 13 paediatric patients in Swansea requiring hydrocortisone administration, none of whom have Addison’s disease as the underlying diagnosis. All Ambulance crew carry hydrocortisone in their emergency equipment. However current guidelines (1) state this can only be administered in an Adidsonian crisis. This is interpreted to mean that if the diagnosis is not Addison’s disease then Hydrocortisone is not administered.

None of our patients would have the necessary medication administered by the ambulance crew if they presented in an adrenal crisis. This represents a clinical risk causing a delay in administration of potentially life saving medication. This risk currently applies across Wales and the rest of the UK as all ambulance crew follow these guidelines and are advised not to deviate away from it.

**Conclusions:** A significant proportion of paediatric patients requiring long term hydrocortisone replacement do not have Addison’s disease as the underlying cause and would not be given the appropriate resuscitation medication in the UK. It is important that this is recognised so that future guidelines can be amended. In the meantime, patients can be registered with the ambulance authorities so there is an alert that hydrocortisone may need to be administered.

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**PAO-21**

**Do we need to change the policy of hydrocortisone administration by emergency personnel?**

*Rebekah Pryce*

Abertawe Bro Morgannwg Healthboard, Department of Paediatrics, Swansea, United Kingdom

**Background:** To define differences of IGF-1, IGFBP-3 and uGH values in various variants of short stature.

**Objective and hypotheses:** To define differences of IGF-1, IGFBP-3 and uGH values in various variants of short stature.

**Methods:** We have examined 147 subjects (85 boys and 62 girls), aged 3-18 yrs (mean age 11±3,9yr.) with short stature and 20 healthy children (10 boys and 10 girl). Serum levels of IGF-1, IGFBP-3 and uGH were measured by IRMA (Immunotech, Beckmand Coulter).

**Results:** The obtained data of laboratory researches of levels of IGF-1, IGFBP-3 and uGH are given in the table. GH excretion and basal levels of IGF-1 and IGFBP-3 were lower in growth hormone deficiency, hypothyroidism and raised in case of familial short stature in comparison with healthy children.

**Conclusions:** Fast-food consumption frequency in late pubertal boys higher than in other groups. Intensity of life quality’s dissatisfaction and anxiety about the future relate from the disease duration.

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**PAO-22**

**Diabetes influence on nutritional stereotype and children's quality of life**

*Ekaterina Lapeteli; Angelika Solnecva; Ludmila Viazava*

Belarusian State Medical University, Pediatrics, Minsk, Belarus

**Background:** Diabetes mellitus type 1 (DM1T) can influence on life quality and emotional stability in children.

**Objective and hypotheses:** The study aim was to assess nutritional stereotype’s influence on emotional status and life quality in children with DMT1 depending on gender and pubertal stage.

**Methods:** 58 children with DMT1 were included into this research and divided to 4 groups depending on gender and pubertal stage. Group A (n=14) and B (n=15) included early pubertal boys at age 10,1±2,1 years and girls (10,1±2,1 years) respectively. Group C (n=14) and D (n=15) ~ late pubertal boys at age 15,1±2,2 years and girls (15,1±2,2 years) equally. Patients were interviewed by self-report questionnaires (Diagnostic Interview for psychological disturbances in childhood and adolescence (DIPS-K)) with point estimation. All foodstuffs were divided into 3 groups: allowed, with the limited use and prohibited. Questions about fast food using were separated from other. Glycosylated haemoglobin (HbA1c), daily usual glycemia, insulin doses were also estimated. All patients got insulin therapy in intensive regimen. Statistical analysis were performed by using T-test (p<0,05).

**Results:** Forbidden products increasingly used for in groups A and B (p<0,05). Useful products prevailed in groups C and D (p<0,05). 20% children from A and B groups used fast-food in everyday life, 11% -during weekends; 50% and 17% from group C, 8% and 0% from group D respectively.

**Conclusions:** Hypoaldosteronism may present with severe growth retardation during the first year of life. Complete catch-up of growth was achieved during the first year of treatment.

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**PAO-23**

**Values of levels of IGF-1, IGFBP-3 and urinary GH to diagnose of short stature**

*Said Ismailov1; Barno Nazarova2*

1Center of Endocrinology, Sugery, Tashkent, Uzbekistan; 2Center of Endocrinology, Pediatric Endocrinology, Tashkent, Uzbekistan

**Background:** Levels of IGF-1, IGFBP-3 and also urinary GH (uGH) are recognized by markers of GH deficiency and have diagnostic value in various variants of short stature.

**Objective and hypotheses:** To define differences of IGF-1, IGFBP-3 and uGH values in various variants of short stature.

**Methods:** We examined 147 subjects (85 boys and 62 girls), aged 3-18 years (mean age 11±3,9yrs) with short stature and 20 healthy children (10 boys and 10 girl). Serum levels of IGF-1, IGFBP-3 and uGH were measured by IRMA (ImmunoTech, Beckman Coulter).

**Results:** The obtained data of laboratory researches of levels of IGF-1, IGFBP-3 and uGH are given in the table. GH excretion and basal levels of IGF-1 and IGFBP-3 were lower in growth hormone deficiency, hypothyroidism and raised in case of familial short stature in comparison with healthy children.

**Conclusions:** Complex measurement of levels of IGF-1, IGFBP-3 and uGH allows to improve the diagnoses of endocrine variants of short stature.

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**50th Annual Meeting of the ESPE**

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PAO-24

Descriptive study on growth of small for gestational age (SGA) babies in a multi-ethnic population
Sharon Lim
Broomfield Hospital, Paediatric, Chelmsford, United Kingdom

Background: The childhood population under study is approximately 200,000 with an annual birth rate of approximately 11,000.
Objective: In this prospective observational study, the aim was to collect data on parental ethnicity, educational attainments, social habits, medical history and auxology of SGA babies till the first birthday.
Methods: SGA babies were defined as birth weight or length less than the third percentile for gestation. Measurements were converted to SD scores. Mothers of SGA babies were interviewed by one of the authors using a standardised questionnaire. Babies were measured using a stadiometer and weighed using digital weighing scales.
Results: 24 mothers were interviewed. Growth data was available for all babies except 1 final measure. Only 5 out of 24 mothers were Caucasian, 14 were Asian, 3 were mixed and 1 was African. Mean maternal age was 31 (range 21-40yrs). 2 admitted to smoking before and during pregnancy. 10 admitted to alcohol intake prior to getting pregnant, with 3 continuing to drink in pregnancy. Birth weight SDS ranged between -2.7 to -1.3, mean -1.8, weight SDS at 1 year ranged between -2.2 to 1.1, mean -0.7 (see chart).
Conclusions: It was possible but difficult to study this largely multiethnic group of families (hence the small numbers). Data obtained can be used in future to compare with other populations and with the comparisons, possible factors may be identified to be more strongly linked to having a SGA baby.

PAO-25

Serum IGF-1 and IGFBP-3 levels in central precocious puberty girls with gonadotropin releasing hormone agonist (GnRHa) treatment
Kyung Hee Yi1; Eun Young Kim2
Wonkwang University Sanbon Medical Center, Pediatrics, Gunpo, Gyeonggi province, Republic of Korea; 1Chosun University School of Medicine, Pediatrics, Gwangju, Republic of Korea

Purpose: To investigate changes of serum IGF-1 and IGFBP-3 levels during one year gonadotropin releasing hormone agonist (GnRHa) treatment in central precocious puberty (CPP) girls.
Methods: From 2007 through 2009, twenty six girls were enrolled in this study. They were diagnosed as central precocious puberty and were treated with GnRHa (Leuprolide acetate) for one year. Height, bone age, IGF-1, IGFBP-3 were evaluated every 6months.
Results: At the time on diagnosis, their mean serum IGF-1 and IGFBP-3 were 270.2±41.2ng/mL and 101.6±12.0ng/mL respectively. One year later, IGF-1 concentrations were more increased (p=0.01) but IGFBP-3 concentrations were slightly decreased and IGFBP-3 production was moderately negatively correlated with age (r=-0.419, p=0.01) at the start of GH treatment. ROC curve analyses provided cut-off levels for age (>9.75 years) and height (<3 SD score) for prediction of poor first-year response. Risk of poor first-year response increased 2.9 times per 1 SD score increase in height and 1.6 times per 1 year increase in age.
Conclusions: Poor response to GH treatment in children with brain tumor is associated with some clinical variables, which might serve to make treatment modifications.

PAO-26

First-year response to growth hormone in children with brain tumours: analysis of data from KIGS Turkey
Ecce Bobile1; Feyza Darendeli2; Ferdevs Bas3; Korcan Demir4; Pinar Isguven1; Erdal Aday1; Oya Ercan1; Merih Berberoglu5; Sukran Darcan1; Omer Faruk Tarim6; Banu Kucukemre Aydin7; Zeynep Siklak1; Damla Goksen1; Oltay Evliyaoğlu1; Sule Cift7; Zehra Ayca12
1Dokuz Eylul University, Department of Pediatric Endocrinology, Izmir, Turkey; 2Istanbul University, Istanbul Faculty of Medicine, Department of Pediatric Endocrinology, Istanbul, Turkey; 3Goztepe Education and Investigation Hospital, Department of Pediatric Endocrinology, Istanbul, Turkey; 4Bakirkoy Maternity and Children Education Hospital, Department of Pediatric Endocrinology, Istanbul, Turkey; 5Istanbul University, Cerrahpasa Faculty of Medicine, Department of Pediatric Endocrinology, Istanbul, Turkey; 6Ankara University, Department of Pediatric Endocrinology, Ankara, Turkey; 7Ege University, Department of Pediatric Endocrinology, Izmir, Turkey; 8Uludag University, Department of Pediatric Endocrinology, Bursa, Turkey; 9Dr. Sami Ulus Women Health, Children's Education and Research Hospital, Department of Pediatric Endocrinology, Ankara, Turkey

Background: Determinants of first-year response to growth hormone (GH) are not well established in children with brain tumor.
Objective and hypotheses: To retrospectively analyze first-year response to GH in children with brain tumor registered in KIGS (Pfizer International Growth Database) Turkey.
Methods: Among 53 eligible patients, 9 were excluded due to a follow-up period of under 9 months and 7 due to lack of relevant data. Remaining patients were divided into two as Group 1 (change in height SD score >0.5, n=15) and Group 2 (change in height SD score <0.5, n=22), which were compared regarding clinical and laboratory variables. Correlation analysis, receiver operating characteristic (ROC) curve, and logistic regression analysis were used to further assess the association of follow-up variables with the degree of height gain.
Results: Thirty seven cases [MF: 17/20, median (interquartile range) age 11.8 (8.9-13.7); ratio of pubertal patients, 28%] were included in the study. Majority of the patients were suffering from craniopharyngioma (n=15, 41%) or medulloblastoma (n=12, 32%). Median (interquartile range) value for height SD score at the start of treatment was 2.83 (4.01 – -1.93) and duration of follow-up 2.7 years (1.35-4.93). Higher age and height SD scores and greater number of cranial tumors distant from pituitary/hypothalamic area were found in Group 2. Age (r= -0.462, p=0.004) and height SD scores (r= -0.419, p=0.01) at the start of GH treatment were moderately negatively correlated with first-year response. ROC curve analyses provided cut-off levels for age (>9.75 years) and height (>3 SD score) for prediction of poor first-year response. Risk of poor first-year response increased 2.9 times per 1 SD score increase in height and 1.6 times per 1 year increase in age.
Conclusions: Poor response to GH treatment in children with brain tumor is associated with some clinical variables, which might serve to make treatment modifications.
10q. The breakpoint located by CGH-array was in 2q37.1 (gene DIS3L2).

**Objective and hypotheses:** MC’s mother, carrying the balanced (2;10) translocation, has no loss of genetic material according to karyotype and CGH-array; but curiously she has the same phenotype than her son except mental retardation.

**Method:** AHO phenotype is present in two disorders: pseudohyoparathyroidism 1a (PHP 1a) where it is associated with hormone resistances especially to PTH; and pseudohypohypoparathyroidism (PHPH) where no resistance to PTH is observed. In most of the cases of PHP 1a and PHPH, patients have a gene GNAS (located in 20q13) mutation, responsible for a decrease of Gsα protein activity. This gene is controlled by genomic imprinting. In case of paternal transmission the patient has PHPH and inversely. However, some cases like MC have no PHPH without gene GNAS mutation but are carrier of a 2q37 deletion. Then Gsα protein activity is normal.

**Results:** Some molecular investigations have tried to identify the gene responsible for the AHO phenotype in 2q37. Recently the gene HDAC4, located in 2q37.3, was found to be mutated in patients with AHO phenotype. However, the mother’s breakpoint is in 2q37.1 and HDAC4 is entirely translocated.

**Conclusions:** We propose a diagnostic flow chart in case of AHO phenotype in order not to forget 2q37 deletion as rare cause of short stature and obesity. Furthermore this familial case may be useful to understand the molecular pathways leading to AHO phenotype.

**PAO-28**

**Diabetic ketoacidosis as initial presentation in children with type 1 diabetes mellitus in South Region of Saudi Arabia**

**Mohammad A. Al-Faiz Al-Khaththari**

**MOH, Pediatric, Abha, Saudi Arabia**

**Background:** Type 1 Diabetes Mellitus (DM) represents about 5-10% of total diabetes with more susceptibility to develop Diabetic Ketoacidosis (DKA) than Type 2 DM as the underlying cause is insulinopen.

**Objective:** To study the percentage of patients with Type 1 DM that presents initially with DKA as this is a good indicator of public health knowledge about diabetes in the pediatric age group.

**Method:** A retrospective study to evaluate charts of patients seen regularly in Ascer Diabetes Center (ADC) over a period of 10 years from 1st Jan 2000 till 31 Dec 2009 whether they present initially in DKA or not.

**Result:** A total of 614 patients with Type 1 DM were registered. Among them 487 patients with completed data, 228 patients were seen in DKA as initial presentation (47%), whereas 259 patients were discovered before reaching DKA (53%). This percentage is higher than what have been published from the United States (25%) and in between if compared to the International figures (16-80%). In relation to age we found that 83% of patients who are less than 1 year of age had DKA as initial presentation. Beyond that age there was no much difference.

**Conclusions:** A relatively high percentage of DKA as initial presentation necessitates to follow up study to evaluate what can be the cause of this relatively high percentage, with suggestion to have more public health programs in the media and training courses for primary health care physicians in order to reaches developed countries percentages.

**PAO-29**

**Hypoglycaemia in a Nigerian paediatric emergency ward**

**Jerome Elusiyi**

**Ebubulu AdaJudige; Olawagbenag Anaodu**

**Obafemi Awolowo University, Paediatrics and Child Health, Ille-Ife, Nigeria**

**Background:** Hypoglycaemia is a common problem in paediatric emergency admissions. It has not received enough attention in Nigeria. It has been shown to complicate many childhood illnesses.

**Objective:** This study aimed to determine the prevalence of hypoglycaemia in paediatric emergency admissions, describe clinical factors that commonly predispose to it and investigate its effect on outcome of management.

**Method:** Three hundred and ninety-two consecutively admitted patients were studied. Two milliliters of blood was obtained from each patient for plasma glucose determination. Hypoglycaemia was defined as plasma glucose 52.5 mmol/l (945 mg/dl).

**Results:** Out of these 392, twenty-five (25) of them were hypoglycaemic giving a prevalence of hypoglycaemia to be 6.4 per cent in our emergency ward. Hypoglycaemia was found to be associated commonly with severe malaria, septicaemia, pneumonia, and protein energy malnutrition. Interval of last meal and unconsciousness were the only two significant associated factors to hypoglycaemia. However, the likelihood of hypoglycaemia is increased with night admissions and prolonged duration of illness before admissions. Presence of hypoglycaemia at admission was also found to be significantly associated with death and dying within 24 hours of admission.

**Conclusions:** The prevalence of hypoglycaemia was found to be 6.4 per cent. It was found to complicate many childhood illnesses and it is associated with a higher mortality. It should be suspected in all very ill children, particularly when they are unconscious and have not eaten for over 12 hours.

**PAO-30**

**Ethnic and gender inequities in the evaluation of referred short children**

**David Yardeni; Neta Loewenthal; Yehuda Limony; Eli Herskovicz**

**Soroka Medical Center, Pediatric Endocrinology and Metabolic Unit, Beer Sheva, Israel**

**Aims:** To examine ethnicity and gender differences in the evaluation of referred children with short stature and to investigate adherence of the primary care evaluation to published guidelines.

**Methods:** Cross-sectional study in a referral center. 371 short patients aged 2 to 18 years were included. Outcome measures were patient’s growth characteristics, final diagnosis, and prevalence of pre-referral patient data.

**Results:** The study population was composed of 239 Bedouin children and 132 Jewish children (P < 0.0001). More males (61%) than females were evaluated (P < 0.0001). There were no significant differences between males and females in age and growth parameters at the time of referral. Bedouins, males and females, were significantly shorter than their Jewish counterparts at the time of referral: BMI SD -2.4±0.73 and -2.6±0.5 versus -2.1±0.55 and -2.1±0.57, respectively (P < 0.05). There were no significant ethnic or gender differences in the final diagnosis. Significant deficiencies in the primary care evaluation of referred short children were found.

**Conclusions:** We demonstrated novel ethnic- and gender-based inequities in the evaluation of referred short children. We found that the current evaluation of short stature in our area does not comply with existing guidelines.

**PAO-31**

**A novel mutation in EIF2AK3 gene associated with Wolcott-Rallison syndrome in a family from Saudi Arabia**

**Ramil Al-Salif1; Amra Al-Salif; Ali Al-Amer2**

1MOH, Pediatric, Safwa, Saudi Arabia; 2King Faisal Specialist Hospital & Research Center, Genetic Diagnostic Lab, Riyadh, Saudi Arabia

**Objective:** To study the percentage of patients with Type 1 DM that presents initially with DKA as this is a good indicator of public health knowledge about diabetes in the pediatric age group.

**Method:** A retrospective study to evaluate charts of patients seen regularly in Ascer Diabetes Center (ADC) over a period of 10 years from 1st Jan 2000 till 31 Dec 2009 whether they present initially in DKA or not.

**Result:** A total of 614 patients with Type 1 DM were registered. Among them 487 patients with completed data, 228 patients were seen in DKA as initial presentation (47%), whereas 259 patients were discovered before reaching DKA (53%). This percentage is higher than what have been published from the United States (25%) and in between if compared to the International figures (16-80%). In relation to age we found that 83% of patients who are less than 1 year of age had DKA as initial presentation. Beyond that age there was no much difference.

**Conclusions:** A relatively high percentage of DKA as initial presentation necessitates to follow up study to evaluate what can be the cause of this relatively high percentage, with suggestion to have more public health programs in the media and training courses for primary health care physicians in order to reaches developed countries percentages.

**Context:** Wolcott-Rallison syndrome (WRS) is a rare autosomal recessive disorder characterized by neonatal diabetes mellitus, multiple epiphyseal dysplasia, osteoporosis, skeletal dysplasia and growth retardation. WRS is caused by mutations in EIF2AK3 gene.

**Objective:** The aim of the study is to describe a new case of Wolcott-Rallison Syndrome and define the underlying genetic defect.

**Design:** A WRS patient was followed up for the first 7 years of his life. DNA sequencing was performed to detect mutations in EIF2AK3 gene.

**Setting:** The patient was followed up in a pediatrics hospital.

**Patients:** DNA analysis was performed on the index case, his parents and siblings.

**Results:** A child of first-cousin parents presented at the age of 38 days with hyperglycemia. At the age of one year, x-rays showed skeletal deformities. He developed recurrent acute hepatitis during the follow-up time, the last one was associated with renal failure that resulted in his death at the age of 7 years. DNA sequencing showed homozygosity for a novel mutation (c.1262delA) in the EIF2AK3 gene.

**Conclusion:** A novel mutation c.1262delA was detected in a new case of Wolcott-Rallison syndrome.
PAO-32

Growth and weight-regulation disorders in children are not commonly associated with mutations of the ghrelin and GH secretagenous receptor (GHSR) genes

Ora Hess1; Gadir Elias1; Tal Almagor1; Osnat Admoni1; Morad Khayat2; Stavit Salev-Alkon2; Yerdana Tenenbaum-Rakover1

1Ha’Emek Medical Center, Pediatric Endocrine Unit, Afula, Israel; 2Ha’Emek Medical Center, Genetic Institute, Afula, Israel

Background: Ghrelin and its receptor, growth hormone secretagenous receptor, GHSR, play a major role in appetite control and growth regulation. To date, only four confirmed mutations in the GHSR gene have been identified in children with obesity and short stature, while no such mutations have been found in the ghrelin gene.

Objective and hypotheses: In the current study, we tested the hypothesis that mutations in ghrelin or GHSR will result in subjects being either over or underweight, and exhibiting abnormal growth.

Methods: Ninety-five subjects (37F:58M) were enrolled with FTT (10 pts), GHD (45 pts), ISS (18 pts) or obesity (22 pts). Both ghrelin and GHSR genes were sequenced.

Results: Seven different sequence changes were identified (66.3%) in GHSR, two of them novel and five described previously. None of the sequence changes identified in the GHSR gene changed the sequence of the encoded protein. The prevalence of these sequence changes did not differ between the subgroups. One previously described sequence change, Leu72Met, within the preproghrelin/ghrelin gene was identified in two patients (2%), one with FTT and the other with obesity and partial GHD. This sequence change, which had been identified previously in obese women, is located in exon 2 outside the coding region of the mature ghrelin.

Conclusions: Our results suggest that mutations of the ghrelin and GHSR genes are not commonly associated with growth and weight-regulation disorders in children.

PAO-33

The relationship between initial BMI and BMI change during 1-year of GnRH agonist therapy in girls with idiopathic central precocious puberty

Juyoung Yoon; Sei Won Yang; Young Ah Lee; Min Jae Kang; Simnim Kim; Jeun Lee; Choong Ho Shin

Seoul National University Children’s Hospital, Department of Pediatrics, Seoul, Republic of Korea

Background: Childhood obesity is associated with early pubertal development, and early sexual maturation is associated with increased prevalence of obesity. Above-average BMI is frequent at diagnosis of central precocious puberty (CPP).

Objective and hypotheses: The purpose of this study is to evaluate the relationship between initial BMI and BMI after 1 year of GnRH agonist(GnRHa) therapy in girls with idiopathic CPP. We also compared the group in which BMI-standard deviation score (BMI-SDS) increased after treatment with the group in which BMI-SDS remained the same or decreased.

Methods: The subjects were ninety-nine CPP girls treated with GnRHa for more than 1 yr. We investigated chronologic age (CA), bone age (BA), BA advance (BA-CA), height, HT-standard deviation score (HT-SDS), BMI, BMI-SDS, predicted adult height (PAH), PAH-SDS before initiation of GnRHa treatment and 1 yr later.

Results: There was no difference in initial CA, BA, BA-CA, HT-SDS, target height between normal BMI group and overweight obesity group. BMI-SDS increased more in normal BMI group than in overweight/obesity group (0.2 vs 0.1, P<0.004), and initial BMI and delta BMI-SDS showed negative relationship (R2=0.251, P<0.001). PAH-SDS decreased less in normal BMI group than in overweight/obesity group (0.3 vs 0.7, P<0.002), but there was no linear relationship between initial BMI and PAH-SDS. Delta BA, delta BA-CA, delta HT-SDS also was not different between normal BMI group and overweight/obesity group. Comparing pts. in whom BMI-SDS increased or remained the same after treatment with those whose BMI-SDS decreased, there was no difference in delta BA, delta HT-SDS, delta PAH-SDS. Delta BMI-SDS was related only with initial BMI SD and showed no relationship with CA, BA, BA advance, height, drug dose.

Conclusions: In CPP girls treated with GnRHa for 1 year, BMI SDS increased in those with normal BMI. Delta BMI-SDS had negative relationship with initial BMI-SDS, but was not influenced by other factors such as initial CA, initial BA, initial BA-CA, initial HT-SDS, initial PAH-SDS, target height, drug dose.

PAO-34

A case of salt-wasting and virilizing form of congenital adrenal hyperplasia in a patient with male phenotype and 46,XX karyotype

Maia Rekhtivshvili1; Mariam Balakhadze1; Revaz Morgosha2; Rolf Peter Willig

1JSC “Vere XIX”, Department of Physical and Sexual Development of Children and Adolescents, Tbilisi, Georgia; 2Endokrinologikum Hamburg, Pediatrics, Hamburg, Germany

Background: In congenital adrenal hyperplasia (CAH) with 21-hydroxylase or 11β-hydroxylase deficiency, futile trophic hormone stimulation results in excess sex hormone precursors. Androgen predominance in these forms of CAH leads to virilization of affected females in utero.

Objective and hypotheses: We describe a patient with virilizing and salt-wasting form of CAH.

Methods: A case report.

Results: Patient 7.2 years old boy. The complaints were: Delay of physical and sexual development (unorchia), pubic hair since the age of 2 years. Anamnesis to over the postnatal period the child was frequently hospitalized due to intensive vomiting, diarrhea and weight loss. The patient was on symptomatic treatment. Auxology: HSDS 1.22. Sexual development stage P3 A1 G2; Testes not palpable. Bone age by Greulich and Pyle 10.5 years. Genetical research: karyotype – 46XX; Laboratory research: 17OH Prog 50 ug/l, Potassium 4.1 mmol/l, Sodium-136 mmol/l, LH <0,1 IU/l, FSH 2.8 IU/l, Estradiol 10 ng/l, Androstendion 0.7 ug/l, ACTH 133 ng/l, Renin 241 ng/l. Abdominal MRI: In the pelvic cavity on both sides ovary like structure, with the size: 0.8X1.33 cm. At the posterior side of the urinary blade tubular mass with the size 2X7 mm (apparently vagina). The conclusion of children’s psychologist: The psychologic development of the child coresponds to male. Therapy: Hydrocortisone 15mg/day, Fludrocortisone 1 mg/day, Cyproterone 10 mg/day. By substitutional therapy hormone concentration in the blood came down to the normal range and puberty stopped. The condition of the patient was explained to the parents and to an ethical committee for the decision, to raise the patient as a girl or as a boy by gender reassignment surgery (exstirpation of uterus and ovaries).

Conclusions: Continued excessive adrenal sex steroids in untreated CAH patient causes several problems which reveal not only physical, but also psychological deviations.

PAO-35

A hypothyroid hamartoma associated with precocious puberty

Mariam Balakhadze1; Maia Rekhtivshvili2; Revaz Morgosha2; Rolf Peter Willig

1JSC “Vere XIX”, Department of Physical and Sexual Development of Children and Adolescents, Tbilisi, Georgia; 2Endokrinologikum Hamburg, Pediatrics, Hamburg, Germany

Background: Gonadotropin-releasing hormone (GnRH) dependent, or central precocious puberty (CPP) results from early onset of pubertal hypothalamic-pituitary-gonadal activity. This occurs as a consequence of physiologic gonadotropin stimulation emanating from the GnRH secretion of hypothalamic origin. Both boys and girls with an organic etiology of CPP are more likely to present at a younger age, than those with idiopathic etiology.

Objective and hypotheses: We describe a child with hypothalamic hamartoma associated with precocious puberty on Triptorelin treatment.

Methods: A case report.

Results: We report 1 year 9 months old girl. Complaints: premature puberty. Sexual development stage: Tanner 3 (B3, P3, A2, Me at the age of 8 months) Anamnesis: from the age of 2 weeks till today vaginal discharge (white), at the age of 3 months pubic hair appeared, at the age of 6 months breast de-
Female with disorder of sexual differentiation

DSD 47,XY: a first report

Ignacio Diaz Lopez1; Ainhoa Sarasua Miranda1; Irigo Bilbao Gonzalez1; Luis Fernando Galera Moreno1
1Txagorritxu Hospital, Endocrinology Pediatric Unit, Vitoria, Spain; 2Txagorritxu Hospital, Urologic Unit, Vitoria, Spain

Background: Disorder of sexual differentiation can produce phenotype alterations. Some of them are imperceptible at birth. We present the case of a girl with a karyotype and internal/external phenotype never described before. We present a large iconography of this peculiar case.


Methods:

Complementary tests TSH 1.98µu/mL; FSH 51.6 U/L LH 33.2 U/L Estradiol 13.3 pg/mL. Testosterone total 10.41 ng/mL. SHBG 52.92 nmol/L. DHEA-S 174 mcg/dL. Free Testosterone 19.3 17 OHP 1.64 ng/mL. Karyotype: (400 bands): 47,XY[28]/45,X[2]

Genital Echography: small size uterus (40x20x68 mm) and gonades (15 x 5 mm) without follicles Lineal endometrium. LHRR Test: positive respond for testosterone Ginecológico exploration through laparoscopy: Uterus and Fallopian tubes were normal. Left ovary compatible with testicle; with a similar form between fimbriaes in right side. Tissues biopsy: Compatible with testicular tissue. Karyotype of gonadal biopsy 47XY Evolution: Quick estrogenization (etimelastrodil VO and combined progesterone). 6 months after quiryurgy, there was a reduction of basal testosterone, partial reduction of body hair, telarche development grade III and a substantial improvement of patient’s self-esteem. Clitoromegaly is lower too.

PAO-37

Diabetes in 6 patients of beta-thalassemia major

Zhe Meng; Li-Yang Liang; Li-Na Zhang; Li-Ping Hou
Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University, Department of Pediatrics, GuangZhou, China

Objective: The aim of this study was investigation of clinical features, pathogenesis, laboratory examination and early treatment of diabetes mellitus in patients with beta-thalassemia major.

Methods: Diabetes mellitus was observed in 6 of 53 patients with beta-thalassemia major. In this retrospective analysis study, patients were examined to determine their pubertal status and the standard deviation score for height for evaluation of short stature. Laboratory test index of blood were measured.

Results: The average age in the 6 patients was 13.36 years (11-18 years). Two patients, at onset of clinical diabetes, presented with an asymptomatic glycocuria and four with polydipsia, polyuria, weight loss and ketoadicosis. Serum ferritin was in the range of 4800-7148µg/L. Fasting blood glucose was in the range of 8.9-43.8mmol/L. HbA1c was in the range of 9.8-16.8%. 2 patients were detected high insulin level (>20µU/mL), suggesting insulin resistance. 4 cases of ketoadicosis were detected insulin level <2µu/L, C peptide mean 24µmol/L, suggesting lack of insulin secretion. Pancreas MRI showed the signal to reduce, which was related with iron deposition. The pubertal stage of 6 patients was in Tanner 1 to Tanner 2. 6 patients were all short stature, 4 cases of hypothyroidism, 2 cases of GHD. Mild liver function abnormalities (2 cases) and abnormal heart function (1 case) were detected. All patients treated with transfusion, deferoxamine, exercise, diet control, Glucobay and insulin. Comprehensive therapy was good.

Conclusions: Despite therapy with deferoxamine to treat iron overload, the risk of secondary endocrine dysfunction remained high. Diabetes in patients of beta-thalassemia major were often accompanied by other endocrine organ damaged, which occurs with iron deposition. The pathogenesis of diabetes in beta-thalassemia major may be similar to the development of type 2 diabetes. Early diabetes, it was insulin resistance, and finally lack of insulin secretion induced to insulin dependent diabetes mellitus.
in 39% of patients shows impairment of 3-axis pituitary in 28% of 2 or more axes in 11% of 1 or more and 22% no axis compromise. [5]. The most frequent response is that of a GH deficiency present in more than 75% of cases, followed by a gonadotropine deficiency in 40% of cases and a ACTH and TSH deficiency in 25%. Despite craniopharyngiomas are usually of significant size already at diagnosis, the pituitary stalk is rarely interrupted, for which only 20% of patients presents hyperprolactinemia resulting from the compression pedicle.

Our experience: In 25 children (16 males and 9 females) whose age at diagnosis was between 0.35 and 13.30 years with an average of 6.65 years (SD 3.04). Location of craniopharyngioma. Suprasellar 8 Sellar suprasellar 8 Saddle + 3rd ventricle 1 Suprasellar dienecfal 1 Suprasellar + 3rd ventricle 1 Chiasmatic 1 Chiasmatic 2 3rd ventricle 1 Chiasmatic 1 Retrachiasmist 1 Suprasellar retrochiasmatic 1 Total 25 Auto-endoctrine abnormalities at diagnosis. Growth retardation 4 / 25 (16%) Precocious puberty, 1 / 25 (4%) Delayed puberty 1 / 25 (4%) PU / PD 1 / 25 (4%) Overweight / obesity 5 / 25 (20%) Gigantism 1 / 25 (4%) Endocrine abnormalities detected after treatment. Diabetes insipidus, 20 (80%) Precocious pubert 2 (8%) Hypoprolactinism 17 (82%).

Conclusion:
- High incidence of short stature and / or = 2
- High incidence of obesity hyperphagia
- marked hyperphagia (binge eating) with difficulty in controlling appetite.
- Increased behavioral and psycho-social.

PAO-39
Is the level of anti TPO antibodies predictive for the course of Hashimoto thyroiditis?
Ana Ostojic; Jovana Obrenovic; Silvija Sajic; Ana Stankovic; Vera Zdravkovic

Background: Hashimoto’s thyroiditis (HT), characterized by the presence of high serum thyroid auto-antibody titers and goiter, is one of the most common types of thyroiditis in children and adolescents. It is associated with a wide spectrum of thyroid functions, ranging from euthyroidism to overt hypothyroidism, with a variable clinical course.

Objective and hypotheses: To assess the thyroid hormone status during the long-term follow-up and to establish the prognosis of children and adolescents with HT.

Methods: We evaluated thyroid function (TF) in 77 children with HT. The patients were assessed at presentation and then followed up at 6-12 months intervals. We divided them according to the level of anti TPO antibodies into 2 groups: up to 10 fold elevated and above that level.

Results:
Age (years) 5-19, mean 14
Sex (M/F) 19/58
Puberty (no/yes) 8/69
TSH (high/normal) 28/49

Follow up period was 0.5 to 10, mean 1.9 years. We compared TF in 2 groups of patients and did not find that level of anti TPO antibodies was predictive.

Conclusions: In our group of patients we noticed female predominance, most patients were in puberty and majority of them are still euthyroid in follow up. We were not able to establish the connection between the level of anti TPO antibodies and thyroid function.

PAO-40
Prevalence of subclinical hypothyroidism in child cancer survivors and efficacy of levothyroxine treatment
Shinichiro Sato; Yuichi Nakagawa; Toshiki Nakanishi; Rie Matsuhashi; Eiichiro Satake; Yasuko Fujisawa; Eiko Nagata; Takehiko Ohzeki

Background and objective: Child cancer survivors (CCS) have some complications. Although hypothyroidism in CCS has been well reported, little is known about subclinical hypothyroidism (SCH). The aim of this study was to investigate the prevalence of SCH and efficacy of levothyroxine (LT4) supplementation in CCS with SCH.

Methods: Twenty CCS were divided into two groups. The chemo group (n=8) was treated with chemotherapy alone and the radiated group (n=12) received chemotherapy plus radiotherapy. Control group was healthy children who showed short stature but normal hypothalamic-pituitary and thyroid function. TSH, FT3, and FT4 were measured in all patients. TRH stimulating test was performed only in the patients who were diagnosed with SCH. The definition of SCH is TSH > 5 µIU/ml, while FT3 and FT4 are within normal range. Lipid profile and QOL were evaluated after 2 or 3 month of LT4 supplementation in these patients.

Results: No patients in the chemo group showed SCH. Four patients in the radiotherapy group (33%) were diagnosed with SCH. They received radiotherapy both in spine and brain. Their TRH stimulating test showed hyperresponse and persistence of high levels of TSH. Their cholesterol levels were significantly higher than those of the chemo group. Mild dose of LT4 administration improved their lipid profile and QOL.

Conclusions: High prevalence of SCH was seen in CCS with radiotherapy. Our findings suggest that irradiation of spine plus brain is high risk of SCH. Mild dose of LT4 can improve the lipid profile and QOL in SCH patients.

PAO-41
Adenohypophysitis in a boy with pan-sinusitis and meningitis
Mariella Valenzise; Małgorzata Wasniewska; Francesca Granata; Sabrina Caradì; Maria Rosaria Velletri; Filippo De Luca

Background: Although hypophysitis is usually thought as a primary process, it may occur secondarily in relation to infections or other processes such as Langerhans cell histiocytosis, Crohn disease.

Case report: We report the case of a 15-year-old boy who was admitted to our Clinic due to headache, fever, visual disturbances and rigor nucals. A 3D-CT showed pansinusitis whereas CSF showed a pleocytosis (500 cell/mm3); therefore, broad spectrum antibiotics therapy were administered. After 5 days headache, fever, rigor nucals were resolved, but diplopia persisted. MRI demonstrated diffuse pansinusitis and extension of inflammation and infection into the adjacent cavernous sinuses and pituitary gland that, after gadolinium, presented asymmetrical enlargement in size. Basal concentrations of plasma ACTH, cortisol, PRL, FSH, LH, testosterone were very low; also TSH appeared very low but thyroid hormones were still within the normal limits. Anti-pituitary antibody was also negative. Corticosteroid treatment (1 mg/kg/die) was administered for six months and after two months of discontinuation endocrinological investigations were repeated. There were normal responses of FSH and LH to appropriate stimuli, normal levels of T, ACTH, cortisol, TSH, F4. Only GH secretion after stimulation tests appeared subnormal (Peak 3.71 ng/ml). Follow-up MRI showed that the pituitary had reduced in size.

Conclusion: On the basis of our case we may conclude that: a) pansinusitis can have devastating intracranial sequelae, as involvement of the adjacent pituitary gland and cavernous sinuses; b) endocrinological and radiological examination could be performed after pansinusitis in order to detect early involvement of pituitary gland; c) corticosteroid therapy can be effective in reducing the pituitary size, attenuating inflammation and restoring pituitary function; d) a pattern of pituitary hormone deficiency with early loss of ACTH and TSH and sequential loss of GH could be observed. Long term follow-up is mandatory to monitor other possible hormonal deficits.
PAO-42

Adrenal agenesis secondary to DAX 1 mutation in a newborn

Ignacio Diez-Lopez1,2; Ainhoa Sarasa Miranda1; Enrique Gonzalez Molina1; Mercedes Martinez Ayucar1; Amaia Rodriguez Estevez1; Luis Castaño Gonzalez1;2; Txoagorri Hospital, Paediatric Endocrinology Unit, Vitoria, Spain; 2 Cruces Hospital, Paediatric Endocrinology Unit, Bilbao, Spain

Background: Agenesis or hypoplasia of adrenal glands associated to alterations of Gen DAX-1 (crom X) are a very unusual clinical subject, and could be accompanied by other hormonal and genetic alterations. We present a clinical case, supported with images.


Methods: Weight 3880 G (>2 SDS) Height 56,5 cm (>2 SDS) CP 37 cm Hypotonic, with labial sub cyanosis and general hyper pigmentation, Silverman score 3-4-10. Normo configurated genitalia, except hyperpigmentation. Agap 2/6/8. Requires RCP type II.

Results: Laboratory: pH 7,26, COSH 19,4; EB -6. Sodium 119 mEq/L, potassium 7.3 mEq/L, PCR 23.8 mg/dL. After 24 hours/life Cultives: Negative. Cortisol 2.86 mcg/dl, DHEA-S 8.32 mcg/dl (32-431), 17OP 3.73 ng/mL (0.4-3.3). ACTH 1.129,1 pg/mL (5-77), cholesterol 177 mg/dl (50-170), Norapinefrine: 5 mcg/24 horas (12 mcg/L) Ephinefrine: < 1 mcg/24 horas (<2 mcg/L) Dopamine: 65 mcg/dl (163 mcg/L). Abdominal ultrasound and MRI: There is no sign of adrenal glands. Genetic study: 46 XY (DAX-1 +) at index case, father not affected, mother 46 XX, (null/DAX-1 ).

Conclusions: After Hydro-electrolyte correction and treatment with hydrocortisone, the values of Na/K were normal. We use supplementary dose of sodium too. After 3 months, the levels of ACTH were normal. Up to date (18 months age), patient is asymptomatic. His psychomotor and somatometric development is according to his age. Bone-age equivalent and the hyper-pigmentation has disappeared.

PAO-43

Bone mineral density and turnover in patients with idiopathic hypogonadotropic hypogonadism

Eeva-Maria Laatikainen1; Johanna Tommiska1; Kiri Suuralahti1; Tanelli Raivo2
1 Helsinki University Central Hospital, Hospital for Children and Adolescents, and, University of Helsinki, Institute of Biomedicine/Physiology, Helsinki, Finland

Background: Patients with idiopathic hypogonadotropic hypogonadism (IHH) may have reduced peak bone mass in early adulthood, and increased risk for osteoporosis despite long-term hormonal replacement therapy (HRT).

Objective and hypotheses: We investigated markers of short-term bone turnover, and the relationship between HRT history and bone mineral density (BMD) in patients with IHH.

Methods: 33 subjects (24 men, 9 women; mean age 39.8 yrs, range 24.0—69.1) with IHH (Kallmann Syndrome or normosmic IHH), were physically examined and measured for circulating PINP, ICTP, and sex hormone levels. Subjects were divided into those with adequate HRT (n=11; LBMD: -0.5 SD, -2.4—0.7) (p=0.037).

Results: In men, serum PINP correlated with ICTP (R=0.62; p=0.002), but these markers correlated neither with circulating T, nor with serum E levels in women.

Treatment history had a clear impact on bone health in men: lumbar spine (LBMD), mean Z-score -2.0 SD, range -4.1—1.4 was reduced in subjects with inadequate HRT (n=7, including those with long (≥5 yrs) treatment pauses) as compared to those with a history of adequate HRT (n=11; LBMD: -0.5 SD, -2.4—0.7) (p=0.037).

Conclusions: In patients with IHH, the prevailing sex steroid milieu does not affect short-term bone turnover. Our data suggest that both the quality and quantity of HRT influence BMD in IHH patients irrespective of age.

PAO-44

Two cases with HDR syndrome (hypoparathyroidism, sensorineural deafness and renal disease)

Mehmet Keskin1; Yilmaz Kor2; Ali Yalcin1; Hatice Uygur1; Ozlem Keskin1; Deniz Kor2
1 Gaziantep University, Faculty of Medicine, Pediatric Endocrinology and Metabolism, Gaziantep, Turkey; 2 Gaziantep University, Faculty of Medicine, Pediatrics, Gaziantep, Turkey

Background: HDR syndrome (hypoparathyroidism, sensorineural deafness and renal disease) was first reported by Barak et al. described two brothers with steroid-resistant nephrosis with progressive renal failure, sensorineural deafness and hypoparathyroidism in 1977. Autosomal dominant disorder that is caused by mutations of the GATA3 gene, which is located on chromosome 10p15, has been identified recently. GATA3 is expressed in the developing parathyroid glands, inner ears and kidneys, together with thymus and central nervous system.

Objective and hypotheses: The patients with symptoms of hypocalcemia must be evaluated carefully.

Results: Hypoparathyroidism, sensorineural deafness and renal anomaly were diagnosed in our two patients with symptoms of hypocalcemia.

Conclusion: These cases are reported because of HDR syndrome is a very rare condition and the history of deafness in patients with hypocalcaemia for understanding of this syndrome.

PAO-45

Effects of growth hormone on muscle strength, tone and mobility of children with Prader-Willi syndrome

Shadab Salehpour1; Omid Aryani2; Farzaneh Rohani3
1 Shaheed Beheshti University of Medical Sciences, Pediatric Surgery Research Center, Pediatric Endocrinology, Tehran, Islamic Republic of Iran; 2 Special Medical Center, Molecular Genetics, Tehran, Islamic Republic of Iran; 3 Tehran University of Medical Sciences, Pediatric Endocrinology, Tehran, Islamic Republic of Iran

Background: Prader-Willi syndrome (PWS) is a genetic syndrome presenting with severe hypotonia and decreased agility. Growth hormone (GH) which is often used in these cases to treat short stature and obesity, seems to have some improvement in hypotonia, physical strength, activity, and locomotor developmental ability.

Objective: The aim of this study is to find the growth hormone effect on the agility and strength of these patients.

Material and methods: In a prospective, randomized controlled clinical trial, at an out-patient pediatric endocrine clinic in Tehran, 21 PWS children (12 boys and 9 girls, 4 to 9 years old) were divided either in GH-treated or control groups and followed for two years. Agility run, sit ups, weight lifting, and inspiratory and expiratory strengths were considered as the main outcome measures.

Results: All the outcome measures of the GH treated group showed a significant improvement compared to those of the control (p<0.01).

Conclusions: GH causes a significant improvement in agility and strength of PWS children.
PAO-46

An unusually early diagnosis of 17-alpha-hydroxylase deficiency

Nicolin Dutz1; Jens Siegel2; Felix Riepe3; Michaela Hartmann4; Stefan A. Wudy5; Sabine Heger1
1Children’s Hospital Bult Hannover, Department of Pediatric Diabetology and Endocrinology, Hannover, Germany; 2Children’s Hospital Bult Hannover, Department of Neonatology, Hannover, Germany; 3Christian-Albrechts University, Department of Pediatrics, Division of Pediatric Endocrinology and Diabetes, Kiel, Germany; 4Justus-Liebig-University, Steroid Research Unit, Center of Child and Adolescent Medicine, Giessen, Germany

Background: Mutations of the CYP17A1 gene result in 46,XY disorder of sex development, hypertension, hypokalemia and absent pubertal development. It is a rare, autosomal recessive form of congenital adrenal hyperplasia (CAH).

Objective and hypotheses: Usually, most patients are detected rather late as adolescents due to lack of puberty or hypertension.

Methods: We report about a neonate born to a 40 year old woman, 1st para, 1st gravida. Amniocentesis revealed a fetus with a 46,XY karyotype. At 20 weeks of gestation the development of male external genitalia was missing. Further molecular testing excluded an androgen receptor and SRY gene mutation. A phaenotypically female child was born at 41st week of gestation. Gonads were palpable in the labia majora.

Results: Postpartal ultrasound revealed testes in both labia majora, absence of uterus and normal adrenal glands. Screening for 21-hydroxylase-deficiency was normal. Multisteroid analysis in serum showed reduced basal glucocorticoid, testosterone and androstenedione levels at the age of two weeks. The urinary steroid metabolome – assessed by GC-MS - showed excessive excretion of 17-desoxy -steroids, decreased glucocorticoid metabolites and absent C19-steroids. Such a metabolic constellation proves 17-alpha-hydroxylase-deficiency. Molecular analysis identified a novel mutation of the CYP17A1 gene: c.896T>A (p.L299N) in exon 5. Substitution with hydrocortisone was started at a moderate dose to prevent hypertension. The child is growing well so far.

Conclusion: Herein we report the unusually early diagnosis of a newborn with the rare CAH form of 17-alpha-hydroxylase-deficiency allowing installation of early treatment.

PAO-47

The effect of gonadotropin-releasing hormone agonists in Korean boys with idiopathic central precocious puberty and early puberty

Hae Sang Lee; Hong Kyu Park; Jin Soon Hwang
Ajou University School of Medicine, Pediatrics, Suwon, Republic of Korea

Background: Central precocious puberty (CPP) is less common in boys than in girls. There is little data available on the long-term safety and efficacy of GnRHa treatment in boys with CPP. The effects of GnRHa, with and without growth hormone, on the predicted adult height in boys with CPP and early puberty were evaluated after two years of treatment.

Methods: This study included nine boys with CPP and 13 boys with early puberty that were treated with depot leuprolide acetate. Anthropometry, bone age, the sexual maturity rating and predicted adult height (PAH) were assessed at baseline, and after 6, 12, 18, and 24 months.

Results: The PAH standard deviation score (SDS) in the GnRHa group of boys with CPP (n=9) was significantly increased (-0.23 ± 1.60 vs 0.49 ± 0.71; P=0.0014). The PAH SDS of the GnRHa group with early puberty (n=9) was significantly decreased to the pretreatment PAH SDS (0.57 ± 1.06 vs 0.36 ± 0.68; P=0.05). Multiple regression analysis revealed that height gain was influenced significantly by age at the start of treatment.

Conclusions: GnRHa treatment significantly improved the growth potential in boys with idiopathic CPP. However, GnRHa treatment alone did not affect the growth prognosis in boys with early puberty.
Medullary thyroid carcinoma in two children from a family with multiple endocrine neoplasia 2a syndrome - a case report

Gordana Stipancic1; Lavinia La Grasta Sabolic2; Marija Pozgaj Sepec2; Maja Radman2

1University Hospital, Department of Pediatrics, Zagreb, Croatia; 2University Hospital “Sestre milosrdnice”, Department of Pediatrics, Zagreb, Croatia; 3University Hospital Center Split, Department of internal medicine, Split, Croatia

Introduction: All carriers of a point mutations in the RET proto-oncogene with multiple endocrine neoplasia type 2A (MEN2A) develop medullary thyroid carcinoma (MTC), while 50% and 30% of patients develop pheochromocytoma and hyperparathyroidism. MTC tends to disseminate early. It is chemoresistant and radio-resistant and remains the cause of death in 15-20% of MEN2A patients. Consequently, early prophylactic total thyroidectomy is performed in all MEN2A patients.

Case report: A 32-yr-old father presented with bilateral pheochromocytoma, MTC and parathyroid adenoma. Genetic analysis revealed a point mutation in codon 634 of exon 11 of the RET proto-oncogene. Genetic testing confirmed that both siblings were carriers of the same mutation. In a 10-y-2-mo old son ultrasound of the neck disclosed nodules in both thyroid lobes and enlarged paratracheal and left jugular lymph nodes. Laboratory examination revealed high calcitonin concentrations (437pg/ml), while serum calcium and PTH levels were on the upper limit of normal values. In a 7-y-10-mo old daughter serum calcitonin level was slightly elevated (20.7pg/ml), and plasma calcium and PTH levels were normal. On ultrasonography, a nodule in a right thyroid lobe, enlargement of the left jugular and right submandibular lymph nodes were observed. Both children underwent total thyroidectomy with neck dissection. Pathological examination showed bilateral MTC in a boy and MTC of the right thyroid lobe in a girl, with no lymph node metastatic disease. Laboratory examination showed no pheochromocytoma in siblings. After surgery both children began with thyroid replacement therapy. Due to the permanent hypocalcaemia in a boy, treatment with calcium-carbonate and calcitriol was initiated. Eighteen months after thyroidectomy, the children are doing well.

Conclusions: At present, genetic testing and prophylactic total thyroidectomy is performed in all MEN2A patients.

Comparison of the efficacy of multiple daily insulin injection therapy and flexible intensive insulin therapy in children with type 1 diabetes mellitus

Gurul Gulecog1; Ozlem Sangur2; Bumin Dundar2

1Suleyman Demirel University, Department of Pediatrics, Sparta, Turkey; 2Suleyman Demirel University, Department of Pediatric Endocrinology, Sparta, Turkey

Objective: To compare the effects of multiple daily insulin injection therapy (MDII) and flexible intensive insulin therapy (FIIT) on metabolic parameters and quality of life in children with type 1 Diabetes Mellitus (DM).

Method: Twenty eight patients who were followed regularly at least 1 year in our Pediatric Endocrinology outpatient clinic and being treated with MDII (three doses of pre-meal insulin aspart and a single daily dose of basal detemir/glargine insulin) were included in the study. All the patients were evaluated for HbA1c, BMI-SDS, hypoglycemia, mean fasting plasma glucose (FPG) levels, lipid profile, total daily insulin requirement and quality of life (QOL) before and after the 6 months of FIIT. Treatment periods of MDII and FIIT were compared. The Medical Outcomes Survey Short Form-36 (SF-36) was performed in order to assess QOL.

Results: Mean age of the patients was 12.9 ± 2.59 years old. The mean HbA1c and FPG levels of the patients during MDII treatment were found significantly decreased after switched to FIIT (p<0.001 and p=0.024). Insulin requirements, frequency of hypoglycemia, total cholesterol, low density lipoprotein (LDL), triglyceride levels, HDL levels and BMI-SDS of the patients was not significantly decreased with FIIT (p>0.05).

Conclusion: HbA1c and mean FPG levels significantly decrease with FIIT without causing significant difference in insulin requirement, frequency of hypoglycemia and lipid profiles. FIIT also improves mental health and is a reasonable choice in treatment of pediatric Type 1 DM patients.

A case of adenral hypoplasia congenita caused by DAX1 deletion

Eun Young Kim-Kook1; Yang Jib Kang1; Hyun Wook Shin1; Han-Wook Yoo1

1Kwangju Christian Hospital, Pediatrics, Gwangju, Republic of Korea; 2Asan Medical Center, Pediatrics, Seoul, Republic of Korea

Background: Adrenal hypoplasia congenita caused by DAX1(Dosage sensitive sex reversal-Adrenal hypoplasia congenita critical region on the X chromosome gene-1) mutation, is a rare disorder and presents usually acute severe adrenal insufficiency in the neonatal period and hypogonadotropic hypogonadism. Because DAX1 is located on Xp21, the mutation affects primarily boys (X-linked). Associated with deletion of DAX1, the Duchenne muscular dystrophy, mental retardation-IL1RAPL1, glycerol kinase and ornithine transcarbamylase genes may also be deleted as part of a contiguous gene syndrome.

Case: We report an 1 month old male patient presenting with weight loss, dehydration, lethargy, poor feeding, and hyperpigmentation. The first laboratory investigation showed hypomagnesemia (121 mEq/L), hyperkalemia (7.8 mEq/L), high ACHT (342 pg/ml), and high renin (24.6 ng/ml/hr), so he was diagnosed with primary adrenal insufficiency (PAI). To reveal the cause of PAI, further investigations were performed and showed normal 17-OHP, VLCFA, and negative adrenal Ab. On abdominal CT, adrenal hypoplasia was detected. DAX1 gene analysis using PCR presented complete deletion and contiguous genes (glycerol kinase and IL1RAPL1) were also deleted. He showed clinical improvement after glucocorticoid and mineralocorticoid treatment but at present (12months of age), shows mild motor developmental delay.

Conclusion: DAX1 mutation analysis should be considered in males with adrenal hypoplasia congenita.
Influence of body mass index on peak GH level in provocation test: children without growth hormone deficiency

Jieun Lee; Juyeong Yoon; Min Jae Kang; Shin Mi Kim; Young Ah Lee; Choon Ho Shin; Sei Won Yang
Seoul National University Children's Hospital, Pediatrics, Seoul, Republic of Korea

Background: Obesity and other related factors are known to suppress the secretion of growth hormone. But the influence of obesity on the peak GH level of provocation test is still controversial in children without growth hormone deficiency (GHD).

Objective and hypotheses: This study aims to evaluate the influence of obesity on the peak GH level of provocation test in children without GHD.

Methods: The subjects were patients who were admitted to Seoul National University Children’s Hospital and got provocation tests done due to short stature from January 2000 to July 2010. Their medical records were retrospectively reviewed, and patients with obvious growth hormone deficiency were excluded. The main outcome measure was peak GH level of provocation test, and the height, weight, and serum IGF-1 levels were also recorded.

Results: Simple linear regression analysis showed that body mass index standard deviation score (BMI SDS) had negative correlation with natural log value (Ln) of peak GH level (P=0.004), but gender, age, pubertal status, Ln IGF-1 had no correlation, respectively. In multiple logistic regression analysis, BMI SDS (P=0.042) and age (P=0.017) were suggested to be significant predictors of Ln peak GH level.

Conclusions: In children without overt GHD, a higher BMI SDS may have negative correlation with the peak GH level. Therefore, we can take BMI SDS into consideration when analyzing the results of growth hormone provocation test.
PAO-58
Failure to thrive and the diencephalic syndrome
Yvonne Yiuan Lim; Cindy Wei Li Ho; Kah Yin Loke
National University Health System, Paediatrics, Singapore, Singapore

Background: Diencephalic syndrome is a rare condition which typically presents with severe failure to thrive despite preservation of normal linear growth. This is associated with tumours involving the hypothalamus and/or optic chiasma, with the majority being astrocytomas.

Objective and hypotheses/method: We describe 3 patients seen at our centre who were diagnosed with diencephalic syndrome over the past 20 years.

Results: Initial differential diagnoses for failure to thrive included celiac disease, generalized lipodystrophy and Russell Silver syndrome in one patient who was short. Only one patient presented with nystagmus, which suggested an intracranial pathology. After extensive workup for failure to thrive, Computed Tomography of the brain eventually revealed the presence of a suprasellar tumour in all 3 patients, which were subsequently confirmed to be inoperable hypothalamic astrocytomas. The age of diagnosis ranged from 9 to 18 months old. There was one death, with the other two patients demonstrating a more protracted course. The child who died presented at the earliest age and had the largest tumour which recurred within 1 month of surgery, suggesting a more aggressive course. Of the other two patients who have survived into adulthood, one underwent cranial irradiation before the age of 5 years, and suffered the consequences of late onset endocrinopathies and mental retardation. Both surviving patients have reached adulthood, with minimal increase in tumour size, suggesting a more indolent course. In diencephalic syndrome, the overall mortality rate is 55% with death ranging from 8 months to 13 years.

Conclusions: Diencephalic syndrome must always be considered in any child with failure to thrive from no other apparent reason. This peculiar syndrome provides a unique model of partial growth hormone resistance (elevated growth hormone levels) with normal linear growth, and suggests that there are hypothalamic-pituitary factors in the feedback mechanisms of appetite regulation and metabolism.

PAO-59
Profile of iron metabolism in pediatric age: clinical and epidemiological impact on our environment
Javier Caballero1; Alicia Romero2; María Aguilar2; Eva L van Donkelaar3; Ramón Cañete2
1IMIBIC, Hospital Reina Sofia, Universidad de Córdoba, Clinical Analysis Service, Córdoba, Spain; 2IMIBIC, Hospital Reina Sofia, Universidad de Córdoba, Pediatric Endocrinology Unit, Córdoba, Spain; 3University of Maastricht, Faculty of Health, Medicine and Life Sciences, Maastricht, Netherlands

Introduction: Iron deficiency is a significant public health problem in terms of epidemiology and potential comorbidities. Its prevalence and easy diagnosis and treatment, put into question the relevance of performing screening programs or targeted screening in high risk populations or suspected cases.

Objectives: Determine our environment and the existence of iron deficiency or iron-deficiency anemia in children previously diagnosed between 2 months and 11 years, analyzing their clinical implications.

Material and methods: Cross-sectional study in children with IBD. We collected anthropometric and clinical data (cumulative dose of corticosteroids, index of IBD activity, nutrition survey and lifestyles). It was carried out a blood analysis. It included CBC and serum biochemical study on the levels of glucose, urea, creatinine, sodium, potassium, calcium, phosphorus, iron, ferritin, transferrin, osmolar water and TSH. It was performed bone densitometry (DEXA) of spine and hand-wrist radiograph. Multiple linear regression was performed in successive steps, using as dependent variable bone mineral density (BMD) quantified by the z score value obtained from the DEXA.

Results: Preliminary there are 8 patients (4 boys and 4 girls) aged between 3 and 17. About 25% had a BMD below the normal range for age and sex. Another 25%, an IBD activity index higher. About 37.5 had increased CRP. The C-telopeptide was increased all cases. There was only one case of overweight. We found a significant relationship (p <0.02) between BMD and IBD activity index.

Conclusions: The index of activity of the IBD had a negative impact on BMD of the child. Iatrogenic corticosteroid did not result in a detriment of the BMD of pediatric patients and so we propose to prioritize good rate control IBD activity. The C-telopeptide is consistently high in children with IBD.

PAO-60
Implications of bone metabolism in pediatric patients with inflammatory bowel disease
Caballero Javier1; María Aguilar2; Alicia Romero2; Virginia Moreno2; Eva L van Donkelaar3; Ramón Cañete2
1IMIBIC, Hospital Reina Sofia, Universidad de Córdoba, Clinical Analysis Service, Córdoba, Spain; 2IMIBIC, Hospital Reina Sofia, Universidad de Córdoba, Pediatric Endocrinology Unit, Córdoba, Spain; 3Maastricht University, Faculty of Health, Medicine and Life Sciences, Maastricht, Netherlands

Introduction: Alterations of bone metabolism in patients with inflammatory bowel disease (IBD) have a high prevalence. Among the known factors leading to this comorbidity are: corticosteroid therapy, the activity of IBD and duration of symptoms and lifestyle.

Objectives: To study the potential impact of IBD in mineral metabolism in pediatric patients, evaluating clinical, biochemical, densitometric and radiographic parameters.

Material and methods: Cross-sectional study in children with IBD. We collected anthropometric and clinical data (cumulative dose of corticosteroids, index of IBD activity, nutrition survey and lifestyles). It was carried out a blood analysis. It included CBC and serum biochemical study on the levels of glucose, urea, creatinine, sodium, potassium, calcium, phosphorus, iron, ferritin, transferrin, osmolar water and TSH. It was performed bone densitometry (DEXA) of spine and hand-wrist radiograph. Multiple linear regression was performed in successive steps, using as dependent variable bone mineral density (BMD) quantified by the z score value obtained from the DEXA.

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Conclusions: The index of activity of the IBD had a negative impact on BMD of the child. Iatrogenic corticosteroid did not result in a detriment of the BMD of pediatric patients and so we propose to prioritize good rate control IBD activity. The C-telopeptide is consistently high in children with IBD.

PAO-61
Gonadal mosaicism 45X/46XY resulting in a Turner phenotype with mixed gonadal dysgenesis: a report of two cases
Cristina Dumitrescu1; Lavinia Viga1; Camelia Procopiuc1; Anda Carageaheorghieopol2; Florentina Dinu1; Dana Popa1
1“C I Parhon” National Endocrinology Institute, Bucharest, Romania; 2“C I Parhon” National Endocrinology Institute, Hormonology Laboratory, Bucharest, Romania; “Grigore Alexandrescu” Paediatrics Hospital, Surgical Department, Bucharest, Romania

Background: Mixed gonadal dysgenesis is regarded as the most common manifestation of 45X/46XY mosaicism associated with a wide spectrum of phenotypic manifestations.

Objective and hypotheses: We describe two cases with a Turner phenotype associated with mixed gonadal dysgenesis. One of the two cases presents a mosaicism 45X/46XY and one a 46XY caryotype.

Methods: We describe a 16 year old girl who presented with short stature and pubertal delay. She had female external genitalia, an urethral opening on the posterior vaginal wall and some clinical features of Turner syndrome (widely spaced nipples, cubitus valgus, low hairline, multiple nevi). Endocrine studies showed levels of sex hormones consistent with primary gonadal failure. The
pelvic ultrasound revealed the presence of an uterus. At laparotomy a uterus, fallopian tubes and small gonad-like tissue masses in the region of the Fallopian fimbriae were found. Histological analysis revealed no organized testicular or ovarian morphology, fallopian tubes on the right side and epididymis on the left side. The second case is a 10 year old girl presenting with features of Turner syndrome (broad chest, mouth abnormalities, cubitus valgus), short stature, and primary gonadal failure. The pelvic ultrasound reveals the presence of an uterus; gonads were visualized. A laparoscopy confirms the presence of an uterus and fallopian tubes with streak gonads.

Results: In the first case G-band analysis of blood lymphocytes confirmed a 46XY karyotype while in the second there was a mosaicism 45XO/46XY. FISH analysis for the eventual presence of isodicentric Y chromosome, as well as gene sequencing for SRY, SOX9, AMH and AR are in progress.

Conclusions: Comprehensive cytogenetic, endocrine, histological and molecular studies on the gonads are further needed in order to explain the causality between the genetic profile and the phenotype in these two particular cases.

**PAO-62**

The experience of recombinant growth hormone treatment in a secondary endocrine referral centre in Saudi Arabia

Suzanne Elkholy; Sulaiman AlMuhaimad
King Fahad Military Medical Complex, Paediatrics, Dhrahan, Saudi Arabia

Background: King Fahad Military Medical Complex is a secondary referral centre for paediatric endocrinology for the eastern province in Saudi Arabia. Recombinant Growth Hormone has been used for many years as a treatment option for children and young adults with many endocrine disorders mainly short stature resulting from growth hormone deficiency or insufficiency.

Objective and hypotheses: The aim of the present study is to evaluate the use of R-GH treatment use, indication, dose, effect on height as well as effect of discontinuation of treatment due to compliance or lack of supply issues.

Methods: We have identified over 50 patients who are receiving R-GH and performed a retrospective chart review to assess the effect of treatment of GH.

Conclusions: Most patients were diagnosed with growth hormone deficiency followed by children with Turner syndrome, then other genetic disorders, and ideopathic short stature. Doses used were generally less than recommended and periods of treatment interruption were noted. The study results will help guide the newly published growth curves for children from Saudi Arabia.

**PAO-63**

Rapid increase of serum TSH level in an infant on amiodarone treatment: a case report

Aleksandr Pesti; Vallo Tillmann
Children’s Clinic of Tartu University, Department of Paediatrics, University of Tartu, Tartu, Estonia

Background: Amiodarone is widely used as an effective and relatively safe anti-arrhythmic drug. Amiodarone-induced hypothyroidism is well described and close monitoring of thyroid function in all patients receiving amiodarone is recommended. For the first control of serum TSH level is usually recommended 10 to 60 days after starting the treatment.

Objective and hypotheses: We present a case of term infant who rapidly developed increased TSH level after starting amiodarone treatment.

Results: Male infant from normal pregnancy and uneventful delivery was born from 40 gestational week with the birth weight of 3210 g. Supraventricular tachycardia, severe combined congenital heart diseases (conduction defect of aorta, ventricular septal defect, and foramen ovale apertum), and congestive heart failure were diagnosed at the first day of life. In order to control frequent episodes of supraventricular tachycardia paroxysms, treatment with amiodarone was initiated over 50 patients who are receiving R-GH and performed a retrospective chart review to assess the effect of treatment of GH.

Conclusions: Most patients were diagnosed with growth hormone deficiency followed by children with Turner syndrome, then other genetic disorders, and ideopathic short stature. Doses used were generally less than recommended and periods of treatment interruption were noted. The study results will help guide the newly published growth curves for children from Saudi Arabia.

**PAO-64**

A case of Liddle’s syndrome in an 8-year old girl with argininosuccinic academia and childhood absence epilepsy

Jan Marquard; Thomas Meissner
University Hospital Duesseldorf, Department of General Pediatrics, Duesseldorf, Germany

Background: Liddle’s syndrome, also called pseudohyperaldosteronism, is a rare autosomal dominant disorder caused by an activating mutation of the renal epithelial sodium channel. Affected patients typically show hypertension, hypokalemia and metabolic alkalosis.

Case report: We report on an 8-year old girl with argininosuccinic academia and childhood absence epilepsy who developed arterial hypertension. Initial diagnostic workup showed a slight hypokalemia, serum aldosterone was incapable of measurable. 24-hour urinary potassium excretion, serum creatinine, arterial blood gas analysis, blood catecholamines and steroid levels, abdominal and renal ultrasound, echocardiogram and renal magnetic resonance angiography were without pathological findings. The family history was unremarkable. An essential hypertension was assumed and the girl was treated with propranolol which failed to control the elevated blood pressure as well as the combination of captopril and spironolactone. Additionally, the girl developed a metabolic alkalosis, hypokalemia worsened. Serum and urine aldosterone levels as well as plasma renin activity were abnormally low. Liddle’s syndrome was suspected and treatment with amiloride was started. After 4 weeks of uncomplicated treatment blood pressure returned to normal levels and blood gas analysis was in a normal range. Gene-sequencing for liddle’s syndrome was negative.

Discussion: Despite a negative gene-sequencing for liddle’s syndrome (molecular detection rate around 40%) the diagnosis could be established by typical laboratory findings and a good response to amiloride. Neither argininosuccinic academia nor childhood absence epilepsy seems to be related to liddle’s syndrome since there are no comparable reports in literature. In retrospect the initial slight hypokalemia in combination with hypertension was already indicative for liddle’s syndrome but in fact the clinical course provided the diagnosis.

Conclusion: Children with hypertension and lack of therapeutic response to first-line antihypertensive agents should be worked up for secondary causes.

**PAO-65**

Side effect profile of diazoxide in children with congenital hyperinsulinism. A retrospective study

Jan Marquard; Laura Huberman; Thomas Meissner
University Hospital Duesseldorf, Department of General Pediatrics, Duesseldorf, Germany

Background: Diazoxide is the first-line drug for long-term treatment of congenital hyperinsulinism (CHI). However, the use of diazoxide is often limited by side effects, e.g. hypotension, fluid retention and feeding problems. Up to now the frequency of these side effects is based on estimation.

Objective: To precisely determine the frequency of major side effects of diazoxide in children with CHI.

Patients and methods: Interviews on side effects were performed with the parents of CHI patients who received diazoxide. In addition, patients’ records were retrospectively searched for side effects of diazoxide.

Results: So far we identified 24 patients (13 female, 11 male) with CHI who are or had been treated with diazoxide. Preliminary data shows that 92% of them developed hyperinsulinism. The treatment of 16 patients is still ongoing, for 25% of those patients hyperinsulinism has been regressive in the course of the treatment. In 8 cases the diazoxide treatment has ended because of remission of the disease. In all of these patients hyperinsulinism regressed completely. Hypertension was most distinctive along the spine (48%) followed
by the face (30%) and the extremities (13%). In 54% of patients feeding difficulties were reported during the diazoxide treatment, 40% of them had a verifiable weight loss. 37% of the patients developed edema, nearly all of them had facial edema. Tachycardia was rarely reported (4%), hyperuricemia and leucopenia were not reported during diazoxide treatment.

Conclusions: The most common reported side effects of diazoxide in patients with CHI are hypertrichosis (92%) followed by feeding problems (54%) and facial edema (37%).

**PAO-66**

**Ambiguous genitalia – a 15 years overview**

Abiola Odunola; Rolli Nwodo; Elizabeth Ebebrechi Ogusuru; Chris Bode; James Rennier

Lagos University Teaching Hospital, Paediatrics, Surulere, Lagos, Nigeria

Background: The term ambiguous genitalia or indeterminate sex is a terminology that parents fear to hear. This is most devastating within the African continent were despite being in the 21st century the sex of a child is of utmost importance. Fortunately this disorder is uncommon. Classifying the cases into different groups is formidable especially when investigative support is minimal.

Objective: To determine the prevalence of ambiguous genitalia, categorize patients, the mean length of time for completion of investigation and therapy outcome.

Methodology: This is a review of all patients referred with ambiguous genitalia to the clinic over 13 years. Assessment criteria were based on clinical presentation, hormonal and biochemical estimations, sonogram of the abdomen, genitogram and karyotype / baccal smear. Stimulation with human chorionic gonadotropin (hCG) and ACTH (adrenocortical hormone) stimulation tests were performed as required.

Results: Reviewed were 44 out of 245 patients with endocrine disorders (1997 to 2010) who had ambiguous genitalia. They were categorized as genetic females with virilisation or FPH (15, 34 %) Genetic males overvirilized (4, 9%) Genetic males undervirilized or MPH (11, 25%), Microgenitalism with severe chordee 3, 8.6 %), micropolycystic ovary syndrome (5, 11%), true hermaphroditism (2, 4.5% ) and the syndromic form of ambiguous genitalia (1, 2.2%). Age at presentation ranged from 48hrs to 10 years. Mean length of time for investigation 9 months while 75% had appropriate therapy.

Conclusions: Ambiguous genitalia appear very rare when compared to similar collections for the length of time of review. This may be an invalid conclusion due to the inadequate health delivery service, referral system and or older age presentation. Finance seems to be a big constraint to management. The obvious indeterminate external genitalia in females with CAH may account for higher percentage amongst cohorts.

**PAO-67**

**Characteristics and prevalence of non-classical congenital adrenal hyperplasia with a v281l mutation in patients with premature pubarche**

Senay Savas Erdve; Merih Berberoglu; Nuket Yurur Kutlay; Zeynep Sikkar; Bulent Hacihamamoglu; Alian Tukun; Gonul Ocal

1Ankara University School of Medicine, Department of Pediatrics, Division of Pediatric Endocrinology, Ankara, Turkey; 2Ankara University School of Medicine, Department of Medical Genetics, Ankara, Turkey

Background: The frequency of NCCAH with V281L among children presenting with premature pubarche (PP) is variable.

Objective and hypotheses: To determine the prevalence, clinical and laboratory characteristics of NCCAH with the V281L mutation in patients with PP.

Methods: The study group was composed of 159 unrelated patients with PP. ACTH stimulation test was performed in 14 of the 159 patients with PP who had basal 17-OHP levels >22 ng/ml. Patients whose stimulated 17-OHP level on the ACTH test was ≥10 ng/ml underwent a mutational analysis of the CYP21 gene, and those with the mutation were considered to have NCCAH.

Results: NCCAH was defined in nine (5.7%) among 159 patients with PP and all of them had the V281L mutation. The gender distribution showed a similarity between NCCAH and patients with idiopathic PP (IPP). When compared with the IPP group, the NCCAH group had higher bone age and BA-chronological age ratio. However, chronological age, age at pubic hair onset, height, height standard deviation score, parental adjusted deficit in height, weight, and body mass index (BMI) were similar in both groups. All nine patients whose peak 17-OHP levels in the ACTH stimulation test were >10 ng/ml had the CYP21 gene mutation. Four of them were homozygote and four of them were heterozygote. Other one patient was compound heterozygote for the V281L mutation and the I2 splice mutation . The one of the patients with V281L heterozygous mutation developed true precocious puberty and the other one patient had rapid progressive early puberty and developed polycystic ovary syndrome.

Conclusions: ACTH stimulated >17-OHP 10 ng/ml in PP patients is load star to mutation analysis and heterozygote patients should be followed for clinical and biological hyperandrogenism up to completion of the whole gen sequence.

**PAO-68**

**Continuous subcutaneous insulin infusion (CSII): a successful mode of therapy for neonatal diabetes (experience in Qatar)**

Faturchy Alkhalfieh; Maryam Al Ali; Ashraf Tawfeq; Mohamoud Zyyoud; Noura Alhemaidi; Amal Sabt; Ahmed Alawa

Hamad Medical Corporation, Pediatric, Doha, Qatar

Background: Neonatal diabetes is defined as persistent hyperglycemia occurring in the first months of life that lasts more than two weeks and requires insulin for management.

Objective and hypotheses: Although pediatricians face numerous difficulties in managing insulin therapy at this age, very few data are available on possible methods of insulin delivery in neonatal diabetes.

Methods: We report our experience over 3 years of continuous subcutaneous insulin infusion (CSII) in cases of neonatal diabetes requiring insulin therapy (n = 5).

Two neonates were negative for ABCC8,-ve KCNJ11, two had pancreatic agenesis and one has Wolcott-Rallison syndrome. CSII therapy in neonatal diabetes allows easy adaptation of insulin delivery, closely following the current feeding regimen (a basal infusion needed with very minimal dose; prernarial boluses being started with intermittent bottle feeding).

Results: Management using very small insulin doses (e.g. bolus = 0.20 U and basal rate = 0.02 U/h) was required and was only possible after insulin dilution (5-10 U/ml) and is more accurate with CSII than with using syringes. CSII also allows delivery of such small doses without dilution errors. CSII achieved good glycemc control for all neonates (mean HbA1c < 8 %) with few hypoglycemic events; which are particularly frequent and dangerous at this age. Neonates tolerated the subcutaneous infusion lines well without any local side effects.

Conclusions: During the neonatal period, and under the supervision of an experienced team, CSII is safe, more physiological, accurate and easy to manage than using syringes or pens.

**PAO-69**

**Complete catch-up growth in a case of Johanson-Blizzard syndrome with severe postnatal growth retardation**

Amal Sabt; Ashraf Solliman; Noura Alhemaidi; Ahmed Elawwa; Nadra Abdelnajeeed

Hamad Medical Center, Pediatrics, Doha, Qatar

Background: Patients with Johanson Blizzard syndrome (JBS)have significant postnatal growth retardation.

Objective and hypotheses: We report the growth pattern of a boy with the JBS who was born at term with aplasia of the alae nasi and severe congenital sensori-neural deafness.

Case: At the age of 1.5 years the boy presented with features of JBS and severe postnatal growth failure and apparent severe mental retardation.

Results: Investigations revealed mild pancreatic exocrine insufficiency and oral Pancrex V (lipase) was initiated. Despite some improvement in weight, his linear growth was still slow. At 2 years of age, endocrine evaluation proved growth hormone deficiency (glucagon test) with low IGF-I level, primary hypothyroidism (low free T4 and high TSH) and cortisol deficiency. MRI of the brain, showed hypoplastic pituitary gland. The child was started on human growth hormone deficiency (glucagon test) with low IGF-I level, primary hypothyroidism (low free T4 and high TSH) and cortisol deficiency. MRI of the brain, showed hypoplastic pituitary gland. The child was started on human growth hormone.
growth hormone (GH), L-thyroxine and hydrocortisone replacement. Marked improvement of linear growth occurred with complete catch-up to his mid-parental height SDS occurred in 2 years. He maintained normal linear growth during the following 3 years.

Conclusions: Our case represents the first report of complete catch-up growth in a case of Johansen blizzard syndrome after severe postnatal growth retardation during infancy.

Linear Growth JBS on Therapy

Conclusions: Pediatric Graves ophthalmopathy was associated with high titers of thyroid autoantibodies. Nevertheless, large-scale studies are required.

TSH Receptor antibody levels were higher in patients with ophthalmopathy than those without ophthalmopathy.

Methods: We aimed to compare the thyroid autoantibody levels in Graves disease patients with ophthalmopathy to those in patients without ophthalmopathy.

Results: Among them, 20 patients associated with Graves ophthalmopathy (33.3%) were compared with 40 patients without ophthalmopathy (66.7%). TSH Receptor antibody levels were higher in patients with ophthalmopathy than in patients without it (111.25±140.50 U/L vs 57.52±103.08 U/L, p = 0.024), and the percentage of elevated anti-microsomal antibody level was also higher in patients with ophthalmopathy (80 % vs 45 %, p=0.013).

Background: Hyperparathyroidism is a rare finding in children. It is a typical sign of vitamin D-deficiency caused by different reasons. It may also be due to calcium wasting syndromes, and it can rarely be induced by adenomas of the parathyroid glands and in parathormone receptor mutations (pseudohyperparathyroidism).

Objective and hypotheses: To show how celiac disease can mimic hyperparathyroidism followed by rheumatic complaints.

Patient: A 12-year old Gambian girl living in north Europe was developing abdominal and joint pain. Serum analysis revealed low serum-calcium, significantly elevated parathormone and decreased vitamin D. Immigrant rickets was assumed. Because of abdominal pain and iron deficiency, lambliasis was ruled out. Celiac disease was demonstrated by gluten- and tissue transglutaminase-antibodies as well as by intestinal mucosa biopsy. Despite of a gluten-free diet the joint pains persisted. They were declared by rheumatologists to be caused by a chronic juvenile arthritis (sister disease of celiac disease). However, there were no positive inflammation signals and no clear elevated rheumatology.

Follow up: Gluten-free diet and additional treatment with calcium and active vitamin D did not stop increasing parathormone levels, did not stop abdominal and joint pain, and did not stop increment of positive celiac disease antibodies. Assuming compliance problems the patient was then treated with vitamin D injections, which caused decreasing parathormone levels and vanishing joint pain.

Conclusion: Celiac disease can cause intestinal rickets with elevated parathormone levels mimicking chronic juvenile arthritis, if gluten-free diet is not strictly performed by compliance problems. Parenteral supply of depot-vitamin D is the therapy of choice in these patients exhibiting normalization of parathormone and vitamin D25 levels with disappearance of rheumatoid joint pain.

Background: Despite recent progress in imaging techniques, it is not possible to distinguish between TSH-producing macroadenoma and hyperplasia of pituitary thyrotroph cells on CT and MR scans. In such cases, repeat MRI after therapy with thyroxine may provide a definitive diagnosis and eliminate unnecessary surgery.

Objective and hypotheses: We describe an example of reactive pituitary hyperplasia from primary hypothyroidism that mimicked a pituitary macroadenoma in a child.

Case report: A 10 year old boy presented with occipital headache over the last three months and height growth arrest. Cranial Magnetic Resonance Imaging (MRI) detected an intrasellar and suprasellar pituitary mass. Endocrine evaluation revealed a severe primary hypothyroidism (TSH 589 mU/L, free T4 1.5 pmol/L), mild hyperprolactinemia (1.23 nmol/L) and low IGF-1 (8.6 nmol/L). MRI study documented resolution of the mass effect.

Conclusions: Pituitary hyperplasia in primary hypothyroidism is a rare condition in children. MRI may avoid unnecessary operations which can cause irreversible complications.

Intestinal malabsorption and dark skin caused elevated parathormone levels

Objective: Familial nonautoimmune hyperthyroidism which is inherited autosomal dominant, that caused by activating mutations of the thyrotropin receptor gene (TSHR). Recent studies have shown that FNAH, toxic adenoma and sporadic congenital hyperthyroidism are in fact facets of the same disease, genetic hyperthyroidism due to TSHR mutations.

Background: As pediatric Graves disease is an uncommon condition, Graves ophthalmopathy should be more unusual. Graves ophthalmopathy has been reported to be associated with high titers of thyroid autoantibodies. Nevertheless, studies on children are not abundant.

Objective and hypotheses: We aimed to compare the thyroid autoantibody levels in Graves disease patients with ophthalmopathy to those in patients without ophthalmopathy.

Methods: The subjects were 60 patients under the age of 18 years diagnosed with Graves disease from January 2000 to December 2010 at the Catholic University Saint Vincent Hospital. We reviewed the medical records retrospectively.

Results: Among them, 20 patients associated with Graves ophthalmopathy (33.3 %) were compared with 40 patients without ophthalmopathy (66.7 %). TSH Receptor antibody levels were higher in patients with ophthalmopathy than in patients without it (111.25±140.50 U/L vs 57.52±103.08 U/L, p = 0.024), and the percentage of elevated anti-microsomal antibody level was also higher in patients with ophthalmopathy (80 % vs 45 %, p=0.013).

Conclusions: Pediatric Graves ophthalmopathy was associated with high titers of thyroid autoantibodies in our study. Nevertheless, large-scale studies with more patients are required.

Background: Hyperparathyroidism is a rare finding in children. It is a typical sign of vitamin D-deficiency caused by different reasons. It may also be due to calcium wasting syndromes, and it can rarely be induced by adenomas of the parathyroid glands and in parathormone receptor mutations (pseudohyperparathyroidism).

Objective and hypotheses: To show how celiac disease can mimic hyperparathyroidism followed by rheumatic complaints.

Patient: A 12-year old Gambian girl living in north Europe was developing abdominal and joint pain. Serum analysis revealed low serum-calcium, significantly elevated parathormone and decreased vitamin D. Immigrant rickets was assumed. Because of abdominal pain and iron deficiency, lambliasis was ruled out. Celiac disease was demonstrated by gluten- and tissue transglutaminase-antibodies as well as by intestinal mucosa biopsy. Despite of a gluten-free diet the joint pains persisted. They were declared by rheumatologists to be caused by a chronic juvenile arthritis (sister disease of celiac disease). However, there were no positive inflammation signals and no clear elevated rheuma-immunology.

Follow up: Gluten-free diet and additional treatment with calcium and active vitamin D did not stop increasing parathormone levels, did not stop abdominal and joint pain, and did not stop increment of positive celiac disease antibodies. Assuming compliance problems the patient was then treated with vitamin D injections, which caused decreasing parathormone levels and vanishing joint pain.

Conclusion: Celiac disease can cause intestinal rickets with elevated parathormone levels mimicking chronic juvenile arthritis, if gluten-free diet is not strictly performed by compliance problems. Parenteral supply of depot-vitamin D is the therapy of choice in these patients exhibiting normalization of parathormone and vitamin D25 levels with disappearance of rheumatoid joint pain.
Methods: Case 1: Eleven -year-old male patient was admitted to our clinic with complaints of a neck swelling, weight loss, irritability, sweating. In his physical examination his weight and height were in the normal range, cardiac rate was 100/min above the upper limit. Thyroid examination revealed grade 2 goiter. The patient’s laboratory examination: TSH:0.199uIU/ml (0.5-4.8), free T4: 1.23ng/ml(0.8-2.3), free T3:4.92pg/ml(2-4), anti-TPO:175IU/ml, anti-TG:21.6IU/ml(0-134), anti-TSH receptor was negative. Imaging of the thyroid gland both thyroid glands and isthmus thickness increased, 3mm colloid nodule was seen in right lobe. The patient’s mother also had goiter with hyperthyroidism which was resistant to treatment so radioactive iodine treatment was applied. Also autoantibody and anti-TSH receptor were found negative in mother.

Case 2: Ten-year-old female patient was admitted because of goiter with his (case1) older brother. Beside intolerance the hear, she had no symptom. In her physical examination her weight and height were in the normal range, cardiac rate was 104/min above the upper limit. The patient had grade 2 goiter whose laboratory examination: TSH:9.3uIU/ml (0.5-4.8), free T4:1.43ng/dl (0.8-2.3), free T3: 4.66pg/ml (2-4), anti-TPO:12.8 IU/ml(0-134), anti-TG:19.7 IU/ml (0-134) and anti-TSH receptor was negative. Imaging of both thyroid glands and isthmus thickness increased TSHR gene mutations were sent for genetic analysis because of known two-generation family affected and hyperthyroidism no autoimmune.

Result: TSHR activating mutations as the cause of subclinical hyperthyroidism may be more common and should be considered in the differential diagnosis especially if familial.

PAO-74
The effect of long term sandostatin treatment in a child with hypothalamic obesity
Merih Berberoglu; Bulent Haşimdemiroglu; Zeynep Siklar; Senay Savas Erdve; Gonul Oral
Ankara University School of Medicine, Pediatric Endocrinology, Ankara, Turkey

Background: Hypothalamic obesity is one of the most important effects of central nervous system damage. Generally lifestyle modification and diet are ineffective to treat the hypothalamic obesity. Sandostatin has been trying in treatment of hypothalamic obesity with short period in a few study. The results were promising but some are inconclusive.

Objective and hypotheses: To evaluate sandostatin treatment a case with morbid hypothalamic obesity.

Methods: A 5.1 year old male patient admitted to our clinic with complaint of visual disturbances and cephalgia. Extended evaluation revealed diagnosis of craniopharingioma. After neurological investment, he had developed multiple hypothyesal hormone deficiency (TSH, GH, LH, FSH, ADH deficiency) and was given appropriate replacement therapy. Growth was normal despite GH deficiency, and no GH therapy was introduced. Intractable obesity as BMI increased from19.3 kg/m2 to 45.4 kg/m2 within 2 years was developed. The attempts to reduce heigh gain were unsuccessful. Sandostatin was introduced to patient and he treated for 2 years (5 mcg/kg/day in dose in the first year, 10 mcg/kg/day in the second year). First year of sandostatin treatment, decrease of weight gain gain, even loss of weight occurred (A BMI: −2.3 kg/m2/year). Second year of therapy, the response was not the same that only stabilisation of weight was achieved. No side effect was seen related to sandostatin treatment.

Results: In this case report, sandostatin treatment was safe but not as effective as expected, especially in second year of therapy.

Conclusions: But that result can not be generalised because consist of one patient. More hypothalamic obese children should be evaluated to conclude the effectiveness of sandostatin treatment.

PAO-75
TNF-A and others inflammatory molecules in overweight children
Maria Cristina Bazán1; Teresa Carrizoz2; Maria Prado3; Elsa Diaz4; Maria Fonio2; Adela Agregu
1University National of Tucuman, Medicine Faculty, Tucuman, Argentina; 2University National of Tucuman, Biochemical Faculty, Tucuman, Argentina

Background: Childhood obesity is associated with obesity later in life for adults, and it constitutes a major risk factor for cardiovascular disease and diabetes. The obese adipose tissue expresses an increased quantity of proinflammatory proteins such as the TNF-α.

Objective and hypotheses: The objective of this study was to evaluate the levels of TNF-α and others proinflammatory molecules in an overweight infant-junvenile population and their relationship with clinical and laboratory variables. Twenty overweight children and 20 control children were studied. Children in both groups were between 8-13 years old, and each child had his/her waist circumference (WC) measured and body mass index (BMI) calculated. The exclusion criteria for the overweight group was a BMI of >85th percentile for age and sex. In both groups was determined: fasting glucose level (glucose-oxidize); plasimatic insulin (<ECLA); plasma fibrinogen (Clauss); CRP (Immunoturbidimetric); plasma myeloperoxidase (Enzyme immunoassay); TNF-α (ELISA); lipid profile (enzymatic); erythrocyte sedimantation rate and HOMA index. The data were analyzed with the SPSS 15.0 program for Windows. The Spearman’s rank correlation coefficient was used to measure statistical dependence between the variables.

Results: The TNF-α levels were higher in overweight children [15.4(13.2-24.0) vs. 12.7(11.2–14.8) pg/ml; p= 0.03]. Also the levels of fibrinogen (Fg), plasma insulin, HOMA index, uCRP and triglycerides were statistically higher than in the control group. The TNF-α was positively correlated with the waist circumference.

Conclusions: The high TNF-α, uCRP and fibrinogen levels confirm a proinflammatory state associated with abdominal obesity in the studied population.

PAO-76
Prevalence of abnormal serum transaminases concentrations in obese children and adolescents
Feneli Karachaliou1; Elpis Vlachopapadopoulou1; Antonis Togias1; Aspasia Foteinou1; Enri Paraskaq2; Stefanos Michalakos3
1“P & A Kyriakou” Children's Hospital, Department of Growth and Development, Athens, Greece; 2Children’s Hospital, Microbiology Department, Athens, Greece

Background: Non-alcoholic fatty liver disease (NAFLD), the most common cause of liver disease in children, is associated with obesity.

Objective: The aim of the study was to examine the prevalence pattern of NAFLD in obese children and adolescents and analyze the anthropometric, biochemical and metabolic factors related to it.

Methods: We retrospectively reviewed the charts of 2007 obese children and adolescents (BMI >95th centile) who attended our Department between January 2000 and January 2010. A total of 114 obese subjects were found with elevated (>40U/L) serum alanine (ALT) and/or aspartate (AST) amino transferases, considered as surrogate marker of NAFLD, since other causes of hepatitis and alcohol consumption were excluded. Variables studied included BMI, pubertal status, and fasting levels of glucose, insulin and lipids. Insulin resistance was evaluated by means of HOMA-IR and Quicki.

Results: Presumed NAFLD was present in 5.8% of the obese pediatric population but, predominantly in boys (boys vs girls : 8.4%/vs 3.9%, p<0.001). They were 63 boys and 51 girls aged 3.15 to 16.4 (mean age 9.8 ± 3.0) with BMI ranging from 1.62 to 5.11 (mean 3.17 ± 1.6). 48% of them were prepubertal and had significantly lower serum ALT levels compared with pubertal children (p<0.001). Hyperinsulinemia was present in 77(67.5%). Insulin resistance as estimated with HOMA-IR>3 or Quicki >0.31 were equally prevalent in pre-and post puber tal children. In multiple logistic regression models BMI and sex and male gender were strongly associated with NAFLD.

Conclusion: Elevated transaminases is a common finding among obese children even in younger ages, strongly associated with insulin resistance. Their evaluation is recommended as a screening parameter in obese pediatric population.
PAO-77

The first documented case of Wolcott-Rallison syndrome in Serbia
Tatjana Milenkovic1; Sladjana Todorovic1; Dragan Zdravkovic1; Anke Pyper2; Andrea Naeke3; Jayne Houghton3; Sian Ellard3; Katarina Mitrovic1
1Mother and Child Healthcare Institute of Serbia, Endocrinology, Belgrade, Serbia; 2Klinik fur Kinder und Jugendmedizin, Endocrinology, Dresden, Germany; 3Peninsula Medical School, Universities of Exeter and Plymouth, Genetic Laboratory, Exeter, United Kingdom

Background: Wolcott-Rallison syndrome (WRS) is a rare autosomal recessive disease. Its main characteristic is permanent neonatal diabetes mellitus (PNDM) associated with skeletal epiphyseal dysplasia.

Clinical report: The female infant was born from unrelated parents. Pregnancy was uneventful and delivery was at term. Birth weight was 2100 g (below 5th centile) and length was 48 cm. At 3 months of age, the diagnosis of NDM was established and insulin treatment was introduced.

From the very beginning, diabetes was difficult to control. At the age of 1.5 years she was admitted to the hospital for vomiting, edema and hepatomegaly. Laboratory workup showed extremely high levels of liver enzymes. This episode of hepatitis resolved spontaneously within 4 weeks. By that time, she was also diagnosed with hypothyroidism and was started on L-thyroxine. Eight months later, when investigated for steatorrhoea, pancreatic hypotrophy was found on abdominal ultrasound.

After exocrine pancreatic insufficiency has been confirmed, therapy with pancreatic enzymes was initiated. At the age of 2.6 years an episode of liver failure (requiring hospitalization) reappeared. She had seizures soon after and was put on Phenobarbital. The etiology of seizures was unrevealed. Mutation analysis of the EIF2AK3 gene showed that the child is homozygous for a nonsense mutation, R902X, in exon 13.

This result confirmed the diagnosis of WRS. After the diagnosis had been established skeletal X-ray was performed. It revealed multiple epiphysseal-metaphysseal dysplasia affecting long bones, vertebrae and pelvis.

Conclusions: WRS is a very rare disease. However, it should be considered in any child with NMD and associated disorders, especially if skeletal changes are detected. The diagnosis of WRS in our patient delayed since genetic testing had not been performed at the time of making the diagnosis of NDM and hypothyroidism.

Although genetic diagnosis of WRS does not alter therapeutic approach, it might help in predicting the outcome, as well as offering informed genetic counseling.

PAO-78

Obesity in Greek children: a meta-analysis of data from the last decade
Eleni Kotanidou1; Maria Grammatikopoulou1; Bessie E. Spiliotis1; Christina Kanaka-Gantenbein2; Maria Tsigga2; Assimina Galli-Tsinopoulou1
1Faculty of Medicine, Aristotle University of Thessaloniki, 2Department of Pediatrics, Thessaloniki, Greece

Aim: To present the evolution of height and metabolic parameters in 100 short children receiving GH therapy – a retrospective study
Cristina Dumitrascu1; Corina Chirita2; Camelia Procopiuc2; Anda Dumitrascu3
1National Institute of Endocrinology, Pediatric Endocrinology, Bucharest, Romania; 2Anina Speciality Medical Services, Endocrinology, Bucharest, Romania; 3National Institute of Endocrinology, Radiology, Bucharest, Romania

Background: The obesity epidemic has reached children in Europe, including Greece. National epidemiological data and trend monitoring are of extreme interest in order to be able to provide a burden to this epidemic.

Objective and hypotheses: The aim of the present study was to review all available data published the last decade on objectively measured weight status in prepubertal (1-12 years old) Greek children and therefore to estimate an updated accurate prevalence of obesity in this age group according to sex, after controlling for publication bias.

Methods: We reviewed all published available citations from January 2001-December 2010, reporting the prevalence of childhood obesity (ages 1-12 years old) according to the International Obesity Task Force Criteria, in Greece. Pooled analysis and Der-Simonian Laird analysis was performed.

Results: The pooled analysis revealed that among 219996 boys, 11.8% were obese, whereas in the girls the prevalence of obesity was 10.6% (total n=210772). When forest plots were plotted for identification of studies with publication bias, the prevalence of obesity was 10.9% in the boys and 10.2% in the girls (total n=216168 boys and 208637 girls). Overall the boys demonstrated increased odds for being obese compared to the girls (OR:1.14, CI:1.1-1.2). Between pooled and meta-analysis, the girls demonstrated a significantly lower prevalence of obesity in the second (p<0.001).

Precise conclusions: According to the analysis, one out of ten preschool and school age Greek children appears to be obese. The results also demonstrate the existence of publication bias in pediatric obesity research.

PAO-79

Prevalence of obesity and overweight in the primary school children and their relationship with some lifestyle factors, Iran, 2010
Shahla Vaziri Esfarjani1; Samin Vaila1; Maryam Razaghi-Azar2
1Jondi-Shapour University of Medical Sciences, Social Medicine, Ahvaz, Islamic Republic of Iran; 2Tehran University of Medical Sciences, Pediatric Endocrinology and Metabolism, Tehran, Islamic Republic of Iran

Background: Currently obesity is a major health problem throughout the world and a risk factor of many chronic diseases such as cardiovascular disease, hypertension, diabetes mellitus and cancer. Prevalence of obesity and overweight has been rapidly increased in both children and adults. Most of the obese children (80%) will be obese in adulthood.

Objective and hypotheses: The aim of this study presents the prevalence of childhood overweight, obesity and their relationship with factors which focused on watching TV, using the computer or playing video games, fast foods consumption, breast feeding and birth weight.

Methods: In this cross sectional study 960 (480 male and 480 female) primary school children aged 6-12 years old were selected by a two stage cluster sampling method. Height and weight were measured by the standard methods. Additionally BMI was calculated based on the weight, height and obesity; overweight were defined based on the BMI scores using CDC chart. Obesity, overweight and normal weight were defined as BMI≥95th percentile and BMI=85-95 15;BMI<85th respectively. The other data were collected by questionnaire that completed by parents. Data were analyzed by using chi square and Fisher exact test (ANOVA).

Results: According to our findings 11.9% of the subjects were overweight and 6% were obese. The results have shown a positive significant relationship between BMI and the mean time of watching TV, using computer or playing video games and fast food consumption during childhood (p=0.0001). There was no relationship between BMI and gender, birth weight and breast feeding.

Conclusions: In this study the prevalence of overweight and obesity was compared to the same study in the last seven years which shown increasing in this community. Several studies have shown breast feeding is a protective factor for obesity, but this study has shown fast foods consumption, the mean time of watching TV and using computer or playing video games during childhood in spite of breast feeding in infancy period can be more effective on obesity.
Results: In group 1, the average height was -3.1 SD +/- 1SD (between -6.1 and -1.5 SD). In the first year, the height gain was of 0.8 SD with an average GV of 3.9 SD (0.6 cm/year). In the second and third years of treatment the height gain and GV were 0.9 SD and 3.3 SD (8.5 cm/year) respectively. 0.4 SD and 2.3 SD (7.4 cm/year). In group 2 the initial growth deficit was -2.7 SD +/- 1.2 SD (between -5.0 and -1.1 SD), with a gain of 0.5 SD in one year. The GV was 2.5 SD – 8.6 cm/year (p=0.02 compared with the 1st group) but dropped to 1.2 SD (6.9 cm/year) in the second year (p=0.05), with a further gain of 0.5 SD in height. Group 3 had a -3.3 +/- 0.7 SD height deficit with a gain of 0.5 SD in the first year and of another 0.4 in the second year. The GV was 2.7 SD – 9.1 cm/year (compared with the group 1 p= 0.15) respectively. 1.2 SD – 6.8 cm/year (p=0.1). In the 4th group, the initial growth deficit was -3.3 +/- 0.5 SD, with a growth of 0.6 SD in the first year of treatment. The GV was 1.4 SD, (8.5 cm/year) significantly lower than in the first group (p=0.01). There was an increase of blood glucose levels (p=0.03), but the values remained normal.

Conclusions: GH therapy in short children is effective, especially in children with GH deficiency. The maximum of catch-up growth is obtained in the first year of treatment. The therapy is safe, but clinical and biochemical follow-up is necessary.

PAO-82
Pituitary hyperplasia caused by primary hypothyroidism: clinical presentation and follow up
Miriana Kooovc; Elena Sukarova-Angelovska
University Pediatric Clinic, Endocrinology and Genetics, Skopje, Macedonia, FYrom

Background: Pituitary thyrotoph hyperplasia secondary to primary hypothyroidism is a rare cause of pituitary enlargement. Clinical presentation is variable.

Objective: To present a clinical presentation and evolution in 5 cases (4 girls) of pituitary hyperplasia appearing as a result of longstanding hypothyroidism.

Methods: Clinical appearance was variable (Table 1). Common finding in all children was growth delay during months or years before the diagnosis. All had moderate clinical hypothyroidism. Diagnosis was made by measuring T4, TSH, thyroid antibodies and ultrasonographic examination of the thyroid gland. Pituitary function was revealed by measuring GH, FSH, LH, Prolactin and ACTH. MRI of the pituitary was performed.

Results: TSH was very high, and T4 low in all patients. Ultrasound finding of the thyroid gland was typical for Hashimoto thyroiditis. GH deficiency, as well as TSH, LH deficiency were revealed in two patients. One girl had elevated levels of prolactin. Magnetic resonance imaging revealed symmetrical pituitary enlargement associated with contrast enhancement simulating macroadenoma. After introduction of therapy with levothyroxine, both symptoms and pituitary hyperplasia regressed within a period of 1.5 - 13 months. Children were followed for 2-9 years. Growth resumed in all patients, and puberty followed regularly.

Conclusion: Pituitary tumor associated with elevated thyroid stimulating hormone and low levels of free T4 is most frequently caused by Hashimoto thyroiditis and should always be treated with thyroxine replacement before other diagnostic tests are ordered. Careful follow up is warranted.

PAO-83
Retrospective analysis of effectiveness of growth hormone therapy: identification of poor responder
Claire Karl Paul Hartmann
Inst. of Pediatric Endocrinology & Diabetology, Pediatric Endocrinology, Frankfurt, Germany

Background: Growth hormone (GH) therapy is well established for more than 20 years including experience in different indications as insufficiency of GH secretion, Ulrich Turner and Small for Gestational Age (SGA) Syndrome.

Objective and hypotheses: The aim of this study was to identify Poor Responder after one year of GH Therapy and to find out possible reasons as GH effect on IGF-1 or IGF-BP3 secretion.

Method: For 197 children (136 male/61 female) at the age of 9,2 +/- 7 years GH therapy was started with the average daily dose of 0.029 +/- 0.004 mg/kg for the first and of 0.030 +/- 0.005 mg/kg for the second year.

Results: Average growth velocity increased from 4.6 +/- 1.9 cm/year to 7.6

50th Annual Meeting of the ESPE
Horm Res 2011;76(suppl 2) 285
Objective: Our objective was to determine the relationship between degree of fatty liver and testosterone levels in adult survivors.

Methods: We reviewed the clinical records of 34 patients who received allogeneic SCT at Tokai University Hospital. The median age of the 34 patients at SCT was 10.0 years, the median age at the last evaluation was 25.5 years, and the median follow-up duration after SCT was 15.9 years. The study population was categorized into 4 groups: CRT (cranial radiotherapy) + TBI (total body irradiation) group, TBI group, TAI (thoraco-abdominal irradiation) group, and Chemo groups.

Results: Among the 34 patients, 1 patient treated with only chemotherapy had a greater than 25 kg/m2 BMI. On the other hand, 11 patients had a BMI less than 18.5 kg/m2. No patient satisfied the criteria for metabolic syndrome. Fatty liver was diagnosed in 15 patients during the follow-up period. Concerning the mode of irradiation, a greater number of patients who received CRT+TBI developed fatty liver compared among other groups. Patients in CRT+TBI group were statistically associated with decreased testosterone levels, increased LH and FSH levels compared among other groups (P<0.001, respectively), although testosterone levels in all patients were within normal range during follow-up period. Moreover, severe fatty liver was statistically associated with decreased testosterone levels compared among moderate, mild and non-fatty liver (P<0.001, median 273ng/dL, 335ng/dL, 345ng/dL, and 530ng/dL, respectively).

Conclusion: Even patients who are not overweight/obese may develop fatty liver, and degree of fatty liver was associated with decreased testosterone levels in adult survivors.

PAO-84
Clinical characteristics of subclinical rickets in infants less than two years of age

Ji Young Seo, Ji Hyun Yoon
Eulji General Hospital, College of Medicine, Eulji University, Pediatrics, Seoul, Republic of Korea

Background: In young children, cases with both of vitamin D deficiency and iron deficiency anemia(IDA) are common.

Objective and hypotheses: To evaluate the clinical characteristics of vitamin D deficiency and its association with Ida.

Methods: A total of 261 children aged ≤2 years underwent 25-hydroxyvitamin D3 tests between January 2007 and July 2009. The study cohort was classified into two groups: normal and vitamin D deficient, by their 25-hydroxyvitamin D3 levels.

Results: In total, 171 children were in the normal group (mean age, body weight and height 12.5± 7.0 months, 9.3±0.9 kg and 76.8±1.1 cm), and 51 children in the vitamin D deficient group (9.9±5.4 months, 9.0±0.9 kg and 75.1±0.9 cm). Vitamin D deficiency was most commonly diagnosed in the spring (44%). The proportion of complete breast-feeding was higher in the deficient group (92%), and 25.5% of the children in the deficient group also experienced iron deficiency anemia compared that 12% of normal group. Wrist radiographs showed findings suggestive of rickets in 7 children in the normal group. Nine children in the deficient group experienced persistent bony changes. Six children received calcitriol medication in the normal group, and 12 children in the deficient group. Nine children in the deficient group received vitamin D3 tests between January 2007 and July 2009. The study cohort was classified into two groups: normal and vitamin D deficient, by their 25-hydroxyvitamin D3 levels.

Conclusion: This study demonstrated that approximately 30% of children aged ≤2 years experienced vitamin D deficiency associated with subclinical rickets. Many children also experienced concurrent iron deficiency anemia. Guidelines for vitamin D supplement in such children must therefore be established.

PAO-85
Decreased serum testosterone levels in long-term adult survivors with fatty liver after childhood stem cell transplant

Hiroyuki Ishiguro1; Yuichiro Tomita1; Hiromi Hyodo1; Takashi Koike1; Sei-ichiro Kojima4; Takashi Minemura4; Shunichi Kato2
1Tokai University, Pediatrics, Kanagawa, Japan; 2Tokai University, Cell Transplantation and Regenerative Medicine, Kanagawa, Japan; 3Tokai University, Clinical Laboratory, Kanagawa, Japan; 4Tokai University, Internal Medicine, Kanagawa, Japan

Background: Fatty liver and gonadal dysfunction have been identified as potential late effects of therapy in adult survivors treated with SCT. Obesity and metabolic syndrome are also associated with low testosterone levels in general population.

Objective: The objective was to determine the relationship between degree of fatty liver and testosterone levels in adult survivors.

Methods: We reviewed the clinical records of 34 patients who received allogeneic SCT at Tokai University Hospital. The median age of the 34 patients at SCT was 10.0 years, the median age at the last evaluation was 25.5 years, and the median follow-up duration after SCT was 15.9 years. The study population was categorized into 4 groups: CRT (cranial radiotherapy) + TBI (total body irradiation) group, TBI group, TAI (thoraco-abdominal irradiation) group, and Chemo groups.

Results: Among the 34 patients, 1 patient treated with only chemotherapy had a greater than 25 kg/m2 BMI. On the other hand, 11 patients had a BMI less than 18.5 kg/m2. No patient satisfied the criteria for metabolic syndrome. Fatty liver was diagnosed in 15 patients during the follow-up period. Concerning the mode of irradiation, a greater number of patients who received CRT+TBI developed fatty liver compared among other groups. Patients in CRT+TBI group were statistically associated with decreased testosterone levels, increased LH and FSH levels compared among other groups (P<0.001, respectively), although testosterone levels in all patients were within normal range during follow-up period. Moreover, severe fatty liver was statistically associated with decreased testosterone levels compared among moderate, mild and non-fatty liver (P<0.001, median 273ng/dL, 335ng/dL, 345ng/dL, and 530ng/dL, respectively).

Conclusion: Even patients who are not overweight/obese may develop fatty liver, and degree of fatty liver was associated with decreased testosterone levels in adult survivors.

PAO-86
Abstract withdrawn.
PAO-88

Phenotypic and metabolic characteristics in non-obese adolescents with PCOS
Hae Soon Kim1; Hye Jin Lee2; Ji Young Oh1; Young Sun Hong1; Yeon-Ah Sung2
1Ewha Womans University School of Medicine, Pediatrics, Seoul, Republic of Korea; 2Ewha Womans University Mokdong Hospital, Internal Medicine, Seoul, Republic of Korea

Purpose: Polycystic ovary syndrome is characterized by hyperandrogenemia, insulin resistance, and dyslipidemia. We evaluated the clinical characteristics and metabolic components of non-obese adolescent girls with PCOS.

Subjects and methods: Thirty six non-obese (BMI-25kg/m2) adolescent girls (16-18-years) with PCOS were compared to thirty two control group girls in similar age and BMI with regular menstrual cycles and were evaluated for anthropometric data and blood pressure. Fasting glucose, triglyceride, HDL-cholesterol, LDL-cholesterol, GOT, GPT were measured.

Results: BMI and waist circumference of the PCOS group were not different to the control. Frequency of menstruation and FG score of the PCOS group were significantly lower than the control. Blood pressures of the PCOS group were not different compared to the control. Fat mass and fat percents were higher in the PCOS group but were not significantly different to that of the control. AST ALT, triglyceride, total cholesterol, HDL-cholesterol, fasting glucose were not significantly different between the two groups. LDL-cholesterol was significantly higher in the PCOS group compared to the control.

Conclusion: Metabolic syndrome in non-obese adolescent girls with PCOS, metabolic derangements were not remarkable.

PAO-89

Does gonadotrophin-releasing hormone analogue affect the body mass index in the girls with idiopathic precocious puberty?
Aylin Guven
Goztepe Educational and Training Hospital, Pediatric Endocrine Clinic, Istanbul, Turkey

Background: To assess whether Gonadotrophin-releasing hormone analogue (GnRHa) affects body mass index in children with idiopathic central precocious puberty (ICPP).

Patients and methods: At least 12 months followed up 41 girls (mean age 8.66±1.3 years) with CPP were included in the study: 34 girls with ICPP were followed up 18 months. Complaints had been begun before 8 years old. 28 girls underwent GnRH stimulation test. All children were treated with Leuprolide acetate (LA) 3.75 mg/4 wk. Bone age was measured and uterine length (r:0.437;p:0.05).

Results: LA dose was significantly increased after 6th months of therapy (Figure1). LA dose was significantly increased after 6th months of therapy (r: 0.879). LA dose was significantly increased after 6th months of therapy (r: 0.896; r: 0.909; r: 0.887, respectively). LA dose was significantly correlated with body mass index of therapy. Bone age was correlated with volume of right (r:0.404) and left (r:0.360) ovary and uterine length (r:0.447:p:0.05).

Conclusions: An initial dose of LA 3.75 mg/4 wk was efficient in most girls with ICPP. Unfortunately if this dose would be increased, patients would have a tendency having increased BMI. Clinicians should be alert of obesity risk in children treated with LA.

PAO-90

Age of puberty in a sample of Iranian girls
Fatemeh Safarzadeh1; Maryam Rostamzadeh2; Toktam Karimzadeh2; Neda Esmailzadehha4; Stef Van Buuren5
1Qazvin university of medical sciences, Pediatric Endocrinology, Qazvin, Islamic Republic of Iran; 2Qazvin university of medical sciences, pediatrics, Qazvin, Islamic Republic of Iran; 3Qazvin university of medical sciences, Children hospital clinical research center, Qazvin, Islamic Republic of Iran; 4TNO Quality of life, Statistics, Leiden, Netherlands

Introduction: Entering puberty is an important milestone in reproductive life. Many physiological and psychological processes are influenced by puberty and hormone secretion. Based on data from late 1800s to present, pubertal entry and menarche is occurring earlier than in the past. National data on these milestones can serve as a baseline for assessing secular trends in pubertal development for the population.

Objective: To obtain normal values of pubertal stages in 6-16 years old girls of Qazvin province, Iran.

Methods: This cross-sectional study was conducted during 2009-2010 in 2759 elementary and middle school girls in Qazvin. Healthy girls (6.0 to 16.0 years old) were selected by clustered random sampling. In all subjects height and weight were measured and pubertal stages were evaluated by trained general practitioners. Breast Stages 1-5 were determined by both inspection and palpation, using the criteria and definitions described by marsh and tanner. The self-reported date of menarche was recorded as well. Pubic hair stages were not evaluated because of cultural difficulties and most subjects disagreement.

Results: The mean age of Tanner stage2 breast development (B2) was 9.67 years. The 3rd and 90th percentile for B2 was 6.5 and 12.5 years old, respectively. The mean age of menarche between 548 (24.5%) girls was 12.55 years (9.5 -14.75). The mean BMI was significantly higher in pubertal females (at mean age 12.55 years old) compared to prepubertal girls (at mean age 9.5 years old). The mean BMI was significantly higher in pubertal females (at mean age 12.55 years old) compared to prepubertal girls (at mean age 9.5 years old).

Conclusions: The mean age of pubertal onset in girls living in Qazvin (9.67 years) is lower than internationally accepted. Mean age of menarche was 12.55 years old and the onset of puberty less than 6.5 years is considered precocious in the study area.
Comparison of antithyroid antibodies in type 1 diabetic children and control group in 2010

Fatemeh Saffari1; Ali Asgari2; Tahereh Sadeghi3; Neda Esmailzadehha4
1Qazvin university of medical sciences, pediatrics, Qazvin, Islamic Republic of Iran; 2Qazvin university of medical sciences, pediatrics, Qazvin, Islamic Republic of Iran; 3Qazvin university of medical sciences, Nursing and Midwifery Faculty, Qazvin, Islamic Republic of Iran; 4Qazvin university of medical sciences, Children hospital clinical research center, Qazvin, Islamic Republic of Iran

Background: Type 1 diabetes is the most common metabolic disease worldwide. thyroid autoimmune diseases accompany with type 1 diabetes is the most common endocrinopathy. Therefore, thyroid function tests and antithyroid antibodies in patients suffering from Type 1 diabetes is essential to diagnosis of thyroid autoimmune disorders.

Objective: To compare the anti-thyroid antibodies in patients with Type 1 diabetes and healthy individuals.

Methods: In this descriptive-analytic study, 65 children with Type 1 diabetes and 65 healthy children were selected using simple sampling. Anti-TG, Anti-Tpo, TSH and T4 hormones were measured. The amount of antibodies in both groups compared by using Chi-square statistical analysis, t-independent, Kruskal Valis.

Results: There was not significant difference between two group of samples (case and witness group) in case of sex and age but BMI percentile of two group was significantly different.

Positive Anti-TG in patients was 10.8% and in controls was 1.5% and the difference was statistically significant (p=0.029). 16.9% of patients and 3.1% of controls had positive Anti-Tpo that was significantly different between tow groups (p=0.024).10.8% of patients had overt hypothyroidism and 4.6% of controls had subclinical hypothyroidism. The difference was not significant statistically.

Conclusions: According to the results of research, it seems that the prevalence of Hashimoto thyroiditis in patients with type 1 diabetes is more than healthy people. Hence, thyroid function tests (TFT) and antithyroid antibodies (Anti-Tpo) in patients with Type 1 diabetes is necessary in order to early diagnosis of autoimmune thyroid disorders, prevention of their complications and timely treatment.

Maturity onset diabetes of the young (MODY) 2: clinical and genetic spectrum in five children

Maria João Oliveira; Cristiana Couto; Manuel Oliveira; Joana Freitas; Helena Cardoso; Teresa Borges
Centro Hospitalar do Porto, Paediatrics Department - Paediatric Endocrinology Unit, Oporto, Portugal

Background: MODY is a genetically heterogeneous form of diabetes (DM) characterised by early onset, autosomal dominant inheritance and a primary defect in pancreatic β-cell function. MODY2, caused by mutations in the glucokinase (GCK) gene, is one of the most common types. The authors describe

5 cases of MODY2 diagnosed in paediatric age.

Case report:

<table>
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<th>Case</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<tr>
<td>Age of detection of diabetes (years)</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>8</td>
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</tr>
<tr>
<td>Family history of type 2 diabetes mellitus and/or hyperglycaemia</td>
<td>+</td>
<td>+</td>
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<td>+</td>
</tr>
<tr>
<td>Body mass index (Kg/m2) at 1st exam (percentile)</td>
<td>12.6 (3)</td>
<td>19.4 (85)</td>
<td>15.8 (40)</td>
<td>24.1 (90.5)</td>
<td>14.2 (11)</td>
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<tr>
<td>Fasting glucose &gt;126 mg/dl</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Initial HbA1c (%)</td>
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<td>6.5</td>
<td>5.3</td>
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<td>Serum insulin (µU/ml)</td>
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<td>9.4</td>
<td>&lt;2</td>
<td>8</td>
<td>6.6</td>
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<tr>
<td>Serum C peptide (ng/ml)</td>
<td>1.2</td>
<td>1.2</td>
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| Antibodies: anti-ICA, anti-GAD | negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, negative, 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PAO-93
Persistent pubertal gynecomastia: an unusual presentation of a steroid 17-alpha-hydroxylase deficiency
Francoise Paris1; Marianne Ribotton1; Yves Morel1; Charles Sultan1
1CHU and UMI, Hormonologie and Unité d’Endocrinologie Pédiatrique, Montpellier, France; 2Centre de Biologie et pathologie Est, Service d’Endocrinologie Moléculaire et Maladies Rares, Bron, France

Background: Pubertal gynecomastia is a frequent reason for consultation in pediatric endocrinology. Although it is usually idiopathic, hypogonadism, hyperprolactinemia, hyperthyroidism and rare testicular or adrenal tumors must be considered. Most often, idiopathic pubertal gynecomastia regresses at the end of puberty when the testosterone (T) level increases.

Objective and hypotheses: We report a case of persistent pubertal gynecomastia revealing a mutation of steroid 17-alpha-hydroxylase (CYP 17).

Methods: This 15-year-old boy was referred to our pediatric endocrinology clinic because of bilateral gynecomastia, stage III with pigmented and developed areolae. Pubertal development was P3,G3 with a normal penis (length = 7 cm). Basal LH and FSH were 7.5 mIU/ml (N = 1.5-8.5 and 3-8, respectively). Plasma T = 5.5 nmol/l (N = 12-38), DHEA = 1.8 nmol/l (N = 10-19) and 17OHP = 11 nmol/l (N = 15). E2 level was 175 pmol/l (N = 180). Basal PRL level was 230 µu/ml (N = 500). Plasma TSH and T4L levels confirmed euthyroid status. Plasma BβCG and αFP were negative. Testicular sonography found normal testicular tissue. The low plasma T led us to evaluate other steroid precursors. Plasma progesterone (P) level was 10.9 nmol/l (N = 0.7-2) with low and non-ACTH-stimulated plasma cortisol level (154.4–212.5 nmol/l).

Results: The discordance between the high P level and the low values of other 17OH steroid precursors suggested 17OH deficiency. Sequencing of the CYP17a gene identified an heterozygote composite mutation: p.Pro35Thr and p.Arg239X. Substitution by testosterone enanthate was introduced.

Conclusions: This report points out the usefulness of investigating adolescents with persistent pubertal gynecomastia to identify a specific cause and thus propose adequate management.

PAO-94
Congenital hypothyroidism in a neonate born to a mother with autoimmune thyroid disease
Małgorzata Kumorowicz-Czooń1; Dorota Tylek-Lemanska2
1Polish-American Institute of Pediatrics, Collegium Medicum, Jagiellonian University, Department of Pediatric and Adolescent Endocrinology, Krakow, Poland; 2Division of Screening and Inborn Errors of Metabolism, Krakow, Poland

Background: Congenital hypothyroidism (CH) induced by maternal TSH receptor-blocking antibodies is responsible for approximately 2% of all CH cases.

Objective: A case report of a newborn with CH born to mother with autoimmune disease.

Methods: TSH in blood on filter paper, serum TSH, FT4 and TSH receptor antibodies (TRAB) tests, imaging pictures.

Results: A female newborn is presented pregnancy 1, delivery 1, terminated by a cesarean section at 40 weeks of gestation, birth weight 3150 g, length 50 cm, APgar score 8 and 10 at 1 and 5 minutes, respectively). Maternal medical history indicated hyperthyroidism treated with thiamazol for 5 years, followed by hypothyroidism supplemented with L-thyroxin (LT4) for 3 years prior to conception and during pregnancy. Available data suggested LT4 substitution during pregnancy to be insufficient, resulting in periodic hypothyroxinemia. Suspected fetal arrhythmia led to a cesarean section at 40 weeks of gestation, showing regular, but rather slow heart action (112-120/min). In mass screening for CH, TSH concentration in blood on filter paper was 130.5 mIU/L (N < 15). Serum levels of TSH > 60 mIU/L [N: 0.4-9] and FT4 9.6 pmol/l [N: 10-26] determined in the 4th day of life confirmed the diagnosis of CH. A high neonatal TRAB value [67.8 IU/L, N: < 50] was correlated with maternal TRAB [68.5 IU/L]. Ultrasound showed the thyroid situated normally and normal in size, yet no marker uptake by the gland was demonstrated by Tc99m scintiscan.

On day 7 of life, the neonate received LT4 substitution at the dose of 12 µg/kg/d, the dosage being modified based on serum FT4 and TSH levels. A decreasing demand for LT4 was seen along with normalization of TRAB concentration; at 4 month of life, TRAB was 0.7 IU/L. At 13 month of life serum FT4 and TSH levels during LT4 substitution (1 µg/kg/d) were normal.

Conclusions: The presented case confirms the diagnostic importance of TRAB determinations in newborns with CH born to mothers with autoimmune disease, additionally pointing to maternal hypothyroxinemia in pregnancy as a significant CH risk factor in newborns.

PAO-95
Central precocious puberty in a female child of very young age
Kim Jong-Duck1; Choi See-Seung2
1Wonkwang University Hospital, Pediatrics, Iksan, Republic of Korea; 2Wonkwang University Hospital, Radiology, Iksan, Republic of Korea

Background: Central precocious puberty under age of 6 years old is rarely related to morphological abnormality of hypotalamus and pituitary gland, and the type of abnormality was variable.

Objective and hypotheses: We report a case that a two year and 10 month aged female child was diagnosed central precocious puberty with pituitary intermediate cyst.

Methods: This child was visited the pediatric out-patient clinic due to breast budding and progressively increased size of breast for three months. Physical examination with laboratory and radiological study for precocious puberty of this patient was done.

Results: On visiting day, breast size was 3 x 3 cm and pubic hair was not noticed. Height and weight of this patient were 99.6 cm (95-97 percentile) and 16 kg (90-95 percentile). Head circumference of this patient was 49 cm (50-75 percentile). This patient was born by the full term normal spontaneous vaginal type deliv- ery and birth weight was 3,200 gm, and height 49 cm. Bone age was 5 years old but chronological age was two year and 10 months old. The basal serum level of E2 and LH was 25.58 pg/ml and 7.8 mIU/ml respectively, but the maximum serum level of LH was 43.8 pg/ml after GnRH stimulation. Brain MRI shows pituitary cyst between anterior and posterior pituitary lob. Breast size of this patient regresses to 2 x 2 cm and sustained after GnRH agonist therapy.

Conclusions: We report a case of central precocious puberty that is very young age with intermediate cyst of the pituitary gland and respond well to GnRH agonist therapy. However, careful follow-up will be needed in this patient.

PAO-96
The association of thyroid autoimmunity with statural development in a group of type 1 diabetes mellitus children
Aura Diana Reghina1; Alice Albu2; Nicoleta Petre2
1Polish-American Institute of Pediatrics, Collegium Medicum, Jagiellonian University, Department of Pediatric and Adolescent Endocrinology, Krakow, Poland; 2University Children’s Hospital in Krakow, Division of Screening and Inborn Errors of Metabolism, Krakow, Poland

Background: The association of thyroid autoimmunity with statural development in a group of type 1 diabetes mellitus children was addressed previously, but still limited. These associations may have a negative impact on diabetes control and children development.

Aim: The goal of this study was to evaluate the impact of thyroid autoimmunity on statural growth of children with type 1 diabetes mellitus.

Material and method: We examined a group of children with type 1 diabetes mellitus. We collected demographic data; we performed general physical examination, height, weight, thyroid gland, and laboratory data: glycated hemoglobin, thyroid peroxidase antibodies (TPOAb). The score of standard deviation (SDS) was calculated as the difference of actual height and mean height for age and gender divided by standard deviation value. We defined short stature as a SDS under -2 DS. An informed consent was obtained from children’s parents or legal tutors.

Results: We studied 68 patients (36 boys) with mean age 11.22±4.02 years, mean duration of diabetes 3.43±2.55 years and mean glycated hemoglobin 8.9±1.91.

50th Annual Meeting of the ESPE
Horm Res 2011;76(suppl 2) 289
8.94±1.9%; 16 patients (23%) had thyroid autoimmunity. None of our patients had short stature.

We found a significant association between thyroid autoimmunity and lower SD score: 0.26 SD vs 0.98 SD (p=0.043). Mean glycated hemoglobin was significantly higher in patients with thyroid autoimmunity 9.7% vs 8.6% (p=0.05), but BMI did not differ significantly between the two groups. Logistic regression analysis revealed that low SDS (SDS under 0) was independently associated with duration of diabetes (p=0.049), but not with birth weight, glycated hemoglobin, and TPOAb.

Conclusion: Our data suggest a significant association between thyroid autoimmunity and height in children with type 1 diabetes mellitus, but this seems to be explained by other factors such as diabetes duration.

PAO-97

Pattern of presentation and management when neonatal screening for congenital adrenal hyperplasia is not available

Suzanne Elkholy

King Fahad Medical Complex, Pediatrics, Dhahran, Saudi Arabia

Background: We present the presenting features and management of sixteen cases of congenital adrenal hyperplasia following up in the paediatric endocrine clinic at King Fahad Medical Complex Dhahran, Saudi Arabia. Cases were diagnosed at our centre or referred from other hospitals.

Objective and hypotheses: The aim of the study is to highlight the different presentations and on rare occasions delay of management even when family history exists. The different treatment regimens and follow up plans were also evaluated and compared with current guidelines.

Methods: Retrospective chart reviews of sixteen patients diagnosed with congenital adrenal hyperplasia.

Results: Family history was positive but was denied or concealed by some families which delayed diagnosis for some cases. Salt loss and ambiguous genitalia was the main presenting feature in neonatal period. Genetic diagnosis was performed for some cases and new mutations were identified. Doses of steroids were adequate according to current guidelines but follow up was hindered by lack of local laboratory evaluation of urinary and serum steroid precursors.

Conclusions: We conclude that laboratory support needs to improve as well as parents’ education about need to disclose important medical information.

PAO-98

Endocrine disorders in 62 children with Turner syndrome

Ruimin Chen; Xiaohong Yang; Ying Zhang; Xiangquan Lin

Fuzhou Children's Hospital of Fujian, Endocrinology, Fuzhou, China

Background: Turner syndrome (TS) is a common genetic disorder, is associated with reduced adult height and with ovarian failure. However, it is becoming increasingly evident that patients with TS are also susceptible to a range disorders.

Objective and hypotheses: Explore the endocrine disorders in Chinese children with TS.

Methods: 62 patients with TS diagnosed in our clinic in 1999–2010 by karyotype, FSH, LH, growth hormone stimulation, IGF1, TPO and Tg antibodies, TSH, FT3, FT4, fasting glucose (G5), ACT (if G5 high), ultrasound (varian, uterus and thyroid), bone age, pituitary MRI (if Growth hormone deficiency).

Results: Chronological mean age: 10.9(0.2~18 ) years, mean height z score (HtSDS): -3.96 (-0.39~-7.3)SD, >13.5 years no puberty signs (15/17, 88.2%). Distribution of karyotype: X monosomy-45,X (27/62, 43.6%); mosaicism (22/62, 35.5%); including 45,X/46,XX, 45,X/46,X+marker, 45,X/47,XXX, 45,X/46,X,a(Xq), 45,X/46,XY, 45,X/46,X,dup(X)(q24), 45,X/46,X,delid(X)(q24), 45,X/46,XX,q(X)p22.1, 45,X/46,XX(X)p22.1, 45,X/46,XX,X(q13), 45,X/47,XXX, 45,X/46,XY (10/62, 16.1%), 46,X,del(X)(q22)(3/62,4.8%), Hashimoto thyroiditis (15/40, 37.5%), Hypothyroidism (3.60 %), Hypothyroidism (8/60, 13.3%), growth hormone deficiency (31/55, 56.4%), Diabetes (2/62, 4.8%), LH (11.7±11.2) IU/L, FSH (66.5±5.8)IU/L, IGF1 (201.±116.4)ng/ml Pituitary MRI: small 4/29, 13.8%; empty sella turcica (2/29, 6.9%); pituitary tumor or pituitary hyperplasia (2/29, 6.9%); Arachnodactyly (1/29, 3.4%).

Conclusions: Endocrine disorders are common in Chinese children with TS. Children with TS are at risk for growth hormone deficiency, Hashimoto thyroiditis, thyroid dysfunction, diabetes, which require treat early.

PAO-99

A case of myasthenia gravis with graves disease

Order Azzan; Aycan Zehra; Semra Cetinkaya; Havva Nur Petek

Kendirci; Sebahat Yilmaz Agaladoglu; Veyser Nilay Bas

Ankara, Pediatric Endocrinology, Ankara, Turkey

Background: Thyrotoxicosis due to autoimmune thyroid disease (AITD) occurs in % 5-10 of patients with Myasthenia Gravis ( MG) whereas MG has a frequency of % 0.2 among the patients with AITD. MG and AITD can also be seen together in Autoimmune Polyglandular Syndrome (APS) type 2 and type 3.

Objective and hypotheses: Hereby, we report a patient with MG and Graves diseases.

Methods: A 15 years old male patient was referred to our clinic for hyper-thyroidism. He had palpitations since 8 months and pituitis since 3 months. His height was 169.5 cm, weight was 64 kg, blood pressure was 130/80 mmHg and he had a heart rate of 132/minute. He had unilateral ptosis and diffuse enlarged thyroid gland. Laboratory findings were as follows: TSH: <0.004 mIU/ml, free T4: 4.4 ng/dl, free T3: 13.7 pg/ml, anti thyroglobulin antibody: 2115 U/Iml, anti microsomal antibody: >1000 IU/ml, TSH receptor antibody: 36.9 U/I. He had a positive response when we performed prostigmine test.

Results: Our case was diagnosed with MG and Graves diseases. He started to receive methimazole, propranolol, pridostigmine. We found that plasma cortisol was 10 µg/dL, ACTH was 23 pg/ml, c ANCA, p ANCA, anti dsDNA, ANA, anti Ro, anti La and anti tissue transglutaminase antibodies, anti GAD, anti insulin antibody, islet cell antibody were negative. Vitamin B12 was 175 µg/ml and parietal cell antibody was positive. So, we started to give B12 vitamin replacement. We regulated methimazole dosage, beta- blocker therapy was terminated and there was a decline in TSH receptor antibody levels. His diplopia was recovered on the second month of predostigmine treatment.

Conclusions: Autoimmune thyrotic diseases should be investigated in the presence of Myasthenia Gravis. Further exploration about Autoimmune Polyglandular Syndrome type 2 and type 3 is needed in the association of Myasthenia Gravis and Graves diseases.

PAO-100

Abstract withdrawn.
micronathia, face asymmetry, low-fitting ears, disproportionately large eyes, clinodactyly of fifth finger. The patient’s tooth system is at the initial stage of eruption. She does not have haematological and bone abnormalities.

Results: The girl had treatment of recombinant growth hormone “Saizen” 0.05 mg/kg/day. After six months of treatment height was -9.52SD, height velocity 5,5 cm/6 months (+0.53SD), the level of IGF-1 increased to 80,2 ng/mL (before growth hormone treatment IGF-1 was 46,9 ng/mL). Moleculargenetic researches confirmed Seckel-like syndrome in our patient: a novel homozygous mutation in the PCNT gene 7055 – 7056insC. Her unaffected parents and two brothers are heterozygous for this mutation.

Conclusions: We described a positive effect of GH treatment in patient with Seckel-like syndrome with a novel homozygous mutation (7055 – 7056insC) in the PCNT gene.

Background: Juvenile granulose cell tumors a rare tumor wich originates from the sex stromal cord, occurs in the first two decades of life and represents less than 5% of ovarian tumors in girls. It contains granulose and theca cells and is associated with endocrine manifestations of excess estrogen production. Treatment is surgical. The tumors markers are estrogens and inhibin.

Objective and hypotheses: Describe two patients with granulose cell tumors presenting with precocious puberty.

Methods: Describe two cases: case1: Five year old girl with thearche, pubic hair, axillar odour and menarche. Physical examination breast Tanner 3, hyperpigmentation of the nipple and pubic hair Tanner 2. LH 0.1ng/dl, FSH 4.1ng/dl, estradiol 38.8 pg/ml, pelvic ultrasound: walled cystic image of right ovary .Inhibit post quiriurgical 10 ng/dl Case 2: Seven years old girl with seven months history of mammary growth, Tanner 3 nipple pigmentation, pubic hair tanner 2, LH 0.3 ng/dl FSH 0.3 ng/dl pelvic ultrasound Heterogeneous isodense mass of right ovary. Bone age 10 years 6 months. Inhibit post quiriurgical 45/dl Two cases were diagnosed precocious puberty. Treatment was surgical and pathological. Two cases were diagnosed precocious puberty. Treatment was surgical and pathological report was JUVENIL GRANULOSA CELL TUMORS. CEA and alpha fetoprotein negative.

Conclusions: Patients with granulosa cell tumors presented with precocious puberty, increased estrogen production and decreased gonadotropins. Pelvic Ultrasound reveals an ovarian mass. Treatment was surgical and supervision of inhibin of less than 10ng/ml.

Conclusions: The fearsome consequences of polycystic ovary disease in the short term are present in most of the young patients, which is a personal, familial and social tragedy, considering the low age of the affected. We propose educational and preventive measures to avoid the potential torpid progress of polycystic ovary syndrome in short, medium and long term.

Background: Final Height (FH) could be compromised in DM1 pediatric patients. Poor control, growth retardation secondary to celiac disease, chronic acidosis and hypothyroism are possible causes that could compromise FH in these patients. A retrospective study with 130 patients was performed between 1993-2010.

Objectives: To evaluate FH in patients who have DM1 at childhood or adolescence and to compare with their target height (TH). To identify factors that could compromise FH.

Material and methods: FH was considered when growth velocity were < 1 cm/year at last year and/or Bone age (Gredich-Pyle atlas) >15y for girls, and, >16y for boys. The FH was compared with their TH; mother and father height were obtained from each patient. Were analysed: chronological age (CA) at diagnosis, time of disease(TD) is the time since diagnosis until FH; numbers of hospitalization due to ketoacidosis and hypoglycemia since the diagnosis and, glycosylated hemoglobin (HbA1c) mean during follow up. In addition autoimmune disease: Hashimoto Tiroideites was considered with positives antibodies TPO and/or TG and elevated TSH; Graves Disease was considered with positive antibody anti-TRAB, low TSH and elevated T4free; Celiac Disease was considered with positive antibody antiendomysium IgA and intestinal biopsy confirmed. Presence of microalbuminuria during the follow up were analysed. The HSDS was used for statistical analysis. A p value less than 0.05 was considered statistically significant.

Results: 55 patients (34 girls) reached FH.

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>p value (Group A x Group B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>10.53(±3.72)</td>
<td>10.43(±3.46)</td>
<td>10.03(±2.96)</td>
</tr>
<tr>
<td>TD</td>
<td>6.95(±3.83)</td>
<td>7.1(±3.52)</td>
<td>7.12(±3.38)</td>
</tr>
<tr>
<td>HbA1c</td>
<td>10.6(±1.92)</td>
<td>11.09(±2.23)</td>
<td>10.34(±1.66)</td>
</tr>
<tr>
<td>Hospitalization Hypoglycemia</td>
<td>0.64(±0.88)*</td>
<td>0.86(±0.96)</td>
<td>0.5(±0.8)</td>
</tr>
<tr>
<td>Cetoacidosis</td>
<td>0.36(±0.67)*</td>
<td>0.38(±0.8)</td>
<td>0.32(±0.59)</td>
</tr>
<tr>
<td>Hashimoto Tiroideites</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Graves Disease</td>
<td>zero</td>
<td>1</td>
<td>ns</td>
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<tr>
<td>Celiac Disease</td>
<td>7</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Microalbuminuria</td>
<td>23</td>
<td>8</td>
<td>15</td>
</tr>
</tbody>
</table>

*p<0.0195(t-test).

Conclusion: The patients reached FH according their TH. None of the factors evaluated compromised FH in these patients.
PAO-105
Growth hormone excess in two children with neurofibromatosis type 1 and optic pathway glioma
Patrizia Bruzzi; Assunta Albanese
Royal Marsden Foundation Trust, Paediatric Endocrine Unit, Sutton, United Kingdom

Background: In children with neurofibromatosis type 1 (NF1) growth hormone excess (GHE) is extremely rare, but reported in the presence of optic pathway glioma (OPG). GHE can be the result of hypothalamic regulatory defect due to OPG infiltration of somatostatinergic pathways reducing somatostatin tone and leading to GHRH-mediated overproduction of GH.

Objective and hypotheses: We present 2 cases of children with NF1, OPG and GHE.

Methods: It is a case-report.

Results: First case. A pre-pubertal 5 years old girl with NF1 and a diffuse suprasellar low grade glioma involving the optic pathway was referred for tall stature. After completion of chemotherapy, GHE was documented by failure of GH levels to suppress during a standard OGTT and elevated age-adjusted plasma IGF1 levels. She was started on long acting somatostatin analogue (SSa) therapy which normalized her growth velocity and plasma IGF1 levels. Six months after starting SSa she developed central precocious puberty (CPP) and from age of 7.5 years she also received LHRHa therapy. However following an episode of acute pancreatitis at the age of 10.2 years SSA was stopped. IGF1 levels and growth velocity remained normal while off SSa and subsequently when at the age of 13.5 years LHRHa was also discontinued. This is the first reported case in the literature documenting spontaneous resolution (mean height SDS -2.9 (from -4.8 to -2.0SDS)) according to population standards and associated autoimmune diseases in children and adolescents with type 1 diabetes mellitus (T1DM). Longer duration of diabetes, older age and puberty are the risk factors for the development of complications. Further risk factors include smoking, hypertension, higher body mass index and dyslipidemia. Therefore prevention and screening for complications is an important part in the care of children and adolescents with T1DM.

Conclusions: Tall stature and growth acceleration in children with NF1 and OPG require investigation for both precocious puberty and GHE.

PAO-106
Screening results for vascular complications and associated autoimmune diseases in children and adolescents with type 1 diabetes
Fatima Damari; Derya Tepes; Ozlem Kara; Ihsan Esen
Ankara Child Diseases Hematology and Oncology Education and Research Hospital, Pediatric Endocrinology Department, Ankara, Turkey

Background: Diabetes-related microvascular complications, as retinopathy, nephropathy and neuropathy are life-threatening complications in children and adolescents with type 1 diabetes mellitus (T1DM). Longer duration of diabetes, older age and puberty are the risk factors for the development of complications. Further risk factors include smoking, hypertension, higher body mass index and dyslipidemia. Therefore prevention and screening for complications is an important part in the care of children and adolescents with T1DM.

Objective and hypotheses: Our aim was to investigate diabetic complications and associated autoimmune diseases in children and adolescents with T1DM of more than 5 years duration.

Methods: The study included 46 children and adolescents with T1DM (18 male, 28 female), mean aged 14±2.8 years, with a mean duration of 8.4±2.9 years. Forty-two (91.3%) cases were adolescent and 4 (8.7%) cases were in prepubertal age.

Results: Insulin treatment comprised of four daily injections in all of the patients. Mean HbA1c level was 8.3% (range 5.9%-12.4%). The prevalence of microalbuminuria was 32.6%, dyslipidemia was 21.7%, hypertension was 17.4%, and peripheral neuropathy was 22.2%. None of the patient had diabetic retinopathy. Prevalence of autoimmune thyroiditis and celiac disease were found to be 21.7% and 6.5% respectively. Despite intensive insulin treatment, 47.8% (n=22) of patients with T1DM developed at least one detectable diabetes complication after approximately 8 years of diabetes. Microalbuminuria was the most common complication and the strongest risk marker was high blood pressure.

Conclusions: Annual complication screening should be done after diabetes duration of 5 years in patients with T1DM. Additionally screening at an onset and repeated measurements for autoimmune thyroiditis and celiac disease are recommended.

PAO-107
Cushing's disease in a 14-year old female: difficulties of diagnosis
Violette Csakvary; Zoltan Locsei; Gyorgy Oroszlan; Zita Halasz; Miklos Toff; Sandor Czirjak; Karoly Racz
1Markusovszky Teaching Hospital, Department of Pediatrics, Szombathely, Hungary; 2Markusovszky Teaching Hospital, 1st Department of Internal Medicine, Szombathely, Hungary; 3University of West Hungary - Savaria Campus, Institute for Health Promotion, Szombathely, Hungary; 4Semmelweis University, 1st Department of Pediatrics, Budapest, Hungary; 5Semmelweis University, 2nd Department of Internal Medicine, Budapest, Hungary; 6National Institute of Neurosurgery, Department of Neurosurgery, Budapest, Hungary

Background: Cushing’s disease (CD) is rare in childhood and remains a difficult condition to diagnose and treat. Although the diagnosis of CD is of crucial importance in effective diagnosis and treatment. Sometimes it is difficult to confirm the location of microadenoma in CD.

Objective and hypotheses: We report the case of 14-year old girl, who was referred to our hospital because of growth retardation with muscle weakness and rapid onset weight gain. On admission, she had typical Cushingoid appearance with Tanner pubic hair stage 3. Endocrinological examinations showed elevated levels of serum cortisol, and 24-h urinary free cortisol (UFC), and plasma ACTH. Lack of diurnal variation of ACTH and cortisol was observed. Serum cortisol levels were not suppressed by low and high dose dexamethasone as well. We established ACTH dependent CD. Perforning the corticotrophin-releasing hormone (CRH) test, increased cortisol response confirmed the diagnosis of CD. Gonadotropin levels were subnormal suggesting a suppressive effect of chronic hypercortisolism. Although, on 3.0 Tesla brain MRI, no microadenoma was detected in the pituitary gland. Considering the patient’s age, hormonal findings compatible with pituitary ACTH production and the possible complications the bilateral inferior petrosal sinus sampling for ACTH was not performed.

Results: Despite of the lack of positive radiomorphological MRI signs, the patient underwent successful and curative transsphenoidal pituitary surgery and a 2 mm microadenoma was removed. The histopathological features- ACTH secreting microadenoma-was consistent with the diagnosis.

Conclusions: Hypercortisolism was resolved after pituitary surgery. Possessing the typical clinical presentation and endocrinological investigation of CD in specific cases –lack of detected microadenoma- the transsphenoidal surgery is henceforward a safe and effective procedure in children.

PAO-108
Noonan syndrome: clinical phenotype and response to GH treatment
Yuliya Makarava; Julia Boiko
State Center of Medical Rehabilitation, Pediatric Department, Endocrinology Group, Minsk, Belarus

Background: Noonan syndrome (NS) is a disorder characterized by congenital heart defects, facial dysmorphism, skeletal malformation and short stature. Objective and hypotheses: The aim of the study was to describe a cohort of patients with NS in Belarus, evaluate the effect of rhGH treatment for 24 months on metabolic, clinical and cardiac status in patients with NS.

Methods: Since 2008 at the State Endocrinology Center 8 NS patients (5m, 3f) were observed. Median age was 13.7yr (11.0-17.8). All but one were in puberty Tanner stage 2-3 at the first observation. One boy had early puberty, a gonadal atrophy was found in one boy also. Two patients had a mild growth retardation (mean height SDS -2.9 (from -4.8 to -2.0SDS)) according to population standards. Means birth weight and length were normal. Typical face dysmorphism were found in all patients. 3.8 were diagnosed with pulmonary valve
stension, 3- with atrial septum defect, one at a time - with hypertrophic cardiomyopathy, tetralogy of Fallot and ventricular septal defect. Only 1/8 had mental retardation. 6/8 patients with severe growth retardation were undergone rhGH treatment. Basal serum IGF-1 levels according to age and puberty stage were -1.9SDS. rhGH dose ranged from 47 to 67 µg/kg/d. Anthropometry, bone age, serum IGF-1 level, lipids, fasting glycemia and insulin, cardiac evaluations were performed at baseline, at 12and 24 months of treatment.

Results: At 12 and 24 months of treatment mean height SDS elevation was found (A1 height SDS = 0.43 and A2 height SDS = 0.64, respectively). Basal serum IGF-1 levels normalized after 1yr of rhGH therapy: -0.48SDS. No significant difference was observed in lipids profiles, fast glycemia, fast insulin levels and clinical cardiac status during two years of rhGH treatment.

Conclusions: Cohort of patients with NS in Belarus showed the typical clinical phenotype as well as in other researches. Effect of rhGH treatment starting at the age of puberty in NS is minimal. Early genetic analysis is required to be helpful in selecting the appropriate patients for rhGH therapy.

PAO-109
delayed diagnosis of a giant virilizing adrenocortical carcinoma in a girl presenting with mutation

Background: Adrenocortical carcinoma (ACC) is an unusual, and highly malignant childhood tumor. In children, the incidence is reported 0.3 cases per million per year. We describe a giant virilizing ACC in a girl who presented with a history of virilization and mutation.

Case report: A 5.5-year-old girl admitted to our clinic with mutation caused by deepening of voice. Her previous history revealed that pubic and axillary hair appeared at the age of 1 year and she was admitted to another hospital. However, the parents could not have brought the child to the regular follow up because of economic deprivation. During subsequent years, clinical progression of virilization has resulted in deepening of voice and ultimately a voluntary mutation have occurred which was chief complaint for admission to our clinic. At the time of presentation, in physical examination there were signs of virilization (deepening of voice, hyperpigmentation in genitalia and areola, acne, cliteromegaly, axillary and pubic hair). Laboratory examination revealed acceleration of bone age(10.5 years), elevated adrenal hormone (17-OH-progesterone 2155.5 mg/ml(N<1.6), testosterone 629ng/ml(N<20), DHEAS 1543 µg/dl(N<1.5-60), cortisol 35.9 µg/dl(N<5-15), ACTH 9.2 pg/ml(N<0-46). Abdominal ultrasonography and CT showed a large (13x11,4 cm) cystic heterogeneous mass on right adrenal localization. There was no sign of metastasis in PET scan. Clinical and laboratory findings were consistent with virilizing adrenocortical tumor and patient has underwent surgical resection. Gross appearance of resection specimen is shown in Figure 1. In histopathological examination there was a fibrous capsule of tumor, however, Ki67 proliferation index was 25%, thus diagnosis of carcinoma was concluded with both clinical and histological findings rather than adenoma. After operation hormonal and clinic resolution was observed and she is under close follow-up without adjuvant chemotherapy.

Conclusions: The patient is interesting in her major presenting symptom, mutation, caused by coarsening of the voice and unwillingness to speak.

PAO-110
Growth disorders in Legius syndrome (LS) - a differential diagnosis to neurofibromatosis I (NF1)

Klaus-Peter Ullrich1; Gudrun Wiedemann2; Sebastian Ullrich3; Erico von Bruenen4; Allhard Hoffmann5; Sabine Weidensee6; Helioc Clinics Gotha, Clinic for Pediatrics and Youth Medicine, Gotha, Germany; Private practice, Pediatrics, Erfurt, Germany; Regional government, Continuing Education Emscher Lippe, Dorsten, Germany; Thermo Fisher Scientific, Inc., Strategic Marketing, Kalamazoo, United States; Research Center for Medical Technology and Biotechnology, Research, Erfurt, Germany; Center for Human Genetics, Genetics, Erfurt, Germany

Background: Albeit growth disorders occur in 1 of 33 children, only in 1 of 6,000 children a growth hormone deficiency (GHD) results to be the cause, being early discovered and treated successfully. Seldom genetic disorders require complex diagnosis, like the LS, termed after Dr. Eric Legius since 2009 (Messina et al 2009), which belongs to the group of neuro-facial-cutaneous syndrome related to NF1. Children with short stature and macrocephaly, axillary freckling cafe-au-lait spots, signs of Noonan syndrome and learning disability funnel diagnosis towards NF1. If no punct-mutation of NF1 gene is present, LS is to be considered as a less severe and predictable diagnosis. A mutation in the SPRED1 gene confirms LS. 155 patients have been reported so far.

Objective and hypotheses: Investigation of heredity transmission of LS. Population and methods: We report a 6-year-old patient with typical NF1 symptoms. With no NF1 mutation, the analysis of SPRED1 gene showed the mutation c.293dupA in Exon 4, which was decided to also investigate in other family members.

Results: The same mutation was found in the father; a family tree provides more evidence on the heredity transmission. The inter-disciplinary treatment concept is shown.

Conclusions: The exact clinical description, confirmation of SPRED1 gene mutation and the assessment of heredity allow for an individual treatment and reduction of psychological strain.

PAO-111
Diabetes related problems and diabetic controls among the school children with type 1 diabetes mellitus living in Istanbul

Eda Sunnetci; Serap Turan; Zeynep Atay; Tulay Gurun; Abdullah Bereket; Marmara University, Pediatric Endocrinology, Istanbul, Turkey

Background: Adequate glycemic control in children with T1DM requires optimal conditions guided by diabetes team both at home and at the school since children spend a remarkable time at school. The same mutation was found in the father; a family tree provides more evidence on the heredity transmission. The inter-disciplinary treatment concept is shown.

Conclusions: The exact clinical description, confirmation of SPRED1 gene mutation and the assessment of heredity allow for an individual treatment and reduction of psychological strain.

50th Annual Meeting of the ESPED
the last year. Glukagon was present at 19% of the schools and 72% of the homes of diabetic children.

Conclusions: This survey demonstrated a need for a more vigorous education and organisation for diabetes-care (especially for blood sugar measurement, insulin injections and glucagon) at school environment in Istanbul. It also demonstrates importance of a specialist (pediatric endocrinologist) in care of children with T1DM.

**PAO-112**

**Wolcott Rallison syndrome (WRS): a case report of a rare genetic disorder presenting with permanent neonatal diabetes mellitus**

**Wakas Imran Khan**1; **Muhammad Waqar Rabbani**2; **Sian Ellard**2; **Sara Flanagan**3

1Children's Hospital & Institute of Child Health, Department of Endocrinology, Multan, Pakistan; 2Children's Hospital & Institute of Child Health, Department of Paediatric Medicine, Multan, Pakistan; 3Royal Devon & Exeter NHS Hospital, Molecular Genetics, Exeter, United Kingdom

**Introduction:** WRS is the most common genetic cause of Permanent Neona
tal Diabetes Mellitus in consanguineous families. Much information can be
gained by the identification of a susceptible gene in a particular disorder. The disease is a rare autosomal recessive disorder resulting from mutations in EN-
F2AK3 (or PEK), the gene encoding the eukaryotic translation initiation fac-
tor 2 α kinase 3 (eIF2 α kinase).

**Description:** We report a case of 35 days old female, who presented with
toxicoencephalopathy and diabetes mellitus and diagnosed as WRS on the basis of genetic studies with identification of mutations in the gene EN-
F2AK3. The baby was born an uneventful 36 weeks pregnancy from healthy consanguineous parents with birth weight of 1700 g. Initial glucose level was 1020mg/dl, insulin needs dropped gradually from 4u/kg to 0.5u/kg until adequate glycemic control was achieved.

**Result:** Sequencing analysis has shown that she is homozygous for the non-
sense mutation, L425X, in exon 7 of the EIF2AK3 gene. This mutation is a
T>A substitution at nucleotide 1274 (c.1274T>A) resulting in a premature
termination codon (p.Leu425X). This result confirms a diagnosis of Wolcott
Rallison syndrome. Her mother is heterozygous for the EIF2AK3 nonsense
mutation L425X and her father, heterozygous for a nonsense mutation in exon 7 of the EIF2AK3 gene.

**Discussion:** WRS results from the lack of trans-membrane enzyme activity
which leads to the cell death by apoptosis in a number of different tissues.

The background for early onset diabetes mellitus and skeletal dysplasia in almost
every patient of WRS explains the high level of expression of EIF2AK3 in both
pancreatic β cells and bone tissues.

However the gene is expressed at a lower level in several other tissues, which
determines the variability of the clinical manifestations observed in this syn-
drome. The clinical features of variable intensity found in different tissues
include mental retardation, hepatic and renal dysfunction, cardiac abnormali-
ties, exocrine pancreatic dysfunction and neutropenia.

**PAO-113**

**Terms of diagnostics of 21-hydroxylase deficiency at performance of neonatal screening**

**Oleg Malievsky**1; **Dilara Nurmukhametova**2; **Rushana Basharova**2

1Institute of Biochemistry and Genetics, Department of Molecular Genetics, Ufa, Russian Federation; 2Bashkir State Medical University, Department of Pediatrics, Ufa, Russian Federation

**Background:** Before introduction of neonatal screening there was observed a
great many cases of late diagnostics of the 21-hydroxylase deficiency (21-
OHD), especially in boys. This led to premature sexual development in the
simple virilizing form (SV) and to salt-losing crisis at the salt-wasting form
(SW). Objective and hypotheses: To evaluate age of patients with 21-hydroxylase deficiency, at which the disease was diagnosed, during performance of the neonatal screening.

**Population and/or methods:** In 2006-2010, in Republic of Bashkortostan, by using the neonatal screening the 21-hydroxylase deficiency was revealed in 15 newborns. To evaluate efficiency of the neonatal screening, we deter-

ined terms of performance of each screening stage, age (median, minimal and maximal age) at making out the diagnosis of SW and SV 21-OHD in boys and girls.

**Results:** Age at making out the diagnosis of SW 21-OHD in girls after
introduction of screening did not essentially change (medians 11 and 8 days, respectively). SV 21-OHD in girls in all cases began to be diagnosed at the neonatal period (median 15 days, min-max 0-21 days). In boys, all cases of the SW 21-OHD after the beginning of screening were revealed at the neo-
natal period as early as before development of the salt-wasting crisis (median 20 days, min-max 14-28 days). After introduction of screening, median of the
age, at which the diagnosis was finally established, were 43 days. SV 21-OHD in boys was diagnosed later as compared with SW 21-OHD in boys and with both forms in girls. This is accounted for by that due to a large amount of the increased 17-hydroxyprogesterone values in boys the repeated study of this
marker was performed every 2 weeks.

**Precise conclusions:** Neonatal screening has allowed decreasing essentially the
time of diagnostics of the 21-hydroxylase deficiency, especially in boys.

**PAO-114**

**Following up plasma LH and estradiol in overweight girls with idiopathic precocious puberty during GnRH agonist therapy**

**Se-Min Lee**

Hanyang University, College of Medicine, Pediatrics, Seoul, Republic of Korea

**Background:** They have reported that obesity was associated with develop-
ment of idiopathic precocious puberty (IPP).

**Objective and hypotheses:** We compared suppression of plasma LH and es-
tradiol between overweight girls and nonoverweight group to evaluate wheth-
er overweight is associated with suppression of plasma LH and estradiol dur-
ing GnRH agonist therapy in patients with idiopathic precocious puberty.

**Methods:** We measured plasma LH and estradiol of overweight girls (n=16)
and nonoverweight group (n=27) before and after 3 months of GnRH agonist
therapy.

**Results:** Follow-up plasma LH and estradiol were not significantly differ-
ent between overweight group (0.57 ± 0.31 mIU/mL; 7.77 ± 5.55 pg/mL,
respectively) and nonoverweight group (0.4 ± 0.29 mIU/mL, 7.80 ± 4.91 pg/
ML, respectively). Significant suppression of plasma LH (<0.6 mIU/mL) was
observed in 62.5% of overweight group (n=10) and in 70.4% in nonover-
weight (n=19). Significant suppression of plasma estradiol (< 10 pg/mL) was
observed in 81.3% of overweight group (n=13) and in 81.3% in nonover-
weight (n=22).

**Conclusions:** In 3 months of GnRH agonist therapy, suppression of plasma
LH and estradiol was not significantly different between overweight and con-

**PAO-115**

**The analysis of the CYP21A2 gene in children with 21-hydroxylase deficiency from Republic Bashkortostan (Russia)**

**Vita Akhmetova**1; **A. Rakhkimukulova**1; **Oleg Malievsky**2; **Elza Khusnutdinova**1

1Institute of Biochemistry and Genetics, Department of Molecular Genetics, Ufa, Russian Federation; 2Bashkort State Medical University, Department of Pediatrics, Ufa, Russian Federation

**Background:** Congenital adrenal hyperplasia (CAH) is a group of autosomal recessive disorders of adrenal steroid genesis in which 21-hydroxylase defi-
ciency (21-OHD) accounts for over 95% of cases.

**Population and methods:** We studied 87 patients with 21-OHD from Repub-
lic Bashkortostan with salt wasting (SW) (n=42) and simple virilizing (SV)
(n=45) forms. Mutations of the CYP21A2 gene were revealed in 71.82% of
the studied CAH-chromosomes with the following frequencies: delA2orL-GC (27.62%), R356W (16.02%), I2splice (11.6%), I172N (7.18%), P318X (4.97%), V281L (2.76%), P30L (1.1%) and P453S (0.55%).

Results: The mutations frequency distribution in the CYP21A2 gene in 2 groups of patients with classical disease forms showed statistically significant differences. SW 21-OHD patients demonstrated delA2orL-GC of the gene CYP21A2 twice more often than patients with SV (37.65%) and 19.32%, respectively, $\chi^2$=6.28, $p=0.012$, mutation R356W - 2.6 times higher (23.53% and 9.09%, respectively, $\chi^2$=5.62, $p=0.018$, mutation I2splice - 2.9 (16.47% and 5.68%, respectively, $\chi^2$=2.9, $p=0.043$, and mutation P30L - 8.3 (4.41% and 1.14%, respectively, $\chi^2$=4.4, $p=0.04$).

The mutation I172N, on the contrary, was more typical for SV patients than for classical patients and for SV patients in all patients. We found 621-OHD patients who carried 3 mutations, two of which formed a cluster: Q318X>R356W (2.87%, 5/174), I172N>Q318X (0.57%, 1/174).

Precise conclusion: The studying of molecular-genetic nature of 21-OHD represents the doubtless scientific and practical importance in respect of use of the received data for differential diagnostics of its various forms, medical and genetic consultation and prenatal diagnostics.

**PAO-116**

A rare case of adiposegenital puberal obesity

Susanne Fricke-Ott1; Reinhardt Müllerberg1; Katrin Held2;  
1Helios Clinic Krefeld, Department of Endocrinology, Krefeld, Germany; 2Helios Clinic Krefeld, Children’s Department, Department of Endocrinology, Krefeld, Germany

Background: We present a girl with the diagnosis of a growth hormone producing tumour of the pituitary gland.

Objective: We would like to present the case of a 1411/12-year-old girl who was referred to our outpatient clinic for endocrine evaluation of obesity. The auxology findings showed a body weight of 87.6 kg, a BMI of 32.8 (> 98.8 Perc.) and a body height of 172.6 cm (≈ 90. Perc.) with familiar aim size of 156 cm. X-ray of the left hand showed a retardation of the bone age of 1.6 J, the prospective final size was calculated at 177 cm. 2-3 years ago, at the beginning of the first puberty signs remarkable changes of the physical development and appearance were noted for the first time.

The patient increased extremely in weight and showed a persistent growth push by shoe size at last 45. Clinically she suffered from occasional episodes of headache, strong sweating and a primary amenorrhoe. Because of the clear discrepancy between normal aim size and prospective final size, the external appearance of the patient and her distinct obesity we performed detailed endocrinology analysis incl. chromosome analysis, cerebro MR1 and ophthalmologic investigation and could diagnose a growth hormone producing tumour of the pituitary gland. The patient was transferred to a specified neurosurgery for transsphenoidal tumor extirpation.

Methods: Clinical history and clinical findings, measuring of height, familiar aim size and prospective final size, x-ray of the left hand to calculate bone age and MR1 of the brain, especially the pituitary gland.

Result: After diagnosis of a growth hormone producing tumour of the pituitary gland, the patient was transferred to a specified neurosurgery for transsphenoidal tumor extirpation.

Conclusion: If you see a clear discrepancy between normal aim size and prospective final size in a patient you have to search after a tumor in the pituitary gland.

**Case report:** A 15 year-old female patient with known type 1 diabetes mellitus of two years duration was referred because of fatigue and symptomatic hyperglycemia. She had abdominal pain for the last 24 hours, could not eat her meals appropriately and had hypoglycemia in the morning of admission. Due to appetite loss and hypoglycemia, she omitted the insulin dose at lunch time. On physical examination she was alert, had dehydration, deep sighing respiration and a smell of ketones. Her height was 168 cm (+1.02 SDS), weight 68 kg (+1.66 SDS), respiratory rate was 38/min, pulse 80/min. She had normal body temperature and blood pressure. Blood glucose was 414 mg/dl (23 mmol/l), capillary pH: 6.99 and bicarbonate: 5.0 mmol/l. Base excess was -25.2 mmol/l and anion gap was 29.8 mmol/l. Blood urea, liver enzymes and electrolytes were within normal limits. At the sixth hour of treatment the acidosis with administration of fluid and insulin, the patient became delirious. The delirium persisted despite the normalization of acidosis and was difficult to manage. Brain imaging studies revealed neither brain edema nor other intracranial pathologies. No evidence of intoxication could be found. The patient gradually regained consciousness and “merely” suffered from massive DKA associated with infection.

Conclusions: We did not find any similar case in childhood period in the literature thus we thought that clinicians should be aware that delirium can be seen in DKA due to severe acidosis.

**PAO-118**

Differences in clinical features and responses to treatment in different age groups of children with diabetic ketoacidosis and ketosis

Ayse Nurcan Cebeci; Ayla Guven; Heves Kirmizibekmez; Metin Yildiz; Fatma Dursun
Goztepe Educational and Research Hospital, Pediatric Endocrinology, Istanbul, Turkey

Objective and hypotheses: To compare clinical features and responses to a certain treatment protocol in different age groups.

Material and methods: Hospital records of patients with diabetic ketoacidosis (DKA) and ketosis (DK) who admitted to our hospital between January 2007 and December 2009 were reviewed. Symptoms, clinical and laboratory findings of all patients were recorded. Patients were divided into subgroups regarding to age [Group 1 (0-5.0 years), Group 2 (5.1-10.0 years), Group 3 (>10.1 years)]. All patients with DKA were treated with a standardized intravenous fluid and insulin therapy while patients with DK were treated with subcutaneous insulin. The therapy protocol was analyzed in terms of amount and duration of fluid therapy, dose of insulin infusion and complications of therapy.

Result: 132 episodes in 107 patients with DKA (101 episodes) and DK (31 episodes) were studied. 64 patients (%60) were female, 43 (%40) were male, 81 (%60) were in new onset, 51 (%40) were in established diabetes. There were 22 episodes in group 1 (16.7%), 30 episodes in group 2 (22.7%) and 80 episodes in group 3 (60.6%). Patients in group 1 and 2 reported more polydipsia and polyuria than patients in group 3 involving patients mostly with established diabetes. Blood glucose and corrected Na levels, as well as pH and osmolality did not differ between groups. HbA1c was found significantly higher with age. Children in group 1 had significantly lower HCO3 levels compared to group 2 (p=0.047) and group 3 (p=0.014). Duration and amount of fluid therapy did not differ between groups. Patients in group 3 received significantly higher doses of insulin and patients in group 1 received significantly more bicarbonate therapy. Only one patient experienced cerebral edema which recovered without any sequel owing to appropriate therapy.

Conclusion: Children less than five years of age are at higher risk of acidosis and require more attention and closer monitoring during treatment.

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PAO-119

Long term longitudinal evaluation of overweight and insulin-resistance in patients treated for acute lymphoblastic leukaemia during childhood

Federico Baronio; Martina Zanotti; Alessandra Rolo; Arcangelo Prete; Riccardo Masetti; Alessandro Cicognani
University of Bologna, Pediatrics, Bologna, Italy

Background: Cranial radio-prophylaxis (CR) and total body irradiation (TBI) for hematopoietic stem cell transplantation are risk factors for obesity and insulin resistance (IR) in long term childhood cancer survivors.

Objective and hypotheses: To evaluate overweight and IR in a group of childhood acute lymphoblastic leukaemia (ALL) survivors who received or not radiotherapy (RT).

Methods: We evaluated 74 patients (pts) treated for ALL at our Centre, at mean age 5.2±3.1 years (yrs), follow-up 7.8±3.4 yrs. They were subdivided in 3 groups according to RT: group 1 (CR 1800 cGy) 17/74 pts, group 2 (TBI 800-1800 cGy) 16/74, group 3 41/74 pts not irradiated. In each group BMI SD and HOMA were evaluated yearly. HOMA was normal if < 2.5 in adults and children, <4 in adolescents.

Results: The prevalence of obesity was 9% in group 1 (after the 5th year), 7% in group 2 and 3% in group 3 (in the first 5 years), 0% in group 2. 18% of pts in group 1, 14% in group 2 and 20% in group 3 were overweight. In the first 3 yrs, group 2 pts showed lower mean BMI SD (p<0.05) than the others. HOMA was abnormal in 9.5 % of all pts and in 39% of overweight and obese pts. HOMA improved during follow-up in group 1 and 3. In Group 2 IR was found in 47% of pts, increasing after the 4th year of follow-up. HOMA was abnormal also in some lean pts (8.3% from group 1, 27% from group 2 and 18.5% from group 3).

Conclusions: Obesity is rare in our pts. CR seems to be a risk factor for late obesity onset. TBI showed some protective effect on BMI SD while it negatively affected insulin sensitivity. HOMA should be evaluated in ALL survivors regardless BMI SD, in particular in pts who underwent TBI.

PAO-120

Comparison of efficacy of growth hormone (GH) treatment in short children with neurosecretory dysfunction (NSD) and partial GH deficiency - 3 years of observation

Maciej Hlizcer1; Joanna Smyczynska1; Renata Stawerska1; Andrzej Lewinski2
1Medical University of Lodz, Department of Pediatric Endocrinology, Lodz, Poland; 2Medical University of Lodz, Department of Endocrinology and Metabolic Diseases, Lodz, Poland

Background: Improvement of height velocity (HV), related to an increase of insulin-like growth factor-I (IGF-I) secretion, is the most important index of growth hormone (GH) therapy effectiveness.

Objective and hypotheses: The aim of the study was an assessment of the efficacy of 3 years GH treatment by estimation of HV, IGF-I secretion and IGF-I to IGF binding protein-3 (IGFBP-3) molar ratio.

Methods: The analysis comprised 54 children (40 boys) with short stature and partial GHD (pGHD – GH peak in 2 stimulating tests 5-10 ng/ml), and neurosecretory dysfunction (NSD – GH peak in stimulating tests >10 ng/ml but after falling asleep <10 ng/ml, decreased IGF-I secretion). All the patients were treated with GH in a dose of 0.18±0.02 mg/kg/week for – at least – 3 years. Before GH administration and after following years of therapy HV, IGF-I secretion and the IGF-1/IGFBP-3 molar ratio were compared.

Results: There were no significant differences in any of the analysed parameters between the groups either before the therapy or at any time of treatment, except for the significantly lower (p<0.01) IGF-1/IGFBP-3 molar ratio in NSD group before treatment. For detailed data see the Table.

Conclusion: The effectiveness of treatment presented similar in NSD and pGHD groups. It seems that normal GH results of stimulating tests should not be a reason for disqualifying short children with disorders of spontaneous GH secretion from GH therapy.

PAO-121

A case of osteopetrosis tarda in childhood presenting with polyarthralgia and rickets

Gonul Calti; Korcan Demir; Ayca Altinok; Ayhan Abaci; Ece Bober
Dokuz Eylul University, Department of Pediatric Endocrinology, Izmir, Turkey

Background: Osteopetrosis refers to a clinically and genetically heterogeneous group of rare, heritable disorders of the skeleton characterized by increased bone density resulting from abnormalities in osteoclast differentiation or function. Based on clinical features, mode of inheritance and pathogenetic mechanisms osteopetrosis is classified into several distinct entities ranging in severity from asymptomatic to fatal in infancy. Osteopetrosis tarda (autosomal dominant osteopetrosis) typically has onset in adolescence and adulthood and the main complications are confined to the skeleton, including fractures, scoliosis, hip osteoarthritias and osteomyelitis.

Objective and hypotheses: To present the clinical features of a child presenting with osteopetrosis tarda.

Methods: An 8-year old girl was admitted suffering from back, neck and ankle pain for six months. She was born to nonconsanguineous parents with a birth weight of 3600 grams. At the age of 4 she was referred for pain in thumb, wrist and knees and was diagnosed as having reactive arthritis. She had broken her finger in an accident 1 year ago. Family history was unremarkable except her fathers’ broken fingers and metacarps after a minor trauma.

Physical examination revealed no pathological sign with a height of 138 cm (SDS 1.46) and weight 34 kg (SDS 1.24).

Results: Laboratory studies showed mild anemia and normal biochemistry with mildly elevated values of PTH (78.4 pg/ml, normal range 12-72) and osteocalcin (30.2 ng/ml, normal range 3.2-13.7) and a low 25-hydroxy vitamin D level of 58 nmol/L (normal range 80-250 nmol/L). Radiographic examination revealed findings of generalized osteosclerosis, sandwich vertebra and thus diagnosis of osteopetrosis tarda and rickets was made. After stoss therapy her complaints have diminished and PTH level was normalized (51 pg/ml).

Conclusions: Osteopetrosis tarda is generally diagnosed incidentally in adolescence and adulthood but it may also present in childhood with mild anemia, fractures, polyarthralgia and rickets as in our case.
Multiple endocrine complications of allogeneic hematopoietic stem cell transplantation

Anna Wędrychowicz1; Agata Zygmunt-Górska1; Joanna Wojtyœ1; Marta Ciechanowska2; Aleksandra Kraskowska-Kwieœcn3; Jerzy Starzyk4
1Polish-American Children's Hospital, Medical College, Jagiellonian University, Department of Pediatric and Adolescent Endocrinology, Department of Transplantation, Cracow, Poland; 2University Children's Hospital, Pediatric and Adolescent Endocrinology, Cracow, Poland; 3Polish-American Children's Hospital, Medical College, Jagiellonian University, Department of Pediatric and Adolescent Endocrinology, Cracow, Poland

Results: Ultrasound was performed. Four subjects, who gave their consent, underwent treatment of acute lymphoblastic leukemia diagnosed at the age of 10.

Methods: First chemotherapy was complicated with an acute pancreatitis after L-asparaginase. Eight months after diagnosis an allogeneic HSCT from HLA-matched sibling donor was performed. In the conditioning regimen fractionated total body irradiation and high-dose etoposide were used. After HSCT several early and late complications occurred: bacterial and mycotic infections, engraftment syndrome with renal and respiratory failure, graft versus host diseases (GVHD) and pancreatitis.

Results: We observed multiple endocrine complications successively appearing after HSCT. i) transient carbohydrates metabolism disorders in first days, followed by regular diabetes requiring insulin therapy, ii) euthyroid sick syndrome in first months, then an overt primary hypothyroidism due to Sjögren syndrome, iii) transient hypercalcemia following the successful bone marrow transplantation, iv) transient carbohydrates metabolism disorders in first days, followed by regular diabetes requiring insulin therapy, v) delayed spontaneous puberty followed by secondary amenorrhea requiring an estrogen-progesterone replacement therapy, vi) low bone mineral density detected in repeated densitometry examination, in spite of calcium and vitamin D supplementation, vii) some elements of metabolic syndrome in spite of diabetes with insulin resistance, as high blood pressure, and dyslipidemia.

Conclusions: The significant endocrine complications of HSCT in the presented patient were associated with radiation exposure, but were also related to some chemotherapeutic agents, GVHD, and prolonged corticosteroid exposure.

Central hypothyroidism following chemotherapy for acute lymphoblastic leukemia

Federico Baronti; Laura Battisti; Giorgio Radetti
Regional Hospital of Bolzano, Pediatrics, Bolzano, Italy

Background: Thyroid dysfunction is frequently reported in patients treated with radiotherapy for childhood cancer. However, it has been suggested that chemotherapy per se might also impair the hypothalamic-pituitary-thyroid axis.

Objective and hypotheses: We present the 16,5 year-old girl with endocrine complications after treatment of acute lymphoblastic leukemia. We examined 8 patients, out of a cohort of 31 patients, who were diagnosed with ALL at a mean age (range) of 3.8 years (2-10). Chemotherapy per se might also impair the hypothalamus-pituitary-thyroid axis.

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Background: Since the 1980s, hematopoietic stem cell transplantation (HSCT) has been performed for malignant and non-malignant disorders leading to increasing numbers of long-term survivors. Some of them have endocrine complications that arise many years after the end of the initial disorder treatment.

Objective and hypotheses: We present the 16,5 year-old girl with endocrine complications after treatment of acute lymphoblastic leukemia. We examined 8 patients, out of a cohort of 31 patients, who were diagnosed with ALL at a mean age (range) of 3.8 years (2-10). Chemotherapy per se might also impair the hypothalamus-pituitary-thyroid axis.

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was very irritable with more increased calcium level of 18.2 mg/dL. Her status was considered malignant hypercalcemia, therefore we started continuous renal replacement therapy. After two days, the calcium level decreased to 13 mg/dL without any adverse events, and CRRT had been maintained for six days. At present (postBMT 45 days), her calcium level below 11 mg/dL with weekly pamidronate, daily calcitonin and daily methylprednisolone with tapering dose.

Conclusions: In conclusion, hypercalcemia is common in patients with osteopetrosis after BMT. If the conventional therapeutic strategies including isotonic saline, furosemide and calcitonin would not be successful, continuous renal replacement therapy should be considered seriously to prevent severe adverse events of hypercalcemia.

**PAO-126**

**Vitamin D status in pediatric patients with malignancy**

Dali Modan-Moses1; Ori Pinhas-Hamiel1; Vered Temam2; Dinat Muntit- Shenkara2; Toren Amos2

1The Edmond and Lily Safra Children’s Hospital, Pediatric Endocrinology, Ramat-Gan, Israel; 2The Edmond and Lily Safra Children’s Hospital, Pediatric Hemato-Oncology, Ramat-Gan, Israel.

Background: Multiple studies demonstrated an inverse association between vitamin D and its metabolites and cancer morbidity and mortality. Despite this impressive body of evidence, only a handful of studies estimated vitamin D status in pediatric patients with malignancy.

Objective and hypotheses: Our aim was to assess vitamin D status in a large cohort of pediatric cancer patients and survivors, and to define risk factors to vitamin D deficiency. We hypothesized that 25OHD levels will be low in this population, particularly among actively treated patients.

Methods: 25OHD levels were obtained in 154 consecutive patients (aged 12.1±5.9y, M=76) during their routine visits to the hematono-oncology department (mean time from diagnosis 4.4±3.9y). Patients or their parents were asked to answer a questionnaire regarding calcium intake and sun exposure habits.

Results: Average daily calcium intake was 742.1±415.5mg/day. Mean 25OHD levels were 21.8±8.2ng/ml. Eighteen patients (11.8%) were vitamin D deficient (<15ng/ml), and another 87 (58.3%) were vitamin D insufficient (15-32ng/ml). Only 12 patients (7.9%) were vitamin D sufficient. Younger age and the amount of sun exposure were associated with higher serum 25OHD levels (r=–0.24, p=0.003; r=0.21, p=0.008, respectively). No association was found with sun protection habits, calcium intake, disease type, gender, years since diagnosis, or undergoing stem cell transplantation.

Conclusions: The prevalence of vitamin D deficiency and insufficiency in pediatric hematono-oncology patients is high, while daily calcium intake is significantly lower than the RDA. While these values may be similar to those of pediatric hemato-oncology patients is high, while daily calcium intake is significantly lower than the RDA. While these values may be similar to those of pediatric hemato-oncology patients.

**PAO-127**

**Quantitative ultrasound evaluation of bone status in obese children with or without metabolic syndrome**

Valeria Calcaterra; Tiziana Muratori; Paola Brambilla; Alexandre Diouf; Rossana Toglia; Claudia Caramagna; Daniela Larizza; Valeria Calcaterra; Tiziana Muratori; Paola Brambilla; Alexandre Diouf; Rossana Toglia; Claudia Caramagna; Daniela Larizza

University of Pavia and IRCCS Policlinico San Matteo Foundation, Department of Pediatrics, Pavia, Italy

Background: The relation between metabolic syndrome (MS) and bone metabolism is not clear, because MS has both conflicting factors of osteoporosis: one with a protective property, obesity, and another one which can activate bone resorption, inflammation. We evaluated bone status with quantitative ultrasound (QUS) technique in pediatric obese subjects with or without MS.

Methods: Phalangeal QUS measures for amplitude-dependent speed of sound (ADSoS) and bone transmission time (BTT) were obtained in 56 obese patients (30M/26F; mean age 12.9±1.63) with BMI>97th percentile for their age and sex. Bone parameters were expressed as Z-score based on age-sex-matched normal controls. Patients were classified as having MS according to Pediatric International Diabetes Federation. Insulin sensitivity was calculated by the homeostasis model assessment (HOMA) and impaired insulin sensitivity (IIS) was defined as a HOMA-IR of 4 or higher. In all pts complete blood count and CRP were performed.

Results: MS was present in 10/56 (17.8%); 7 of these pts had IIS (p=0.02). Mean ADSoS Z-score was -1.07±1.1 (males -1.19±1.25 vs females -0.92±0.9, p=0.36) and mean BTT Z-score -0.18±1.3 (M. –0.41±1.25 vs F. 0.07±1.35, p=0.18), without significant difference in subjects with or without MS (ADSoS Z-score -1.16±0.82 vs -1.05±1.16, p=0.89, BTT Z-score -0.06±1.11 vs -0.21±1.35, p=0.74). ADSoS and BTT Z-scores were reduced in 10 (2 with MS, p=1) and 4 subjects respectively (none with MS, p=0.17); bone event was not found. None subject presented signs of inflammation.

Conclusions: In our patients normal bone parameters were found, without significant difference in pts with or without MS. Probably, in obese children the inflammation is low and protective role of obesity is predominant on the bone status.

**PAO-128**

**Osteoporosis-pseudoglioma syndrome: clinical outcome after treatment with growth hormone and bisphosphonates**

Gloria Bueno1; Feliciano Ramos1; Jesus Fleta2; Inês Bueno2; Jesus Maria Garargorni; Nizar Smaoui3; Jose Luis Olivares3

1Lozano Blesa University Clinical Hospital, Department of Pediatrics, Zaragoza, Spain; 2GeneDx, DNA Diagnostic Experts, Gaithersburg, United States

Background: Osteoporosis-Pseudoglioma Syndrome (OPPG, MIM 259770) is a very rare genetic autosomal recessive condition characterized by early blindness and bone fragility with fractures. The affected gene is called LRPS, located at the chromosomal region 11q13.4. Recently, the combined growth hormone (GH) and bisphosphonates treatment in OPPG patients was proposed.

Objective: To present the case and the clinical evolution of a 10-year-old rumanian girl with OPPG, confirmed by the identification of a mutation in exon 11 of the LRPS gene (c.2409_2503+79del174), who was treated for one year with GH and intravenous bisphosphonates.

Case report: She was the third child of healthy non-consanguineous parents. Sibs were apparently normal but she has two maternal cousins, living in Rumania, who are blind. She was first seen in our Hospital at the age of 10 years. She weighed 23.5 kg (<3%), measured 110 cm (<3%) and had a head circumference of 48.5 cm (<10%). She had disproportionate craniofacial anomalies. Sibs were apparently normal but she has two maternal cousins, living in Rumania, who are blind. She was first seen in our Hospital at the age of 10 years. She weighed 23.5 kg (<3%), measured 110 cm (<3%) and had a head circumference of 48.5 cm (<10%). She had disproportionate craniofacial anomalies. She had bilateral microphthalmia, cataracts and entropion. Bilateral horizontal nystagmus was also present. She was blind.

Laboratory analyses included: Calceina: 10.3 mg/dL, phosphatemia: 5 mg/dL, alkaline phosphatase: 221 U/L, PTH 434 pg/mL, 25(OH)D3: 28 ng/mL, osteocalcine: 17 ng/mL, all in normal ranges.

Skeletal survey: Generalized osteopenia, thin long bones, flattened dorsal vertebrae, pectus carinatum and deformed chest. Epyphises were normal. No anomalies were found in the skull. Bone densitometry (L1-L4): 0.378 g/cm2, vertebrae, pectus carinatum and deformed chest. Epyphises were normal. No anomalies were found in the skull. Bone densitometry (L1-L4): 0.378 g/cm2, vertebral anomalies were found in the skull. Bone densitometry (L1-L4): 0.378 g/cm2, vertebral anomalies were found in the skull.

Conclusion: After 1 year of treatment, the intravenous pamidronate therapy was safe, bone mineralization increased (~2.5 SD for age) and fracture rate and pain decreased. Further follow-up is needed in order to confirm the long term efficacy of this treatment.
**PAO-129**

**Evaluation of cardiovascular risk factors in children with classical congenital adrenal hyperplasia due to 21-hydroxylase deficiency**

Nicola Imporda; Lucia De Martino; Flavia Barbieri; Daniela Cioffi; Raffaella Di Mase; Mariacarolina Salerno

Federico II University, Department of Pediatrics, Naples, Italy

**Background:** Classical Congenital Adrenal Hyperplasia (CAH) may present some traits of the metabolic syndrome.

**Objective:** Aim of this study was to investigate cardiovascular and metabolic risk profiles in children and adolescents with classical CAH.

**Subjects and methods:** We compared 20 classical CAH patients (10 males and 10 females, age range 9-19 years) with 20 age- and sex-matched controls. Anthropometry, lipids, blood pressure, fasting glucose concentrations, serum insulin levels and insulin sensitivity were studied. Adiposity was expressed as BMI SDS. Waist Circumference (WC) and Waist-to-Hip Ratio (WHR) were used to evaluate visceral adiposity.

**Results:** BMI SDS was significantly higher in patients than controls (0.9±0.9 vs -0.13±1.53; p=0.000). Five patients (25%) and two controls (10%) had a BMI SDS of >2.0. WC, but not WHR, resulted significantly higher in patients than in controls (82.9±13.7 vs 72.7±13.6; p=0.011). No differences were found for lipid parameters and mean systolic and diastolic blood pressures between the two groups. Fasting insulin levels (12.0±7.6 vs 5.1±5.08; p=0.003) and HOMA index (2.1±3.4 vs 0.98±1.03; p=0.01) were significantly higher in CAH patients, compared to controls. A significant correlation was observed between WC and BMI SDS (r=0.78, p=0.001), fasting insulin levels (r=0.4525, p=0.04) and HOMA (r=0.45, p=0.04).

**Conclusions:** Children with classical CAH are at risk for increased BMI, obesity, hyperinsulinism and reduced insulin sensitivity. WC is an accurate predictor of these metabolic abnormalities and thus it should be monitored during follow-up in patients with classical CAH.

**PAO-130**

**Successful switching from insulin to oral sulfonylureas in neonatal diabetes mellitus patients**

Ngoc Can1; Chi Dung Vu1; Phuong Thao Bui1; Ngoc Khanh Nguyen1; Maria Craig2; Sian Ellard3; Hoan Nguyen1

1National Hospital of Pediatrics, Endocrinology, Metabolism and Genetics, Hanoi, Vietnam; 2St George Hospital and The Children’s Hospital, Endocrinology, Westmead, Australia; 3Human Molecular Genetics, Peninsula Medical School, Department of Molecular Genetics, Exeter, United Kingdom

**Background:** Neonatal diabetes mellitus (NDM) may be defined as hyperglycemia diagnosed within the first 6 months of life and can result from mutations in the Kir6.2 or sulfonylurea receptor 1 (SUR1) subunits of the ATP-sensitive K+ channel. Transfer from insulin to oral sulfonylureas in patients with NDM due to Kir6.2 or SUR1 mutations is well described.

**Objective and hypotheses:** Determine gene mutation of KCNJ11 and ABCC8 in NDM patients; assess the results of oral sulfonylureas therapy relative to insulin injection.

**Methods:** Case study: 5 patients suffer NDM at 45, 35, 47, 36, 44 days of age, respectively, with ABC8 or KCNJ11 mutations are treated in National Hospital of Pediatrics, Vietnam.

**Results:** 2 patients have heterozygous for a missense mutation on KCNJ11: R201H (p.Arg201His) & R201C (p.Arg201Cys); 3 patients with ABCC8 mutations: missense R1183W (p.Arg1147Trp), nonsense E747X and compound heterozygote for E747X & E128K. All 5 patients switched from insulin to sulfonylurea therapy at 5 years, 2.5 years, 7 years, 5 years and 8 months of age, respectively. Before of switching, HbAIC levels were 9.9; 6; 6; 8; 3.5% and 5.8 percent with insulin dose of 1.1; 0.5; 0.2; 0.5; 0.67 IU/kg/d, respectively. After 15; 10; 3; 5 and 5 days, they successfully discontinued insulin, respectively. HbAIC levels were improved in 3 first patients to 6.3; 6.2; 6.1 percent after 12 weeks of treatment) other patients has received sulfonylureas for 5 days. Improved glycemic control was sustained at one year.

**Conclusions:** KCNJ11 & ABCC8 mutations for NDM has been determined in Vietnam and treatment with sulfonylureas.

**PAO-131**

**A child with concomitant precocious puberty secondary to factor V leiden mutation and type II diabetes mellitus**

Ayla Guven; Fatma Durusan; Heves Kirmizibekmez; Nurcan Cebeci

Goztepe Educational and Research Hospital, Pediatric Endocrinology, Istanbul, Turkey

**Background:** In children, the prevalence of type 2 diabetes (T2D) is increasing worldwide. At diagnosis, most patients have a positive family history of T2D. Heterozygosity for Factor V Leiden mutation (FVLM) leads to a 3-fold increase in relative risk of venous thrombosis. The most common causes of precocious puberty are organic cranial lesion such as tumors, trauma, cerebral anomalies, anoxic encephalopathy, in males.

**Case:** An eight-year-old boy was presented with polyuria. He was diagnosed as cerebral venous thrombosis secondary to FVLM two years ago. The patient’s father also was diagnosed as T2D and FVLM. Due to cerebral stroke the patient was on artificial ventilation with BIPAP, has spastic paraplegia and no verbal response. His weight was 40 kg (97th p), height couldn’t measured because of spasticity. Testes volume was Tanner stage 2, pubic hair Tanner stage 3. Basal LH (2.8 IU/L), FSH (2.38 IU/L) and testosterone (0.55 ng/ml) levels of the patient were found pubertal. The other hormonal evaluation was normal. He was diagnosed as central precocious puberty with basal hormonal evaluation (8). Cranial angiography Magnetic Resonans was revealed encephalomalous changes secondary to cerebral thrombosis. We considered that his central precocious puberty was secondary to cerebral thrombosis and anoxic encephalopathy. His blood glucose was measured 350 mg/dl with ketone in urinary analysis and no acidosis, he was diagnosed as diabetes mellitus and treated with insulin. All antibodies for type 1 diabetes were negative. HbA1c was high for his age (%10.4). Because of high C-peptide (14.7 ng/ml) the patient was diagnosed as type 2 diabetes. He was discharged with metformin and basal insulin glargine treatment.

**Conclusions:** In this report we presented an eight-year-old boy with concomitant precocious puberty, T2D and positive family history for these diseases.

**PAO-132**

**Element and thyroid status in newborns from mothers with Graves’ disease**

Shakhlo Muratova1; Larisa Nugmanova1; Elena Danilova2

1Republic specialized scientific - practice medical center of Endocrinology, Thyroid Department, Tashkent, Uzbekistan; 2Institute of Nuclear Physics, Department of activatory analisys, Tashkent, Uzbekistan

**Aim:** To study effect of Graves’ disease (GD) of a mother in region with severe iodine deficiency, on element and thyroid status of a newborn.

**Materials and methods:** We examined 36 newborns in two groups. 1st group (n=18) included newborns born from mothers with GD receiving adequate thyrostatic therapy and the 2nd one (n=18) including those born from the untreated mothers with GD. Content of microelements in hair was measured by means of instrumental neutron activation method at the Institute of Nuclear Physics, Uzbekistan Academy of Sciences.

**Results:** Confidently high content of iodine was found in the 1st group newborns hair as compared with those in the 2nd (22.77±13.33 versus 10.48±4.92; p<0.04), calcium and iron proportions being confidently lower in the 1st group (Ca: 1038.89±27055 versus 3468.89±243.52, p<0.001; Fe: 90.48±28.41 versus 140.73±118.41, p<0.02). In the 1st group newborns thyroid status parameters were close to normal (TSH: 2.52±0.29 mIU/l; T3 1.69±0.11 nmol/l; T4: 111.1±10.9 mmol/l), no case of neonatal transient thyrotoxicosis (NNT) being registered. Only in one newborn isolated T4 increase in normal TSH and T3 was found. On the contrary, in the 2nd group NNT was found in 6 (33.3%) examinees, transient neonatal hypothyroidism being registered in one (5.6%). In this group thyroid status parameters were as follows, TSH: 0.77±0.24 mIU/l; T3: 2.59±0.1 nmol/l and T4: 148.8±7.95 mmol/l, p<0.05.

**Conclusions:** 1. Inadequate thyrotoxicosis compensation in patients with gestational GD results in neonatal transient thyrotoxicosis and transient neonatal hypothyroidism in 33.3% and 5.6% of newborns. 2. In newborns from mothers with the untreated gestational GD confidently high proportions of calcium and iron were found to be the evidence for the enhanced elimination of the elements from the organism.
POA-133

Isolated 17,20-lyase deficiency with testicular regression

Ayla Guven1; Heves Kirmizibekmez2; Fatma Dursun3; Berrin Gucluer4

1Goztepe Educational and Research Hospital, Pediatric Endocrinology, Istanbul, Turkey; 2Goztepe Educational and Research Hospital, Pathology, Istanbul, Turkey; 3Goztepe Educational and Research Hospital, Pediatric Surgery, Istanbul, Turkey

Background: The CYP17A1 gene encodes P450c17 and is expressed in adrenal and gonads. Mutations of this gene is the cause of combined 17-hydroxylase/17,20-lyase deficiency or in very rare cases isolated 17,20-lyase deficiency. Disturbance of sex steroid production leads to disorder of sex development in 46 XY individual and failure of pubertal development in 46 XX individual.

Case report: A 2 years old male patient referred as bilateral undescended testis. He has been investigated for disorders of sex development. Physical examination revealed bilateral non-palpable gonads and hypoplastic scrotum, penile size was 3.2 x 1.5 cm (lower limit for age). In baseline hormonal analysis; total testosterone and androstenedione levels were low, while FSH and LH were elevated. ACTH (250 µg) and hCG stimulation tests were performed in order to evaluate adrenal and gonadal steroidogenesis. There was not meaningful increase in testosterone, androstenedione. DHEAS was low (0.54 µg/dl, N: 5-57 µg/dl). Cortisol production was normal. Normal deoxycorticosterone level and absence of water retention, hypertension or hypokalemia suggested us that he had 17,20-lyase deficiency. The caryotype was 46 XY, testes could not be detected by ultrasonography. In laparoscopic examination gonads could not be found, but some remnant structures had been excised. Histopathologic investigation of these remnants revealed immature testis tissue with focal dystrophic calcifications and significant hyalinization which adjust to testicular regression syndrome.

Conclusion: Isolated 17,20-lyase deficiency is a rare cause of deficiency in sex steroid production. Normal penile formation and absence of Müllerian structures are proofs of normal testicular functions in critical time (12th-14th gestational weeks). This patient who had been presented with two different clinical entities made us think either a coincidental condition or evoked testicular regression syndrome by impaired steroidogenesis.

POA-135

Registry of congenital adrenal hyperplasia in Vietnam

Chí Dung Vu1; Phuong Thao Bui1; Ngoc Khanh Nguyen2; Thi Bich Ngoc Can3; Thi Hoan Nguyen4; Thanh Liem Nguyen4; Kate Armstrong3; Maria Craig4; Garry Warne5

1National Hospital of Pediatrics in Hanoi, Endocrinology, Metabolism and Genetics, Hanoi, Vietnam; 2National Hospital of Pediatrics in Hanoi, Surgery, Hanoi, Vietnam; 3CLAN, CLAN (Caring & Living As Neighbours), Sydney, Australia; 4The Children’s Hospital at Westmead, Endocrinology and Diabetes, Sydney, Australia; 5Royal Children’s Hospital, Endocrinology and Diabetes, Melbourne, Australia

Aims: The National Hospital of Pediatrics (NHP) in Hanoi is an 900 bed tertiary referral centre servicing approximately 40 million people from northern provinces of Vietnam. This audit was undertaken to analyze anecdotal reports of increasing patient numbers.

Methods: Retrospective review of all CAH patients registered at NHP from 1999-2010. Ethical clearance was granted by the NHP Directorate.

Results: At the start of 1999 there were 90 children with CAH managed at NHP. By December 2010 this increased to 551 (47% male and 53% female; 72% salt wasting CAH), representing a more than five fold increase over 11 years. Number of new cases doubled from 30 to 60 in 2009. Most children (72%) were diagnosed at less than 12 months of age (39% at less than 1 month of age); 70% of all children were younger than 10 years. Formal mortality figures were low (6 known deaths), although loss to follow-up unknown. There are data to suggest persisting mortality from undiagnosed CAH (evidenced by low ethnicity group representation; few children from remote provinces; higher average income of CAH families; gender ratio shift; report of sibling deaths).

POA-136

Bilateral adrenal hemorrhage in a neonate

Nicola Improda1; Manuela Carbone2; Iolanda Di Donato3; Lucia De Martino1; Antonio Coppola2; Mariarosaria Salerno1

1Federico II University, Department of Pediatrics, Naples, Italy; 2Federico II University, Regional Reference Centre for Congenital Disorders, Department of Clinical and Experimental Medicine, Naples, Italy

Background: Adrenal hemorrhage is a rare yet potentially life-threatening event that occurs both in traumatic and in a variety of nontraumatic conditions. The incidence of acute adrenal hemorrhage in infancy range from 0.2 to 3%. Only 5% to 15% of cases reported have bilateral hemorrhage. We report on a neonate with bilateral adrenal hemorrhage associated with thrombophilia.

Case report: On day 3 of life the child, a female, presented signs of neonatal sepsis. On day 7, an occasional abdominal ultrasound revealed bilateral adrenal hemorrhage. However, the adrenal function was still normal. On day 36, the child appeared pale and lethargic. Subsequent hormonal and biochemical assessment showed adrenal insufficiency and she, therefore, started therapy of Addisonian crisis with improvement of clinical condition and biochemical parameters.

She is now two years old and she is still receiving replacement therapy with Hydrocortisone and Fludrocortisone. Serial ultrasound evaluations showed a gradual decrease in size of the adrenal hemorrhage with calcifications involving the whole gland bilaterally by the third month of life. Investigations performed to evaluate the cause of adrenal hemorrhage showed heterozygous Factor V Leiden mutation inherited from her father, resulting in resistance to activated protein C, and homozygous MTHFR C677T polymorphism with no elevation of plasmatic homocysteine levels.

Discussion: The adrenal gland of the newborn is particularly vulnerable to hemorrhage. In this condition of vulnerability, it seems likely that sepsis and combined thromboembolic risk may have interacted in causing bilateral adrenal hemorrhage. Moreover, accumulating evidences suggest that the association of multiple haemostatic defects increases the risk of thrombosis. Thus, thrombosis might be considered as a cause of neonatal adrenal hemorrhage and pro-thrombotic risk factors should be investigated in case of familiar history of thrombophilia.

POA-137

Ethnic background influences the distribution of body fat in obese children and adolescents

Gabriel Angel Martinez-Moreno1; Sara Silver2; Guillermo Martinez2; Federico Hawkine3; Jesús Argente4

1Hospital Infantil Universitario Niño Jesús, Universidad Autónoma, ISCIII, II La Princesa, Endocrinology, Department of Pediatrics, CIDERObin, Madrid, Spain; 3Hospital Infantil Universitario Niño Jesús, Radiology, Madrid, Spain; 4Hospital Infantil Universitario Niño Jesús, Endocrinology, Madrid, Spain

Background: The ethnic background, sex and pubertal progression determine body fat in growing children. These factors could also influence the deposition of excess adipose tissue in obese children and adolescents, with potential metabolic impact.

Objective and hypotheses: Our aim was to compare the amount and distribution of body fat between obese Latino and Caucasian children and adolescents and their eventual metabolic repercussions.

Methods: One-hundred obese children [11.5 ±2.9 years; 4.1 ±1.4 BMI-SDS; 53 females/47 males; 57 Caucasian (C) 43 Latino (L)] were studied. Glucose, insulin, uric acid, cholesterol and triglyceride levels were measured. Body composition (DXA) and abdominal MRI and ultrasonography were performed in all patients.

Results: Both ethnic groups showed similar ratios of visceral and subcutaneous (SQ) abdominal fat in the MRI. DXA scans showed that Latinos had higher trunk to whole body T/WB;
L.0.49 ±0.03 vs. C.0.47 ±0.03; p<0.05) and trunk to lower limb (T:L; L.1:43 ±0.27 vs. C.1:29 ±0.21; p<0.05) fat ratios, as well as a higher rate of liver steatosis (X2:7.629; p<0.01).

When analyzing exclusively prepubertal children (n=41), MRI showed a higher percentage of SQ abdominal fat in Caucasians (C:82.6±9.1 vs. L:73.4±18.0%; p<0.05).

No inter-ethnic differences in body fat distribution were observed in pubertal males, whereas pubertal Caucasian females showed more subcutaneous (C:85.3±3.9 vs. L:81.6±4.7%; p<0.05) and less visceral abdominal adipose tissue (C:14.1±3.5 vs. L:18.2±4.5%; p<0.01) than Latinas.

Independently of the ethnic background, a higher percentage of body fat was observed in prepubertal children vs. adolescents (p<0.01), as well as in pubertal females vs. males (p<0.001). Caucasian prepubertal children and pubertal males had higher uric acid levels than Latino children (p<0.01 and p<0.05, respectively), whereas Latino adolescents had higher fasting glucose (p<0.05) than Caucasians.

Conclusions: Ethnic background, sex and pubertal stage influence the distribution of body fat and the metabolic profile in obese children.

**Table 1. The frequency of acute complications (%) and HbA1c level (%).**

<table>
<thead>
<tr>
<th>Years</th>
<th>DKA 2-3</th>
<th>Hypo</th>
<th>HbA1c</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>6.04</td>
<td>0.45</td>
<td>8.9±1.52</td>
</tr>
<tr>
<td>2008</td>
<td>9.23</td>
<td>0.43</td>
<td>8.8±1.45</td>
</tr>
<tr>
<td>2009</td>
<td>11.39</td>
<td>0.57</td>
<td>8.9±1.44</td>
</tr>
</tbody>
</table>

**Table 2. The frequency of acute complications (%) in children with different age.**

<table>
<thead>
<tr>
<th>Age</th>
<th>DKA 2-3</th>
<th>Hypo</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 y.o.</td>
<td>9.83</td>
<td>17.32</td>
</tr>
<tr>
<td>6-10 y.o.</td>
<td>5.32</td>
<td>9.24</td>
</tr>
<tr>
<td>11-14 y.o.</td>
<td>6.82</td>
<td>9.86</td>
</tr>
<tr>
<td>15-17 y.o.</td>
<td>7.94</td>
<td>7.90</td>
</tr>
<tr>
<td>Total</td>
<td>6.04</td>
<td>9.23</td>
</tr>
</tbody>
</table>

**Table 3. The frequency of chronic complications (%).**

<table>
<thead>
<tr>
<th>Years</th>
<th>DK</th>
<th>DR</th>
<th>DN</th>
<th>DA</th>
<th>DNp</th>
<th>DL</th>
<th>DS</th>
<th>CWC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0.94</td>
<td>7.56</td>
<td>10.69</td>
<td>15.42</td>
<td>18.67</td>
<td>3.01</td>
<td>7.59</td>
<td>11.49</td>
</tr>
<tr>
<td>2008</td>
<td>1.92</td>
<td>8.52</td>
<td>11.43</td>
<td>19.14</td>
<td>19.31</td>
<td>7.29</td>
<td>8.55</td>
<td>16.12</td>
</tr>
<tr>
<td>2009</td>
<td>2.01</td>
<td>8.92</td>
<td>12.95</td>
<td>19.04</td>
<td>20.46</td>
<td>8.26</td>
<td>8.30</td>
<td>14.75</td>
</tr>
</tbody>
</table>

**Conclusions:** The main reason of increasing the frequency of chronic diabetic complications in Ukraine for the last 3 years is the using of the unified methods of diagnostics.

**PAO-138**

**Clinical presentation and its relationship with chromosomal abnormalities in Turner syndrome**

Phu Thao Bui; Thu Hoan Nguyen; Chi Dung Vu; Ngoc Kharth Nguyen; Thi Bich Ngoc Can; Thi Phuong Nguyen

1National Hospital of Pediatrics, Endocrinology-Genetics-Metabolism, Hanoi, Vietnam; 2Hanoi Medical University, Pediatrics, Hanoi, Vietnam

Background: Turner syndrome is a relatively common chromosomal disorder. The disease affects only females, causing hypogonadism and short stature. Early treatment can improve short stature and hypogonadism.

Objective and hypotheses: Describe chromosomal abnormalities, clinical characteristics and its relationship with chromosomal abnormalities in patients with Turner syndrome.

Methods: 116 patients with Turner syndrome diagnosed in National Hospital of Pediatrics, Hanoi. Method: A cross-section study was used.

Results: Mean age on diagnosis was 12.2 ± 4.9 years. Monosomy 45.XO occupied 54.31%; 45.X/46.XX was seen in 14.66%; 27.59% had structural disorders of chromosome X. Short stature was found in all patients aged more than 15 years. Severity of short stature and percentage of patients with short stature went up with age. There was no difference in term of height between karyotype groups. In group aged ≥ 12 years, 95.2% of cases had hypogonadism. Other symptoms frequently seen were nail hypoplasia (77.4%), cubitus valgus (74.7%), broad chest (69.2%). Abnormalities in face and neck were epicanthic fold (55.6%), low posterior line (51.3%), excessive skin in the back of the neck/webbed neck (42.5%). In a group aged < 1 year, lymphoedema of hands/feet, epicanthic fold, broad chest, cubitus valgus were found in 100%. Majority of symptoms, congenital defects of heart/kidney were seen more frequently in 45,X group.

Conclusions: Lymphoedema of hands/feet in infants, low growth velocity, delayed puberty, abnormalities in face and neck, and other symptoms should be checked to early diagnose and treat Turner syndrome. Patients with 45,X had more severe presentation compared to patients with 45,X/46,XX and structural abnormalities of X chromosome.

**PAO-139**

**Changing trends in epidemiology of type 1 diabetes mellitus in children and adolescents in Cyprus**

Eleftheria Efthathiou; Andreas Kyriakou; Tassos C Kyriakides; Andria Savvidou; Leonidas A Phylactou; Vassos Neocleous; Christos Chamaras; Nicos Skordis

1Makarios III Hospital, Paediatric Endocrine Unit, Nicosia, Cyprus; 2Yale University, School of Medicine, Department of Epidemiology, New Haven, United States; 3The Cyprus Institute of Neurology and Genetics, Molecular Genetics, Function and Therapy, Nicosia, Cyprus

Background: The incidence of Type 1 diabetes mellitus (T1DM) has dramatically increased worldwide and it is estimated that it may reach the status of an epidemic in the 21st century.

Objective and hypotheses: To calculate the incidence of T1DM in Greek-Cypriot children aged less than 15 years between 1990 and 2009 and to examine any changes in the incidence between the two decades, to analyse gender differences in the age of onset and any seasonal variation at the manifestation of the disease.

Methods: All newly diagnosed cases of T1DM in children less than 15 year old were registered with the capture – recapture method from 1990 until 2009 and relevant information was obtained. The data were statistically processed in relation to the population data provided by the Department of Statistics and Research of the Ministry of Finance.

Results: The overall mean annual incidence of T1DM during this 20 year period is 12.46/100,000. By using the Wilcoxon two-sample test the mean incidence rate in the second decade 2000-2009 was significantly increased when compared to the first one (14.4 vs 10.46 ±00.00). There was an overall male predominance (M:F: 1.03) but not in the group who manifested T1DM at ages 10-15 years, where females prevail. The percentage of children who
developed T1DM at ages 0 – 5 years increased in the second decade (24.5 vs 17.4 %). The seasonal distribution at the time of diagnosis (higher incidence during winter and autumn months) disappeared in the second decade.

Conclusion: The incidence of T1DM in Cyprus is rising. The identification of environmental factors, which increase the risk of T1DM development in genetically susceptible individuals, will theoretically explain this phenomenon. New preventive strategies will therefore be developed if such factors that are implicated in the etiopathogenesis of T1DM will be recognized.

PAO-140
A rare cause of primary ovarian failure in a 16 years old patient: 48,XXXX karyotype
Marie-Béatrice Saade; David Brian; Laurent Pasquier; Livie Chatelais; Marc de Kerdatéan; Sylvie Nivot; Patrick Plady
CHU Rennes, Paediatric department, Rennes, France

Background: 48,XXXX is a rare karyotype. Since first described in 1961, fewer than 60 patients have been described in literature as suffering from this condition. The main feature described is mental retardation. Some women have tall stature, as in other extra X chromosome karyotype (47,XXX, 47,XXXX). Only three patients have been reported so far with primary ovarian failure. Irregular or normal menses are more often described.

Case report: Our patient was first seen in the paediatric endocrine ward at 16 years old for primary amenorrhea. She had a mild mental retardation and attended a special school. She had hyperphagic access and obesity, her parents also had obesity. Her pubertal status was AP2PS1 with important adiposity giving a “false” stage 3 breast development. She had a tall stature (183 cm) above her target height (168.5cm) and had little finger insertion anomaly. Her bone age was 15 years as determined by the Greulich and Pyle method. Blood analysis showed high levels of gonadotrophins: luteinizing hormone: 25.6 mU/ml and follicle-stimulating hormone: 33.5 mU/ml and low level of estradiol 10 pg/ml, consistent with primary ovarian failure. Neither pelvic ultrasound nor MRI showed any ovaries. She had prepubertal uterus. She had chromosome analysis regarding to the amenorrhea associated with the mental retardation and it showed a 48,XXXX karyotype. Estrogen therapy was started to develop sexual secondary characters, close epiphyseal growth plates and prevent osteoporosis.

Conclusion: These features add data on height and ovarian function in 48,XXXX women. Mental retardation is often described in women with 48,XXXX but tall stature and primary ovarian failure are described in a few cases. This patient had obesity which is not, to our knowledge, described in literature. Not only small patients (Turner syndrome) but also tall women with primary amenorrhea should benefit from chromosome analysis.

PAO-141
Pituitary enlargement due to partial IGF-I insensitivity
Sonaya Milan1; Mariana Sarti de Paulea1; Ligia Bataglin de Carvalho1; Rodrigo Custodio1; Marcelo do Amaral Ruiz1; Ayrton Moreira1; Sonir R. Antonini1; Carlos Eduardo Martinelli Jr1
1 School of Medicine of Ribeirão Preto, Paediatrics, Ribeirão Preto, Brazil; 2 School of Medicine of Ribeirão Preto, Medicine, Ribeirão Preto, Brazil

Background: Until recently patients bearing partial GH or IGF-I insensitivity have been diagnosed as idiopathic short stature.

Objective and hypotheses: Few data are available regarding pituitary image in these patients.

Methods: We describe a 5.5 year-old girl that was seen at the emergency in these patients.

Results: Dose accuracy was not dissimilar between devices but dosing precision was 2.5, 11.1 and 97% for FP, 0.8, 2.6 and 99% for GQ, and 0.8, 1.6 and 99% for NF. Dose precision (CV , %) was 2.5, 0.8 and 0.8 for FP, 11.1, 2.6 and 1.6 for GQ and 3.8, 0.7 and 0.7 for NF.

Conclusion: A reduced injection force potentially makes it easier for patients to administer their injected medication.

PAO-143
Virilization of a toddler girl by paternal use of testosterone cream
Sophie Stoppa-Vaucher1; Timothy Hirter1; Franziska Phan-Hug1; Claire-Lise Fawer1; Michael Hauschild1
1 University of Lausanne, Pediatric Endocrinology and Diabetology Unit, Lausanne, Switzerland; 2 University of Lausanne, Pediatrics, Lausanne, Switzerland

Background: A 15-month-old healthy female was referred because of rapid growth of dark pubic hair and a high testosterone (T) level (9 nmol/L, normal value (N) < 0.45).

Objective and hypotheses: Demonstrate the cause of the patient’s virilization.

Methods: Clinical and laboratory work up as well as imaging studies were performed to exclude the main causes of an androgen excess.

Results: Past medical history and review of systems were unremarkable. Family history revealed a 4 year-old brother and unrelated parents, all in good health. Weight (11 kg, 0.78 SDS), height (78.1 cm, 0.4 SDS) were normal.
mal, no growth acceleration was observed. Tanner stage II pubic hair and an enlarged clitoris (12 mm) were found. She had no palpable breast tissue or posterior labial fusion, axillary hair, or acne. Pelvic ultrasound showed prepubertal uterus but no adrenal or ovarian mass were visualized. Adrenal hyperandrogenism was ruled out based on normal values of 17-OHP (0.7 nmol/L; N<0.5), Androstenedione (<0.5 nmol/L; N 0.38 ± 0.20) and DHEAS (<0.5 µmol/L; N 0.06 ± 0.04). Prolanline, thyroid function test and tumoral markers (β-hCG (< 2 U/L, N=5), αFP (5.5 kU/L; N=10) were normal. Her father, a former elite athlete, reported that he was using a T-cream (T 10% in PCCA Lipoderm-Base®) for muscle problems the last 2-3 months. Four weeks after the father had ceased the treatment, T level decreased to 1.7 nmol/L. The child’s clinical virilization signs regressed. We observed no sign of hypothyroidism in her brother.

Conclusions: We describe a virilized toddler girl with isolated high T level due to transdermal intoxication. The differential diagnosis of virilization in childhood includes both endogenous and exogenous causes. Increased utilization of easily available cutaneous androgen applications should prompt clinicians to inquire about exogenous androgen exposure in the medical history of virilized children.

PAO-144
Silent corticotrope adenoma – report of two cases
Liliana Maria Mejía1; Ernest Senz2; William Jibú³
1Clinica Valle del Lili, Centro de Endocrinologia, Universidad Libre
2Fundación Clinica Infantil Club Noel, Valle Del Cauca, Cali, Colombia;
3Clinica Valle del Lili, Valle Del Cauca, Cali, Colombia; Centro de Endocrinología, Valle Del Cauca, Cali, Colombia

Background: Some Pituitary adenomas exhibit immunoreactivity to hypothalamic hormones but because of the absence of clinical syndromes. They are known as silent adenomas. In 1979 Hassouny and collaborators describe the silent pituitary adenomas. In reference to corticotrope adenomas 43% are silent because they produced a biologically inactive hormone. They can be large and have a tendency to invade and recur.

Objective and hypotheses: We describe two cases of silent corticotrope adenomas in children.

Methods and results: CASE1: Nine years old boy presented with frontoparietal headaches, loss of vision, no hypertension, no obesity or evidence of Cushing syndrome Laboratory: 8 am cortisol 4.2 µg/dl, TSH 2mU/ml prolactin 25.9 ng/ml MRI revealed Intrasseal mass of 3.7x2.4x2.4 mm. Treatment surgery, Pathology revealed a ACTH producing adenoma Pituitary Ki67 15%.

Case 2: A fourteen years old girl had a cranepharyngioma removed a year before. She presented with headaches visual loss and obesity, acantosis nigricans, no hypertension and no clinical manifestation of Cushing’s syndrome. A solid suprasellar mass of 15x19 mm MRI. Surgical pathology revealed an ACTH producing Adenoma Pituitary Ki67 1%. Post surgery ACTH 13,4 pg/ml cortisol 7µg/dl prolactina 20,4ng/ml

Conclusions: Silent corticotrope adenoma are not associated with a clinical picture of hormone excess but they can cause pituitary damage and they have a tendency to recur. Clinical diagnostic is difficult.

PAO-145
Karyotype-phenotype presentation and interim results of growth hormone (GH) treatment of girls with Turner syndrome (TS) in Belarus
Natalia Akulivich; Julia Boxa; Yuliya Makaranava; Irina Kunavitch
State Center of Medical Rehabilitation, Department of Pediatrics, Pediatric Endocrinology Group, Minsk, Belarus

Background: TS is a genetic condition associated with different developmental abnormalities including short stature.

Objective and hypotheses: This work aimed to verify clinical details and response to GH therapy of TS girls in Belarus with relation to karyotype.

Methods: Retrospective study of 81 TS patients in our Center.

Results: The mean age of TS diagnosis was 9.3±4.9 yrs; 7/81 (8.6%) girls, all 45,X, were diagnosed perinatally. Karyotypes distribution: 45,X / 45,X (55.5%), mosaicism 45,X/46,XX - 22/81 (27.2%), abnormalities of an X chromosome in 18/81 (18.6%), mosaicism with Y chromosome - 3/81 (3.7%).

Congenital heart abnormalities were diagnosed in 59/81 (72.8%) of pts; 13/81 (16.0%) had bicuspid aortic valve, 6/81 (7.5%) - coarctation of the aorta. The number of severe heart problems tended to be higher in 45,X (p<0.15). Thyroid disorders were found in 63/81 (77.8%) of pts; 21/81 (25.9%) had AIT. Totally, 46/81 (56.8%) pts had hypothryoidism. Thyroid failure was more frequent in other than 45,X girls (61.1% vs.53.3%, p=0.05). Seventeen pts (21%) had kidney abnormalities. GH therapy (0.33 mg/kg/wk) was initiated at the age of 11.1±4.9 yrs. Only 34.6% of pts were younger than 10 yrs at start of treatment. Baseline HSDS in the whole group was -3.4±1.2; time of GH treatment - 2.9±2.1 yrs, regardless of karyotype. The AHSDE were 0.7±0.5, 0.5±0.3 and 0.3±0.5 for year 1, 2 and 3 of GH therapy, respectively. Growth response was not correlated to karyotype. In 25 pts who completed GH treatment final height at 17.2±4.8 cm. In 39±1.4 yrs of GH therapy they benefited 6.2±4.6 cm; height increase was + 1.5 cm/year.

Conclusions: TS in Belarus are manifested with high genetic variability and somatic abnormalities rates. Due to rather late diagnosis, GH therapy of TS in Belarus is often belated. Nevertheless, TS girls have good growth response.

PAO-146
Late development of celiac disease in type 1 diabetes mellitus
Giulio Maltoni; Stefano Zucchini; Mirella Scipione; Angela Rizzello;
Silvana Sallardi; Alessandro Cicognani
S.Orsola-Malpighi Hospital, Pediatrics, Bologna, Italy

Background: Patients with type 1 diabetes mellitus (T1DM) are at a high risk for developing autoimmune diseases such as coeliac disease (CD). Although CD mainly occurs at T1DM onset, it can also develop in the following years, but in our experience never after 6 years from T1DM onset (Salardi et al, J Pediatr Gastroenterol Nutr 2008). There is no consensus as to the duration of follow-up for autoimmune diseases in T1DM. We report a case of a male who developed CD 15 years after the diagnosis of T1DM.

Case report: A 19 yr-old male diagnosed with T1DM at 4 yrs of age. HLA phenotype was DR 3, 4 and DQ 2, 3. His siblings were also tested for autoimmune diseases and the older sister developed CD and few years after autoimmune thyroiditis. Lab examinations for associated autoimmune diseases were performed annually. 13 years after T1DM onset Hashimoto’s thyroiditis was diagnosed, not leading to clinical hypothyroidism. Unexpectedly, after 15 years from T1DM onset, he showed a marked positivity for CD autoantibodies (antiendomisial antibodies 128 u/ml, normal value <10). During the previous year he was completely asymptomatic: he did not refer gastrointestinal symptoms or an increased frequency of hypoglycaemic episodes. There were no biochemical signs of CD (ferropenic anemia, hypertransaminases, hypercholesteremia). Antibody positivity was also confirmed in another laboratory. Bowel biopsy showed a total villous atrophy.

Conclusions: The development of CD so far from diabetes onset (>15 years) has been never described before to our knowledge and the literature reports a follow up period never longer than 10 years. We conclude that screening for autoimmune disease should be annually performed in T1DM patients possibly lifelong, even in the absence of clinical symptoms, especially in those with a strong family history of autoimmune disease.

PAO-147
A case of congenital hypothyroidism with Hirschprung’s disease: an unusual association
K D Mod1; Madan Mohan Rao2; Sunil Kumar Kota
1Medwin Hospitals, Endocrinology, Hyderabad, India; 2HOPE Children’s hospitals, Paediatrics, Hyderabad, India

Background: Hirschprung’s disease (HD) as well as congenital hypothyroidism can present with functional intestinal obstruction and abdominal distension in neonate. Both the diseases are considered as differential diagnosis, rather than as coexistence. We report one such interesting case with unusual coexistence between these 2 conditions.

Objective and hypotheses: Thyroid hormone is necessary for neuronal migration and lamination during brain development. Although hypothyroidism impairs colonic motility resulting in pseudo-obstruction the effects of hypothyroidism on neuronal migration through bowel have not been adequately studied.

Methods: A 21 days baby girl, product of consanguineous marriage presented...
with vomiting and abdominal distension. Weight was 2.5 kg and length 48 cm. On examination, there was facial puffiness, open anterior fontanelles, dry skin, cold peripheries and prominent abdominal veins with visible peri-
stalis. There was no maternal history of hypothyroidism. Patient was sub-
ject to various investigations.

Results: Routine hemogram, liver & kidney function tests were within nor-
mal limits. Plain abdominal radiographs revealed gas filled bowel loops with
barium enema showing dilated proximal colon, empty rectum, delayed empty-
ning time with funnel like transition zone between proximal dilated & distal
constricted bowel (Image 1). TSH was > 150 µU/mL. Thyroid scintigraphy
revealed athyrosis, confirming congenital hypothyroidism due to athyrosis.
Biopsy following colostomy revealed aganglionic segment, confirming the
diagnosis of Hirschsprung’s disease. Baby was discharged with oral levothy-
roxine treatment.

Conclusions: With the present case, we propose that thyroid hormones may
have a role in the development of HD. Further studies are needed to establish
this.

PAO-148

Metabolic syndrome in obese Ukrainian schoolchildren: prevalence and risk factors
Ihor Hrytsyuk
Western Ukrainian Specialized Children’s Medical Centre, Paediatrics,
Lviv, Ukraine

Background: Obesity in children and adolescents is currently on a rise in
Ukraine, posing challenges to personal health and state health care system.

Objectives: To assess prevalence of metabolic syndrome (MS) among obese
children and adolescents residing in Lviv, Ukraine, and risk factors leading to
its development.

Methods: Obese children and adolescents were selected during annual (2009)
medical check-up in 10 city schools. These were referred for further investi-
gations. The major components of MS (abdominal obesity, hypertension,
dys-
lipidemia, and glucose intolerance) were evaluated in a cross-sectional study.
Potential risk factors for developing MS (weight at birth, parental obesity,
degree of obesity, age, sex) were assessed in a multivariate logistic regression
analysis.

Results: The nutritional status of 8523 school students aged 11 to 18 years
was assessed. The prevalence of obesity (BMI ≥ 95%) is 9.1% (n = 776, boys
= 381, girls = 395). The prevalence of MS among obese children reaches
14.3% (n = 111, boys = 62, girls = 49). The prevalence of MS tends to increase
with increasing of BMI class (3.1% in class I, 6.2% in class II and 18.2% in
class III). In a multivariate analysis more advanced age (OR = 4.08, CI = 3.13
-6.24), BMI (OR = 2.71, CI = 1.34 - 4.75) and parental obesity (OR = 2.11,
CI = 1.07 - 4.14) were found to be the most significant risk factors for having
MS in obese children and adolescents.

Conclusions: Although lower than in neighbouring countries, the prevalence
of MS in Ukrainian schoolchildren is growing, which warrants preventive
measures. The older the obese child, the higher are chances for MS. The
most important preventable risk factors are degree of obesity (BMI) and pa-
rental obesity.

PAO-149

Skeletal morbidity in children receiving chemotherapy for acute lymphoblastic
leukaemia and its association with mineral homeostasis and duration of inpatient stay
Musab Elmantaser¹; David Young²; Brenda Gibson²; S. Faisal Ahmed³
¹Bone and Endocrine Research Group, Department of Child Health,
Glasgow, United Kingdom; ²University of Strathclyde, Department of
Statistics and Modelling Science, Glasgow, United Kingdom;
³University of Glasgow, Department of Haematology, Royal Hospital
for Sick Children, Glasgow, United Kingdom; "Bone and Endocrine
Research Group, Department of Child Health, Royal Hospital for Sick
Children, Glasgow, United Kingdom

Background: Reduced activity, older age and abnormal bone mineral status
are considered as important determinants of poor bone health in children with
acute lymphoblastic leukaemia (ALL).

Aim: To investigate the influence of activity, age and mineral status over the
first 12 months of chemotherapy on subsequent SM.

Patients and methods: The medical records of 56 children presenting with
ALL between 2003 and 2007 and treated on UKALL 2003 were reviewed
for the number of in-patient days over the first 12 months of chemotherapy
as a surrogate marker of inactivity and lack of well-being. Data for serum Ca,
Alb, Mg and Pho were also collected over this period. SM was defined as any
episode of bone/musculoskeletal pain (MSP) or fractures.

Results: The median duration of in-patient days over the first 12 months of
treatment in children with no SM was 58 days (40,100) whereas the median
number of in-patient days during the first 12 months in those children with
any SM, MSP only or fractures was 83 days (54,131), 81 days (52,119)
and 91 days (59,158), respectively (p<0.001). Children with SM and fractures
particularly had lower levels of serum Ca, Mg and Pho compared to those
without SM over the first 12 months of chemotherapy. There was a higher risk
of SM in those who were diagnosed after the age of 8 years (p=0.001, OR=16
(95% CI:3.80). Multiple regression analysis showed that the incidence of SM
only had a significant independent association with age at diagnosis (p<0.001)
and the number of inpatient days (p=0.03) over the first 12 months (r=23).
All children who were diagnosed after the age of 8 years with an inpatient
stay of greater than 75 days in the first 12 months of the chemotheraphy (n,14)
children had some form of SM (OR=64).

Conclusion: The incidence of SM in children receiving chemotherapy for
ALL is associated with a higher likelihood of being older and having longer
periods of in-patient stay. The close link between age and changes in bone
mineral status may be one explanation for the increased bone morbidity in
ALL children.

PAO-150

Trends of body mass index in children with craniopharyngioma from the west of Scotland
Muhammad Jaffar Khan¹; Khadidia Humayur²; Malcolm Donaldson²;
S. Faisal Ahmed²; M Gutar Shakh³
¹University of Glasgow, Human Nutrition, Glasgow, United Kingdom;
²Aga Khan University, Department of Pediatrics and Child Health,
Karachi, Pakistan; ³Royal Hospital for Sick Children, Paediatric
Endocrinology, Glasgow, United Kingdom

Background: Hypothalamic obesity is one of the major causes of reduced
quality of life in survivors of childhood craniopharyngioma, predisposing
the patient to a wide variety of complications, including cardiovascular disease.

Objectives and hypothesis: The aim of this study was to examine the trends
of change in body mass index (BMI) in childhood onset craniopharyngioma
patients over 5 years. The hypothesis being all children with a craniopharyn-
gioma gain weight irrespective of their BMI at presentation.

Methods: This was a retrospective study of 23 children with a diagnosis of
craniopharyngioma presenting to the West of Scotland regional endocrine
unit over a 5 year period. Data on height, weight, gender and age was col-
lected. BMI SDS for each patient was subsequently calculated and analysed
for each child. This was repeated over a 5 year period. Data on height, weight,
gender and age was collected over this period. BMI SDS was also collected
for each child. This was repeated over a 5 year period. Data on height, weight,
gender and age was collected over this period. BMI SDS was also collected.

Results: At presentation, (M: F 11:12) 47.5% (n=11) patients were obese,
with 52.5% (n=12) non-obese patients. BMI increased further in 7 of the
Obese patients. There was a rise in mean BMI SDS in the first year after diagnosis, followed by a fall in BMI over the 5 year period in both groups; however the obese group at presentation remained obese. In the non-obese group only 10 had an increase in BMI SDS from presentation, with 8 patients becoming obese during the 5 years.

**Conclusions:** Craniopharyngioma patients who are obese at presentation continue to gain weight and remain obese. This probably reflects a greater degree of hypothalamic damage in these individuals.

**PAO-151**

**Pseudotumor cerebri and diabetes insipidus. Association or coincidence?**

Gabriella Pozzo-Benzi; Giuseppe Cannlala; Chiara Maria Damia; Gisella Garbettta; Maria Piera Ferrarello; Alessandra Musio; Berardo di Natale; Giovanna Weber; Giuseppe Chiullello

Vita Salute San Raffaele University, Pediatric Endocrine Unit, Milano, Italy

**Background:** Pseudotumor cerebri (PTC) is characterized by intracranial hypertension in the absence of clinical, laboratory or radiological evidence of space occupying lesion. It can occur in the pediatric population with an increasing incidence among adolescents, especially in obese females. Idiopathic PTC can be associated with anterior pituitary deficiency but there is no evidence in literature of association with central diabetes insipidus (CDI).

**Objective and hypotheses:** We report a case of PTC and concomitant CDI.

**Methods:** 13-year-old obese female (BMI 2.64 SDS) presented progressive headache, important visual impairment followed by complete blindness, sixth cranial nerve palsy, bilateral papilloedema, right hemisindrome with alteration of the state of consciousness. MRI ruled out the presence of a cerebral mass as well as pituitary lesions, showing concave superior surface of pituitary gland with normal pituitary stalk; posterior pituitary bright spot was not described. Furthermore there was no evidence of cerebral venous thrombosis. High cerebralspinal fluid pressure: 30 mmHg. Autonomic, vascular, infective and tumoral aetiologies were excluded (negative tumoral markers at the beginning and during follow up). Therapy: lumbar puncture+Acetazolamide. A week after diagnosis she developed polyuria and polydipsia (up to 17 L/day). Hormonal evaluations demonstrated CDI with normal anterior pituitary function. The patient started therapy with desmopressin with adequate electrolyte balance. Subsequently she was treated with Clozabam for frontal lobe dysfunction, associated to dysarthria and aimless movements of legs.

**Results:** During follow up (1 year), the intracranial hypertension gradually reduced. No more headaches were reported, but visual impairment and diabetes insipidus were still present, even if less severe. Neuroradiological follow-up remained negative for brain tumors.

**Conclusions:** We assume that the increased intracranial pressure might have altered the activity of hypothalamic osmoreceptors and baroreceptors, inducing a lower synthesis of ADH.

**PAO-152**

**Maturity onset diabetes of the young (MODY) - presentation of two cases**

Ileana Puiu1; Simona Cosoveanu; Veronica Elena Maria1; Alexandra Otilia Puiu2; Ioana Opritoiu2

1University of Medicine and Pharmacy, Emergency County Hospital, Craiova, Romania; 2Emergency County Hospital, Emergency County Hospital, Craiova, Romania

**Background:** Maturity onset diabetes of the young (MODY) is characterized by single or multiple gene mutations in the rDNA origin, which map to chromosome 2q or 12q. It is a rare genetic disorder of pancreatic β-cells, causing early age at diabetes diagnosis (usually in the first or second decade of life), typically without the need for insulin therapy. MODY is an autosomal dominant trait.

**Methods:** We report the cases of two MODY patients diagnosed during the period 2007-2010. Both patients were referred to our hospital for the diagnosis and treatment of diabetes.

**Results:** The two patients were a 14-year-old girl and a 9-year-old boy. The girl was diagnosed with MODY1, while the boy was diagnosed with MODY3. Both patients were advised to follow a diet and to attend regular follow-up visits.

**Conclusions:** Early detection and appropriate management of MODY are crucial for preventing complications and achieving good glycemic control.

**PAO-153**

**Long-term (five-year) height outcome in children treated with Norditropin®**

Judith Ross1; Peter Lee2; Robert Gut3; John Germak3

1Thomas Jefferson University, DuPont Hospital for Children, Dept. of Pediatrics, Philadelphia, PA, United States; 2The Milton S Hershey Medical Center, Penn State College of Medicine, Dept. of Pediatrics, Hershey, PA, United States; 3Novo Nordisk Inc., Dept. of Clinical Development, Medical and Regulatory Affairs, Princeton, NJ, United States

**Background:** The American Norditropin Studies: Web-enabled Research (ANSWER) Program®, a US-based registry, has collected long term efficacy and safety information on patients treated with Norditropin® (somatropin rDNA origin, Novo Nordisk A/S) at the discretion of participating physicians.

**Objective and hypotheses:** To assess the long-term (5 years) height standard deviation score (HSDS) and ΔHSDS by age, gender, and pubertal status in children treated with GH.

**Methods:** Treatment-naïve pediatric patients with isolated/idioopathic GH deficiency (GHD; n=4454), multiple pituitary hormone deficiency (MPHD; n=387), small for gestational age (SGA; n=461), idiopathic short stature (ISS; n=758), and Turner syndrome (TS; n=435) were analyzed.

**Results:** Mean baseline ages (yrs) were generally younger in patients with MPHD (7.4), SGA (8.5), and TS (8.6) than with GHD (10.8) and ISS (11.2). Lowest peak GH levels were observed in patients with MPHD (3.1 ng/mL) and GHD (5.3 ng/mL). In the overall population, HSDS increased from -2.2 at baseline to -1.1 at Y3 and -0.9 at Y5, with GHD, MPHD, and SGA showing better growth response. Boys had significantly greater ΔHSDS than girls after 3 years or longer treatment duration (p<0.001). When stratified by baseline age, younger patients showed greater ΔHSDS than older patients for both genders (Table). In addition, children with GHD who remained pre-pubertal after 5 years of treatment had the greatest ΔHSDS (2.0±1.1) as compared to patients who were already pubertal at treatment start (1.4±0.69) or who transitioned into puberty during the study (1.5±0.68).

**Conclusions:** These results show that boys generally have greater height gain than girls after long-term treatment. A better growth response is observed in younger and pre-pubertal children, emphasizing the importance of starting GH treatment at a young age and pre-pubertal status. Table. (Mean (SD) ΔHSDS over 5 years by Age and Gender.

<table>
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<th>Male N</th>
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<th>All Males &gt; 11 yrs</th>
<th>Female N</th>
<th>All Females</th>
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**PAO-154**

*Role of prophylactic medical examination for early diagnosis of endocrine disorders*

**Alexey Resn'enko**; Lelia Namazova-Baranova

1Scientific Center of Children's Health, Diagnostic, Moscow, Russian Federation; 2Scientific Center of Children’s Health, Head, Moscow, Russian Federation

**Background:** Considerable increment of endocrine disorders in pediatric population within last years was observed. Routine children and adolescent check up does not include examination by endocrinologist.

**Objective and hypotheses:** To estimate rate of endocrine disorders in pediatric population we explored 911 Moscow schoolchildren.

**Methods:** All children were splitted into groups by sex (sex ratio was 54% boys to 46% girls), age (junior school - from 6 to 11 years, middle school from 11 to 14 years, senior school- from 14 to 17 years). Physical examination, anthropometric measuring, and thyroid ultrasound were performed. On the base of measurements BMI, height velocity and standard deviation score of mesuraments were estimated.

**Results:** 12% of children had signs of endocrine disorders. Leading position belongs to overweight and obesity (61% of revealed endocrinological disorders). 25% of children with endocrinological disorders had thyroid gland enlargement. 9% had growth abnormalities (7% cases of short stature and 2% cases of high stature), abnormalities of sexual development were revealed in 5%. 9% of children with detected endocrine disorders had two of more diagnosis. Our data shows that overweight and obesity more common for middle and senior school groups and had no significant differences between sexes (sex ratio for overweight and obesity was 51% boys to 49% girls). Thyroid abnormalities predominated at the age of 11-17 years and more common for female population (sex ratio was 13% boys to 87% girls). Most children with growth abnormalities revealed at age 7-14 years, and sex ratio was 82% boys to 18% girls. 5% of boys and 95% of girls with endocrine disorders had sexual development abnormalities with predomination at the age of 11-17 years.

**Conclusions:** Results of our study show importance of endocrine function assessment in school-age children on a regular basis. This tactics helps to reveal possible endocrine disorders at early stages and form groups of children with high risk of endocrine disorders for prophylactic medical examination.

**PAO-155**

*Rett syndrome associated with thyroid hypoplasia – a synergic association for neurological disturbances: case report*

Otilia Marginean; Ioan Simedrea; Tamara Marcovici; Daniela Chiru

1st Pediatric Clinic University of Medicine and Pharmacy Timisoara, Endocrinology, Timisoara, Romania; 1st Pediatric Clinic University of Medicine and Pharmacy Timisoara, Gastroenterology, Timisoara, Romania; 1st Pediatric Clinic University of Medicine and Pharmacy Timisoara, Pediatrics, Timisoara, Romania; 1st Pediatric Clinic University of Medicine and Pharmacy Timisoara, ICU, Timisoara, Romania

**Background:** Rett syndrome is a neurodevelopmental disorder that characterized by normal early growth and development followed by a slowing of development, loss of purposeful use of the hands, distinctive hand movements, slowed brain and head growth, problems with walking, seizures, and intellectual disability.

**Case presentation:** CA 4 years 3 months old girl admitted in our department in September 2010 for developmental regression, loss of purposeful hand movements, hand stereotypes, and seizures. The patients neonatal and perinatal history were normal (BW 3100g, BH 50cm). She could play with toys with support, she can not sit up or walk. At one and one half years she had stopped using her hands completely and at age two and one half her head growth decelerated markedly and apean seizures. According the progressive neurological problems the child was diagnosed with Rett syndrome (the genetic analise reveal a nucleotide change in the coding region of 4 exons of MECP2 in a family had a 3-month-old sibling and he was followed-up with the initial diagnosis of Rett Syndrome). At admission in our department the child have weight 19kg, height 98.5 cm (age weight 104.96;SDS -1.70 according to Prader criterias), dry rough skin, coarse, dry hair, hair loss, constipation, small feet and hands and small stature (sex weight 104.96;SDS -1.70 according to Prader criterias), dry rough skin, coarse, dry hair, hair loss, constipation, small feet and hands and small stature.

**Results:** At the admission in our departement the child have weight 19kg, height 98.5 cm (age weight 104.96;SDS -1.70 according to Prader criterias), dry rough skin, coarse, dry hair, hair loss, constipation, small feet and hands and small stature (sex weight 104.96;SDS -1.70 according to Prader criterias), dry rough skin, coarse, dry hair, hair loss, constipation, small feet and hands and small stature. Physical examination, anthropometric measuring, and thyroid ultrasound were performed. On the base of measurements BMI, height velocity and standard deviation score of mesuraments were estimated.

**Conclusions:** At the admission in our departement the child have weight 19kg, height 98.5 cm (age weight 104.96;SDS -1.70 according to Prader criterias), dry rough skin, coarse, dry hair, hair loss, constipation, small feet and hands and small stature (sex weight 104.96;SDS -1.70 according to Prader criterias), dry rough skin, coarse, dry hair, hair loss, constipation, small feet and hands and small stature. The patients neonatal and perinatal history were normal (BW 3100g, BH 50cm). She could play with toys with support, she can not sit up or walk. At one and one half years she had stopped using her hands completely and at age two and one half her head growth decelerated markedly and apean seizures. According the progressive neurological problems the child was diagnosed with Rett syndrome (the genetic analise reveal a nucleotide change in the coding region of 4 exons of MECP2 in a family had a 3-month-old sibling and he was followed-up with the initial diagnosis of Rett Syndrome).

**PAO-156**

*Central hypothyroidism secondary to maternal hyperthyroidism*

Pilar Sevilla-Ramos; Maria Alia; Esther Cid; Nerea Lopez-Andres; José Maria Jiménez-Busto

Hospital Universitario Guadalajara, Paediatric Endocrinology, Guadalajara, Spain

**Background:** Neonatal central hypothyroidism is very rare in paediatric patients. We present the case of a breast-fed baby developing central hypothyroidism when aged 2 months old, secondary to maternal Graves’ disease detected after birth.

**Results:** PA: Pregnancy monitored. Caesarean at 34 weeks due to premature breakage of membranes, APGAR 9/10. WAB: 2.570 g (P 75-90); LAB: 45 cm (P 50-75). FH: Father healthy, height 170 cm. Mother healthy, height 165 cm. Evolution during neonatal period: Admission at birth due to early asymptomatic hypoglycaemia birth. Metabolopathy screening for low TSH, with TSH of 0.03 mU/l and T4L of 1.84 ng/dl detected. Presents TA 90/43-78/40, FC 157-130 bpm during the first 5 days of life. Irritability and diarrhoea observed. Mother: TSH undetectable, T4L 2.82 ng/dl, antithyroglobulin Ab 45, antiperoxidase Ab 75, TSI Ab 13 (N<10). Follow-up at surgery: 15-day follow-up: Weight: 2.570 kg (P3), Length: 46 cm (P3), macroglossia. TSH 0.02 mU/l, T4L 1.31 ng/dl, T3 1.05 ng/dl, antithyroglobulin Ab 71 (N 0-5.6) 2.5 month follow-up: Weight: 4.250 (P3), Length: 53.

**Conclusions:** In maternal Graves’ disease the transplacental transfer of Ac TSI affects the development of the hypothalamic-pituitary-adrenal axis (HPA). Rarely, exposure to high levels of intrauterine thyroid hormones in Graves’ disease can halt the hypothalamic-pituitary-adrenal axis, leading to a hypothyroidism in the fetus that continues for a variable period of time among newborns.

**PAO-157**

*Congenital chloride diarrhea with congenital hypothyroidism in two siblings: case report*

Erdal Adal1; Atilla Ersen2; Hasan Onal1; Sezen Ugan3; Tugba Kontbay4; Ahmet Aydir1

1Ministry of Health Bakirkoy Maternity and Children Education Hospital, Pediatric Endocrinology, Istanbul, Turkey; 2Kasimpasa Military Hospital, Pediatrics, Istanbul, Turkey; 3Ministry of Health Bakirkoy Maternity and Children Education Hospital, Pediatrics, Istanbul, Turkey; 4Istanbul University, Cerrahpasa Medical Faculty, Division of Metabolic Diseases, Istanbul, Turkey

**Background:** Congenital chloride diarrhea (CCD) is a rare autosomal recessively inherited disorder causing watery stool and dehydration characterized by impairment of Cl–/HCO3 exchange.

**Objective:** Infrequency of CCD makes diagnostics difficult and CCD companying with congenital hypothyroidism has never been reported so far.

**Population:** A 7-year-old male who was followed with the diagnoses of congenital hypothyroidism, Bartter syndrome and idiopathic chronic diarrhea in different medical centers and treated with L-thyroxine and indomethacin, admitted our unit with electrolyte abnormalities and mental retardation. His medical history was notable for prolonged jaundice and congenital hypothyroidism in neonatal period. L-thyroxine was started but euthyroidism status was hardly supplied with alterations of thyroid hormones. Additionally, dehydration and metabolic alkalosis were recognized in his second months of age with the history of intraterine polyhydramnios; he was diagnosed as Bartter syndrome and indomethacin treatment was started. But all the medications until now could not heal the problems of watery diarrhea, abdominal distention and electrolyte abnormalities. Additionally, we recognized that this family had a 3-month-old sibling and he was followed-up with the initial diagnoses of congenital hypothyroidism and Bartter syndrome.

**Results:** We figured out CCD in our investigation of these two siblings that the age; small thyroid volume 1 ml (more then -2SD). We add to the treatmen L thyroxine. The evaluation after 2 month show mild improved movements but her communications with family was improved.

**Conclusions:** 1. Rett syndrome is a rare genetic disease. 2. Brain damage can be induced by synergistic mechanism of synaptic damage and neuronal metabolism 3. Are necessary more sofisticate genetic analysis to solve the link between hypothyroidism and Rett syndrome.
The results are presented in the table:

| Method and result | T1DM after 6 years. The immunological status has been observed for several
|                  | mary adrenal insufficiency recognised at age of 11 and AITD who developed
|                  | Objective and hypotheses: We report the case of 17 years old girl with pri-
|                  | with autoimmune polyendocrine syndrom type 2 (APS-2) ranges above 50%.
|                  | Background: Whilst X chromosome structural aberrations in female patients
|                  | are most frequently characterized by a short stature and Turner’s phenotype,
|                  | only several patients with strikingly different phenotype have been reported
|                  | so far.
|                  | Objective and hypotheses: To describe clinical and genetic findings in a girl
|                  | with a rare structural X chromosome rearrangement.
|                  | Methods: Physical examination, biochemical analysis, cytogenetic studies,
|                  | imaging methods, neurological and psychological investigation were per-
|                  | Results: The patient was referred at the age of 13 years because of obesity
|                  | (BMI 26.3 kg/m², +3.3 SD). She had a tall disproportionality stature (183cm,
|                  | +3.3 SD), only initial pubic hair (Tanner P2), breast enlargement was caused
|                  | by fatty tissue. No psychomotor delay or mental retardation were mentioned,
|                  | however she had to attend a special school. Basal gonadotrophin levels were
|                  | high (FSH 49.5 U/L, LH 7.5 U/L), estradiol was prepubertal (0.05 mmol/l),
|                  | that was consistent with hypergonadotrophic hypogonadism indicating go-
|                  | nadal dysgenesis. IGF1 levels and thyroid function were normal. Chromo-
|                  | Some analysis revealed chromosomal aberration - an isochromosome i(Xp).
|                  | The result was confirmed by FISH analysis 46, X, i(X) (p10), ish (STS+/+
|                  | DXZ+, SRY-). Bone age corresponded to calendar age. Ultrasound visualized
|                  | a hypoplastic uterus, ovaries were not visible. MRI of central nervous system
|                  | demonstrated slight cortical atrophy.
|                  | Conclusions: We describe a girl with tall stature, obesity, mild mental retar-
|                  | dation, gonadal dysgenesis and a rare structural rearrangement of X chro-
|                  | some. Tall stature can be explained by a triple gene dosage of SHOX (short
|                  | stature homeobox containing gene) in PAR1 (short arm pseudautosomal re-
|                  | gion) together with estrogen deficiency. Oral estrogen replacement therapy
|                  | was initiated to accelerate puberty and promote epiphyseal fusion, unfortu-
|                  | nately the therapeutic effect was diminished due to non-compliance.

**PAO-158**

**Tall stature, gonadal dysgenesis and obesity: unusual phenotype in a female with X chromosomal aberration**

Eva Al Taili, Daniela Zemkova; Drahuse Novotna

1 Charles University, 3rd Faculty of Medicine, Department of Paediatrics, Prague, Czech Republic; 2 Charles University, 2nd Faculty of Medicine, Department of Paediatrics, Prague Czech Republic; 3 Charles University, 2nd Faculty of Medicine, Department of Biology and Medical Genetics, Prague, Czech Republic

Background: Whilst X chromosome structural aberrations in female patients are most frequently characterized by a short stature and Turner’s phenotype, only several patients with strikingly different phenotype have been reported so far.

Objective and hypotheses: To describe clinical and genetic findings in a girl with a rare structural X chromosome rearrangement.

Methods: Physical examination, biochemical analysis, cytogenetic studies, imaging methods, neurological and psychological investigation were performed.

Results: The patient was referred at the age of 13 years because of obesity (BMI 26.3 kg/m², +3.3 SD). She had a tall disproportionality stature (183 cm, +3.3 SD), only initial pubic hair (Tanner P2), breast enlargement was caused by fatty tissue. No psychomotor delay or mental retardation were mentioned, however she had to attend a special school. Basal gonadotrophin levels were high (FSH 49.5 U/L, LH 7.5 U/L), estradiol was prepubertal (0.05 mmol/l), that was consistent with hypergonadotrophic hypogonadism indicating gonadal dysgenesis. IGF1 levels and thyroid function were normal. Chromosome analysis revealed chromosomal aberration - an isochromosome i(Xp).

The result was confirmed by FISH analysis 46, X, i(X) (p10), ish (STS+/+, DXZ+, SRY-). Bone age corresponded to calendar age. Ultrasound visualized a hypoplastic uterus, ovaries were not visible. MRI of central nervous system demonstrated slight cortical atrophy.

Conclusions: We describe a girl with tall stature, obesity, mild mental retardation, gonadal dysgenesis and a rare structural rearrangement of X chromosome. Tall stature can be explained by a triple gene dosage of SHOX (short stature homeobox containing gene) in PAR1 (short arm pseudautosomal region) together with estrogen deficiency. Oral estrogen replacement therapy was initiated to accelerate puberty and promote epiphyseal fusion, unfortunately the therapeutic effect was diminished due to non-compliance.

**PAO-159**

**17-years old girl with autoimmune polyendocrine syndrome type 2 – how to obtain the best metabolic control of diabetes**

Daniel Wiktowski, Ezbietta Piontek, Mieczysław Szalecki

The Children's Memorial Health Institute, Department of Endocrinology and Diabetology, Warsaw, Poland

Background: The association between Addison’s disease (AD) and type 1 diabetes (T1DM) is well recognised. The prevalence of T1DM in patients with autoimmune polyendocrine syndrome type 2 (APS-2) ranges above 50%.

Objective and hypotheses: We report the case of 17 years old girl with primary adrenal insufficiency recognised at age of 11 and AITD who developed T1DM after 6 years. The immunological status has been observed for several years before clinical diabetes onset.

Method and result: The results are presented in the table:

<table>
<thead>
<tr>
<th>Date</th>
<th>4.11.2004</th>
<th>6.03.2009</th>
<th>2.12.2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>5.00%</td>
<td>5.40%</td>
<td>9.30%</td>
</tr>
<tr>
<td>anti GAD /U/mL</td>
<td>&lt;0.9</td>
<td>0.56</td>
<td>2.11</td>
</tr>
<tr>
<td>anti IAA /U/mL</td>
<td>&lt;0.7</td>
<td>&lt;0.2</td>
<td>&lt;0.7</td>
</tr>
<tr>
<td>anti TG-AB /U/mL</td>
<td>N:30-70</td>
<td>75.9</td>
<td>183</td>
</tr>
<tr>
<td>anti TPO-AB /U/mL</td>
<td>N:30-50</td>
<td>277.9</td>
<td>1660</td>
</tr>
<tr>
<td>TSH-R-AB /U/L</td>
<td>&lt;9.0</td>
<td>&lt;5.0</td>
<td></td>
</tr>
<tr>
<td>p-ANA</td>
<td>1:320(+)</td>
<td>1:640(+)</td>
<td></td>
</tr>
<tr>
<td>p-AN2-H U/mL</td>
<td>&lt;1:10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is well known that glucocorticoid replacement therapy in patients with primary adrenal insufficiency and T1DM may lead to quite often and significant changes in insulin requirement and insulin sensitivity. That is why the multiple pen injection regimen was replaced by continuous subcutaneous insulin infusion (CSIID) after one month since the diabetes onset. There are several options of “smart” pumps like: 1) temporary basal change, 2) additional basal rate i.e., “for disease”, 3) automatically calculate meal or correction boluses, 4) continuous glucose monitoring devices with real-time display which can participate in improving and maintain good metabolic control in such patients.

Conclusions: 1. In the immunological course of diabetes, there was no increase of autoantibodies against β cell, in particular, anti-IA2 just before clinical manifestation of diabetes 2. The patient with APS requires observation for clinical signs of diabetes and glucose monitoring by the determination of HbA1c at least once/twice a year 3. Type 1 diabetes treatment commseness using personal insulin pump allows to obtain good metabolic control of diabetes in spite of insulin requirements changes consequently steroid replacement therapy 4. Insulin pump treatment will improve the quality of life in patient with APS type 2.

**PAO-160**

Abstract withdrawn.

**PAO-161**

**The evaluation of body composition and metabolic parameters in girls with central precocious puberty receiving GnRH agonist therapy**

Dogus Vural, Huseyin Demirkilic, Didem Aydogdu, Nazli Gorc, Ayfer Alkäsifoglou, Alev Ozon, Nurgun Kendermir

1 Hacettepe University, Pediatric Endocrinology, Ankara, Turkey; 2 Hacettepe University, Pediatrics, Ankara, Turkey

Background: The changes in body composition and metabolic parameters in girls with central precocious puberty during GnRHα therapy is still under debate. Objective: To evaluate the changes in BMI and metabolic parameters in girls with central precocious puberty during GnRHα therapy.

Population and methods: Thirty-nine girls (mean age 9,1±0,73 years with central precocious puberty treated with GnRHα were enrolled in the study. BMI-SDS, lipid profile, serum leptin, adiponectin and HbA1c levels were evaluated and standard OGTT was done at the beginning, sixth and twelfth month of therapy.

Results: At diagnosis; mean BMI-SDS was 1,13±0,83. Four girls (10,2%) were obese (BMI>95p). None of the patients had impaired glucose tolerance, 8 girls (20%) had insulin resistance. Dyslipidemia was observed in 35,9% at sixth month of therapy. No statistically significant difference was found in serum leptin, adiponectin, Hba1c values between baseline and sixth month of therapy. (p values 0.141, 0.433, 0.443 respectively). At diagnosis, 8 girls (20%) had insulin resistance. Dyslipidemia was observed in 35,9% at sixth month of therapy. No statistically significant difference was found in serum leptin, adiponectin, Hba1c values between baseline and sixth month of therapy. (p values 0.141, 0.433, 0.443 respectively).

Conclusions: At the beginning of therapy one fifth of girls with central precocious puberty had impaired glucose metabolism. However BMI-SDS, lipid and carbohydrate metabolism parameters did not show significant change during six months period. The results of twelfth month evaluation will shed light on the long term changes in patients with central precocious puberty under GnRHα therapy.
Re-evaluation of metabolic parameters of obese children after 5-7 years

Gulay Demirdag1; Sibel Tulgar Kinik2; Ayse Canan Yazıcı1
1Baskent University, Pediatrics, Ankara, Turkey; 2Baskent University, Pediatric Endocrinology, Ankara, Turkey

Background: Obesity beginning in the childhood continues to adulthood and becomes more complicated.

Objective and hypotheses: In this study we aimed to re-evaluate obese children with respect to obesity status and metabolic parameters after 5-7 years from the first admission.

Methods: 100 cases who admitted to our clinic for exogenous obesity were called again. 40 of them were male. Their relative BMI was calculated, serum levels of lipids, glucose, insulin, free T4,TSH were studied. There was significant. The cases were divided into 4 group according to metabolic disorders in the first visit.

Group 1: only dislipidemia (HDL<40 mg/dL, triglyceride>150 mg/dL, LDL>130 mg/dL)
Group 2: only insulin resistance (HOMA>3)
Group 3: dyslipidemia and insulin resistance
Group 4: normal

Results: At the evaluation, rel BMI decreased significantly in group 1 and 2 compared to first visit (p=0.006 and 0.034 respectively). The percentage of cases whom metabolic parameters improved to normal limits were 56% in groups 1,2,4 and 18% in the group 3.

Conclusions: Losing weight is easier in children whom have only dyslipidemia or only insulin resistance than children who have both of them. Having that metabolic disorders together makes the metabolic improvement harder. So, prevention of early stages of obesity and metabolic disorders plays important role in adulthood life quality.
Results: FISH study confirmed the supernumerary marker chromosome is originated from the 14 or 22 chromosome and includes two copies of the autosomal p-arm. 47,XXY or 47,XY,+mar ish idic(14:22). Array comparative genomic hybridization were performed with arr egh 1-22 (2853BAC)x 2, X(158BAC)x 2, Y(27BAC)x0. No pathologic gene dosage variation was detected from array-CGH. PCR and sequence analysis for Hemophilia B and LDL receptor showed c.424 + 1T, Glu > stop gene mutation in factor IX gene and missense mutation of 4th exon of LDL receptor with genotype LDLR-C188(C,Y).

Conclusions: Although no pathologic gene dosage variation was detected from array comparative genomic hybridization. Our patient still had a multiple anomalies with supernumerary marker chromosome, Hemophilia B, hypercholesterolemia and central precocious puberty. She had received GnRH agonist treatment till now.

PAO-166
Patient with congenital hypothyroidism, adrenal insufficiency, and SRY deletion: a case report
Shamita Trivedi; Carla Minotti; Carolyn Jones
Loyola University Medical Center, Pediatric, Maywood, United States

Background: SRY deletion is a rare genetic condition which can cause androgen insensitivity syndrome and ambiguous genitalia. Congenital hypothyroidism and adrenal insufficiency together with an SRY mutation are rare.

Objective and hypotheses: To determine whether congenital hypothyroidism and adrenal insufficiency have been reported in a patient with an SRY deletion. There may be a condition where congenital hypothyroidism, adrenal insufficiency, and SRY deletion occur together.

Methods: Literature search.

Results: This patient was born via in vitro fertilization at 37 weeks gestation to an Indian mother. Physical exam revealed jaundice, a broad nasal bridge, ambiguous genitalia with well-rugated empty scrotum/labia, micropenis, no hypospadias, and bilateral descended testicles. Karyotype was 46, XY and FISH analysis showed deletion for part of the SRY region that is usually caused by a copying error during spermatogenesis. LH and FSH levels were elevated, while DHEA-S, DHT, and testosterone levels were low at 0.4mg/ ml, 0.1 mg/dl, and 115ng/dl respectively. As beta-hCG stimulation test yielded no increase in testosterone, the patient was diagnosed with hypergonadotropic hypogonadism. Intramuscular injections of testosterone enanthate 25mg/month for 3 months were started with monitoring of phallic growth to follow. As his TSH level was high (19.5mU/ml) and free T4 level was low (1.3ng/dl), the patient was diagnosed with hypothyroidism. After starting levothyroxine, TSH and FT4 levels normalized. At two months of age, the patient developed hyperpigmentation. He subsequently failed an ACTH stimulation test and was therefore diagnosed with adrenal insufficiency.

Conclusions: To our knowledge this patient is a novel presentation of congenital hypothyroidism and adrenal insufficiency occurring with an SRY deletion in an in vitro baby.

PAO-167
Response to rhIGF-1 therapy in patients with primary IGF-1 deficiency
Oksana Lazareva; Sheila Perez; Juliana Predescu; Shahid Malik; Svetlana Ten; Anmit Bhangoo
State University of New York, Downstate, Pediatric Endocrinology, Brooklyn, NY, United States

Background: Patients with growth hormone insensitivity or Laron syndrome are a heterogeneous group of children with a variety of clinical phenotypes and variable severity of short stature. A relatively high prevalence of IGF-1 deficiency has been reported in ISS patients without classical Laron syndrome features.

Objective and hypotheses: To study the response to rhIGF-1 therapy in short children with Primary IGFD.

Methods: 21 children with short stature, who passed GHRH (1 mg/kg IV) stimulation test (GHI peak=15ng/ml) were included in the study. They were treated with Increlex® 0.24 mg/kg/day. Height velocity (HV) and Height (Ht) SDS were measured after 6 months of therapy.

Results: Patient’s characteristics: age 9.84±2.5 SD years, Ht -2.49 ± 0.36 SD (range -2.9 to -1.85 SDS) and IGF-1 levels -2.22 ±0.97 SD (range -3.6 to -0.7SDS). The mean birth weight was 2.86 ±0.41 kg. The average peak of GH after GHRH was 48.9±24.1 SD ng/ml. HV after 6 months of Increlex® therapy was 10.3 ± 3.9 cm/yr. There were only 3 patients in this group whose HV was less than 3 cm/yr onIncrelex® therapy. The mean change in Ht SDS was +0.35±0.33 SD after 6 months of Increlex® therapy.

Conclusions: This pilot data revealed that the rhIGF-1 therapy has good efficacy in less severe Primary IGFD. The average HV after 6 months of therapy is similar to the data on severe Primary IGFD (Ht<−3SDS, IGF-1<−3SDS) patients treated with rhIGF-1.

PAO-168
Hot nodule harboring a papillary microcarcinoma in a girl from an iodine sufficient area
Ana Tenaghi1; Horacio M. Solorz2; Javier Farias3; Horacio Bignon4; Paula Moran5; Patricia Papendiek6
1Sanatorio Güemes, Endocrinología Pediátrica, Buenos Aires, Argentina; 2Sanatorio Güemes, Departamento de Patología, Buenos Aires, Argentina; 3Sanatorio Güemes, Endocrinología, Buenos Aires, Argentina; 4Hospital de Niños Ricardo Gutierrez, Departamento de Cirugía, Buenos Aires, Argentina; 5Sanatorio Güemes, Clínica Pediátrica, Buenos Aires, Argentina; 6Hospital de Niños Ricardo Gutierrez, División de Endocrinología, Buenos Aires, Argentina

Background: Hot nodules on radionuclide imaging of thyroid are generally benign but there are reported some cases of hot nodules associated with thyroid cancer with only a few cases in pediatric age. However a relative high incidence in children’s was reported in iodine deficiency area after introduction of iodine supplementation.

Objective and hypotheses: To report a case of thyroid cancer associated with a hot nodule in a pediatric patient from an iodine sufficient area.

Methods: A 3 years old girl consulted for a one week evolution tumor in her neck, her aunt had thyroid cancer. On physical examination an approximately 2 cm firm mobile nodule on thyroid topography was palpated. Thyroid ultrasonography showed a cystic nodule of 19 x 14 x 13 mm with heterogeneous parietal polypoid mass of irregular limits in the right lobe. The rest of the gland was normal.99mTc thyroid scan showed a focal increase of the thyroid with an area of high Tc uptake in the nodule topography corresponding to a hyperfunctioning nodule with normal uptake in the rest of the gland. Thyroid function tests showed T4 9.24 ug/dl (6-14) free T4 1.44 ng/dl (0.8-2.2) T3 178 ng/dl (80-220) TSH 4.42 mUI/ml (0.27-4.2) Calcitonin and thyroid antibodies were negative. Fine needle aspiration biopsy (FNAB) showed: macrophages with hemosiderin and erythrocytes without follicular cells. Because the presence of the risk factor, irregular limits in polypoid mass and no conclusive FNAB a right hemithyroidectomy was performed.

Results: Histologic section revealed a nodular hyperplasia with lymphocytic thyroiditis. A papillary microcarcinoma of 0.25 mm was detected.

Conclusions: Hot nodules in iodine sufficient areas could be associated with malignant disease in pediatric populations too. We recommend the systematic practice of FNAB in pediatric patients with hot nodules especially if suspicious ultrasonography characters or familial history of thyroid cancer are present. The concomitance of an inflammatory process with cancer was previously reported but others studies too.

PAO-169
45,X male with ambiguous genitalia: a case report
Senay Savas Erdvey1; Bulent Hasilhandigolu2; Merih Berberoglu1; Zeynep Siklar1; Timur Tuncali2; Gulnur Gollu3; Sadiye Ekinci2; Gonul Ocal1
1Ankara University School of Medicine, Department of Pediatrics, Division of Pediatric Endocrinology, Ankara, Turkey; 2Ankara University School of Medicine, Department of Medical Genetics, Ankara, Turkey; 3Ankara University School of Medicine, Department of Pediatric Surgery, Ankara, Turkey

Background: A 45,X karyotype usually result in a female phenotype, with clinical symptoms of Turner syndrome. Rarely, the nonmosaic 45,X chromosomal constitution is associated with maleness. Maleness is usually caused by a reciprocal of the SRY gene on an autosome. These cases generally have
testes and normal male external genitalia with infertility.

Objectives and hypotheses: We herein report a male newborn who presented with ambiguous genitalia and had 45,X karyotype.

Methods: A 38-week gestation newborn with 3000 gr birthweight was admitted for evaluation of ambiguous genitalia during the neonatal period. He had predominantly male phenotype with microopenis, choorde, penoscrotal hypoplasia and nonpalpable right gonad. His left gonad was palpable in scrotal region. Ultrasonographic examination showed Mullerian structures and right sided immature gonad at pelvic area; gonad with immature testis structure at left sided in the scrotum. Laboratory evaluation on 18th day of life revealed as LH: 3.07 mIU/ml, FSH: 4.69 mIU/ml, basal testosterone: 111 ng/dl. Neither mosaicism nor a structurally aberrant Y chromosome was observed by routine cytogenetic analysis. Although FISH revealed SRY negative, it was found to be positive with PCR. Thereafter biopsies of both gonads revealed left testes with immature testicular tissue (5x3x2cm) and right streak gonad (3x2x2cm) (compact ovarian stroma with no follicles). SRY evaluation of both gonads were not done due to lack of facilities or high costs. This implies that it was genotypic 45,X with the SRY gene.

Results: The patient has been raised as male by removing Mullerian structures and streak gonad decisioning of our gender assignment team. The investigation of translocation of Y chromosome in our patient is still ongoing. We will follow clinical course of this patient for developing Turner phenotype and the capsulated tumor was removed, currently awaiting the biopsy results.

Conclusions: The presented patient was evaluated as mixed gonadal dysgenesis due to autosomal SRY translocation with 45,X karyotype. SRY should be detected by PCR, in the patient with FISH negative for Y material, before gonadal genotyping.

Results: The patient has been raised as male by removing Mullerian structures and streak gonad decisioning of our gender assignment team. The investigation of translocation of Y chromosome in our patient is still ongoing. We will follow clinical course of this patient for developing Turner phenotype and the capsulated tumor was removed, currently awaiting the biopsy results.

Conclusions: The presented patient was evaluated as mixed gonadal dysgenesis due to autosomal SRY translocation with 45,X karyotype. SRY should be detected by PCR, in the patient with FISH negative for Y material, before gonadal genotyping.

Conclusion: Presence of testicular tumors in a patient with poor control of CAH is not unusual but in our case the testicular pain associated by mistake with glucocorticoid treatment in high doses administrated in acute crisis became a major factor in raising a vicious circle of poor compliance.

PAO-170
The difficulties of investigating and treating an endocrine patient in resource limited countries
Edra Simia Masalahwa; Kandi Cathernine Muze
Muhumbi National Hospital, Paediatric and Child Health, Dar es Salaam, Tanzania

Introduction: Adrenal masses (AMs) are often discovered incidentally and are then termed adrenal incidentalomas (AIs). They are often discovered after an imaging procedure is performed that is unrelated to the adrenal gland. Less commonly, AMs are discovered as part of the clinical workup for suspected adrenal disease (e.g., Cushing syndrome). However it took us more than three months and we are not yet at the final diagnosis.

Case presentation: A 3 years old child presented with overweight. Was born prematurely. Birth weight 2.4kg and a mild birth asphyxia, current weight 18kg. On examination the weight was above 97th centile. He had a moon shaped face, striae, truncal obesity, hirsutism, pubarche and was hypertensive (117/67mmHg). Morning cortisol levels were increased. Abdominal USS showed an adrenal adenoma. Computed tomography showed a mass in the right adrenal gland. Put on ketoconazole tablets later on was operated and the capsulated tumor was removed, currently awaiting the biopsy results.

Conclusion: No diagnosis has been confirmed to date. Most of the investigations were not done due to lack of facilities or high costs. This implies that it is very difficult to have a final diagnosis and manage endocrine patients fully.

PAO-171
Vicious circle of poor compliance in a patient with congenital adrenal hyperplasia due to 21-hydroxylase deficiency - a case report
Carmen Barbu; Alina Carmen Roman; Maria Magdalena Giscan; Suzana Florea; Simona Ficea
Elias Hospital, Bucharest, Endocrinology, Bucharest, Romania

Background: Congenital adrenal hyperplasia (CAH) is a group of disorders resulting from the deficiency of one of the five enzymes required for the synthesis of cortisol. One form of gonadal abnormality in affected males with CAH is the development of testicular adrenal rests, during periods of sustained elevation of plasma ACTH levels. The prevalence of these testicular tumors between 0 and 47% has been reported, dependent on method of detection (palpation vs. ultrasound).

Objective and hypotheses: To evaluate a 17-year-old boy history, known with classic 21-hydroxylase deficiency, salt wasting type, diagnosed at birth, referred to our department with a distinct history in the context of the diagnosis.

Objective and hypotheses: To evaluate a 17-year-old boy history, known with classic 21-hydroxylase deficiency, salt wasting type, diagnosed at birth, referred to our department with a distinct history in the context of the diagnosis.

Conclusion: Presence of testicular tumors in a patient with poor control of CAH is not unusual but in our case the testicular pain associated by mistake with glucocorticoid treatment in high doses administrated in acute crisis became a major factor in raising a vicious circle of poor compliance.

PAO-172
Achondroplasia in a girl with G 1138 A mutation, response to growth hormone therapy, two and half years follow up
Saren Tawiri; Mona Altra; Heba Hassan; Solal Mohamed
1Maadi; Pediatrics, Cairo, Egypt; 2 Cairo University, Pediatrics, Cairo, Egypt; 3 Ain Shams, Pediatrics, Cairo, Egypt; 4 Ain Shams, Genetics, Cairo, Egypt

Background: Achondroplasia is the most common form of skeletal dysplasia in man, has autosomal dominant inheritance and causes extreme short stature. More than 90% of patients with achondroplasia have a G to A transversion or G to C transversion at position 1138 of the fibroblast growth factor receptor 3 (FGFR3) gene.

Objective: To evaluate the response to growth hormone of Egyptian patient with achondroplasia.

Methods: A prospective follow up study of a girl with achondroplasia. Case presentation: The girl was born on 14.9.2006, is a firstborn to non consanguineous parents. She was delivered by cesarean section with birth weight 2.00kg, height 40cm, OFC 41cm at full term, the second baby is 3 years and is unafflected. Our patient presented with short stature and large head at birth. Examination on 16.2.2011. The child is active, cheerful with average intelligence. Paternal height 180cm, maternal height 163cm, patient height 92.8 cm (+2.5 SD), upper segment 60 cm, lower segment 32.48 cm, span 85 cm, weight 18.9 kgm, OFC 55 cm. Bone age is 5.6 years. Low set ears. Skull is large with prominent forehead, flat nasal bridge, small chest compared to the abdomen, medial arm and forearm creases are prominent.

Molecular testing: Fibroblast growth factor receptor-3 (FGFR3) mutation: G1138A and G1138C mutations.


Result: One mutation G 1138 A is detected consistent with achondroplasia.

Discussion: On September 2008 he was given growth hormone (GH) 0.09 u/kg/day, patient height was 78 cm (+2 SD), GH dose increased to 0.12 u/kg/d. On February height is 92.8 cm. +2.5 SD, height velocity 6.048 cm/year.

Conclusion: Patients with achondroplasia with G 1138 A mutation may benefit from GH at a dose range from 0.09a/kg/d to 0.12a/kg/day to maintain an appropriate height velocity.

PAO-173
A case of transient pseudoaldosteronism complicated by cerebral artery infarction
Akiko Seki; Keisuke Yoshii; Masako Sakauchi; Makiko Osawa
Tokyo women's medical university hospital, Pediatrics, Tokyo, Japan

Background: Pseudohypoaldosteronism is a rare condition characterized by renal resistance to the action of aldosterone. Transient pseudohypoaldosteronism (TPHA) has been indentified in neonates and young infants with obstructive uropathy and urinary tract infection. Objective: To describe 8-month-old boy with TPHA complicated by cerebral infarction.

Case: The patient was the second child of nonconsanguineous parents and was born at a gestational age of 39 weeks after an uncomplicated pregnancy. Birth weight was 2710 gr, Apgar score 7/7/7/7/7. Physical examination revealed normal external appearance, small head circumference 31 cm, weight 18.9 kgm, OFC 55 Cm. Bone age is 5.6 years. Low set ears. Skull is large with prominent forehead, flat nasal bridge, small chest compared to the abdomen, medial arm and forearm creases are prominent.

Molecular testing: Fibroblast growth factor receptor-3 (FGFR3) mutation: G1138A and G1138C mutations.


Result: One mutation G 1138 A is detected consistent with achondroplasia.

Discussion: On September 2008 he was given growth hormone (GH) 0.09 u/kg/day, patient height was 78 cm (+2 SD), GH dose increased to 0.12 u/kg/d. On February height is 92.8 cm. +2.5 SD, height velocity 6.048 cm/year.

Conclusion: Patients with achondroplasia with G 1138 A mutation may benefit from GH at a dose range from 0.09a/kg/d to 0.12a/kg/day to maintain an appropriate height velocity.
weight was 3,348g (75-90 percentile). Family history was unremarkable. He showed poor weight gain from the age of 4-month-old. He referred to our hospital for fever and irritability at 8-month. At admission, his weight was 6500g (1.1±1.0 h, p=0.05).

Results: Among 270 episodes of DKA, 2 populations were distinguished: 1) patients in whom type 1 diabetes was revealed by DKA and 2) known type 1 diabetic patients represented 53% of all episodes of DKA and predominantly concerned young patients (58% below 10 years), males (56%), patients with polyuria and polydipsia with a mean duration of 20 days, and patients with a weight loss of a mean of 12.5%. Secondary DKA in known patients represented 47% of all episodes of DKA and predominantly concerned adolescents (90% above 10 years), females (56%) and patients with psychosocial risk factors (61%). 62% of all patients admitted inadequate self-management. In this group, 11 patients were admitted to the PICU between 3 and 12 times and represented 48% of all episodes of DKA. We did not find any significant difference in DKA severity between both above-mentioned populations. All 4 encountered complications during DKA correction (cardiovascular failure, hypoglycemia, cerebral edema and hypokalemia) had a favorable outcome in our study.

Conclusions: In order to limit the incidence of DKA and its complications, it is necessary to reduce the delay between the onset of type 1 diabetic symptoms and the time of diagnosis by providing better education to health care providers and to the general population.
We suggest to diffuse treatment guidelines to healthcare providers to limit iatrogenic risks, to educate patients on management of situations at risk for DKA and to intensify the follow up of patients at risk of relapse.

**Follow-up of girls with complete androgen insensitivity syndrome (CAIS) and gonads in situ during and after puberty – two case reports**

**Patients and methods:** In two sisters with a 46,XY karyotype we identified a M749V mutation in exon 5 of the androgen receptor gene. According to the family’s request the gonads remained in situ. The girls were first seen in our clinics at the age of 13.6 and 11.3 years. Follow-up visits every six months included clinical assessment of growth and puberty, gonadal ultrasound, hormone profiles (LH, FSH, SHBG, testosterone and estradiol) and tumor markers (HCG and AFP).

**Results:** Both girls showed a CAIS phenotype with normal female external genitalia and absence of Mullerian duct remnants. At the age of 15.8 years the older sister had normal breast development without growth of pubic hair. Hormone profiles showed elevated LH levels and FSH, testosterone, estradiol and SHBG levels within the adult male reference ranges. Gonadal ultrasounds and tumor markers revealed no pathology. The younger girl hadn’t shown any signs of puberty at the age of 12.7 years, but stimulated gonadotropins and testosterone levels were detected with prepubertal estradiol and SHBG levels. Ultrasonic scans displayed unsuspicous testes in the inguinal canals.

**Conclusions:** The two sisters are undergoing spontaneous puberty, at which they profit from their specific endogenous hormone production. A follow-up protocol has been designed for early diagnosis of malignancy. However further studies are necessary to evaluate the safety of such protocols and establish criteria for intervention.

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**Invasive pituitary adenoma secreting growth hormone, TSH, prolactin and α-subunit in a 12-year-old girl**

**Background:** Prolactinoma is the most common secreting pituitary adenoma, growth hormone (GH) secreting adenomas are less common and thyrotropinoma only constituting 1% of all pituitary adenomas.

**Objective:** 12-year-old girl first presented with headaches and worsening of vision of a left eye that lasted for 4 months. Clinical symptoms included: overgrowth, signs of acromegaly, hyperthyroidism and galactorrhea. Ophtalmological examination revealed signs of raised intracranial pressure. Hormonal tests showed: high GH levels with lack of inhibition in an oral glucose tolerance test, high IGF-1, both free thyroid hormones and TSH levels were high with no reaction after TRH administration and very high concentration of prolactin (PRL) and α-subunit.

Head MRI revealed a sellar invasive tumour, size 80x55x50 mm, penetrating to interior jugular arteries and optic nerves. A stereotactic biopsy was performed, with tumour hernorrhage complication. Histopathological and immunohistochemical examinations confirmed the diagnosis of invasive pituitary adenoma secreting growth hormone, TSH, prolactin and α-subunit.

**Conclusions:** Survivors of childhood ALL, especially those treated with cranial radiotherapy at young age, are at increased risk for adult short stature. Our results do not appear in accordance with similar studies, but this is probably due to the small number of patients examined. We are collecting further data, also to evaluate the influence of newer treatment regimens on final height.
Ayla Guven1; Heves Kirmizibekmez2; Ayse Nurcan Cebeci3; Mieczyslaw Szalecki3The Children’s Memorial Health Institute, Department of Endocrinology and Diabetology, Warsaw, Poland

Background: Intracranial germinoma is a rare malignant tumor, only constituting 3-5% of paediatric intracranial tumor. It usually occurs in children and young adults and it’s highly sensitive to radiotherapy and/or chemotherapy. Lymphocytic hypophysitis is an uncommon autoimmune disease in which the pituitary function is usually impaired due to it’s infiltration by lymphocytes, plasma cells and macrophages. There are just a few cases of coincidence of this two pathologies described in the literature.

Objective: We present a patient with coincidence of germinoma and lymphocytic hypophysitis. 9-year-old boy presented polypidiosis, poluria and headaches that lasted for 2 years. Neurological and ophthalmological examinations were normal. Wasospresin test confirmed central diabetes insipidus, DDAVP treatment was introduced. TSH, free thyroid hormones, ACTH, cortisol and IGF-1 levels were normal. Tumour markers, α-fetoprotein and βHCG, both in treatment was introduced. TSH, free thyroid hormones, ACTH, cortisol and IGF-1 levels were normal. Wasopressin test confirmed central diabetes insipidus, DDAVP treatment was introduced. TSH, free thyroid hormones, ACTH, cortisol and IGF-1 levels were normal. Wasopressin test confirmed central diabetes insipidus, DDAVP treatment was introduced. TSH, free thyroid hormones, ACTH, cortisol and IGF-1 levels were normal. Wasopressin test confirmed central diabetes insipidus, DDAVP treatment was introduced. TSH, free thyroid hormones, ACTH, cortisol and IGF-1 levels were normal. Wasopressin test confirmed central diabetes insipidus, DDAVP treatment was introduced. TSH, free thyroid hormones, ACTH, cortisol and IGF-1 levels were normal. Wasopressin test confirmed central diabetes insipidus, DDAVP treatment was introduced.

Conclusions: Treatment with somatostatin analogue and bromocriptine is very effective in the therapy of GH, TSH, PRL secreting pituitary adenomas, resulting in not only normalisation of hormones levels but also tumour size regression with better prognosis for the radical surgery.

StAR (= steriodogenic acute regulatory protein) deficiency: case report
Ayla Guven1; Heves Kirmizibekmez2; Ayse Nurcan Cebeci3; Bernin Gucluc4; Melsan Caglar4; Hamit Okur5
1Goztepe Educational and Research Hospital, Pediatric Endocrinology, Istanbul, Turkey; 2Goztepe Educational and Research Hospital, Pathology, Istanbul, Turkey; 3Goztepe Educational and Research Hospital, Pediatric Surgery, Istanbul, Turkey

Introduction: Lipoid congenital adrenal hyperplasia is an autosomal recessive disease due to deficiency of StAR protein that transports cholesterol into the mitochondria for adrenal steroid synthesis. StAR is also essential for gonadal steroidogenesis and is encoded by a gene on chromosome 8p11.2.

Case: 6 month female patient was hospitalized for vomiting and lose in weight started at 4th month. She had severe hyponatremia (Na: 108 mmol/L) and dehydration. She has been referred for persistent hyponatremia and subsequently developed hyperkalemia. She was born at 33rd gestational week, birth weight was 1750 gr. Parents were second degree related, infant death or sexual development disorder was not described in family history. Physical inspections revealed paleness, vital findings were normal. Dehydration or hyperpigmentation was not present. Height: 58 cm (10-25p), weight: 4 kg (< 3p), external genitalia seemed normal female and systemic examination findings were normal. Na: 130 mEq/L, K: 6.4 mEq/L, Glucose: 82 mg/dl, baseline ACTH was high, DHEA-S was normal. In classical ACTH stimulation test, mineralocorticoid, glucocorticoid and androgen precursors had not been increased. Significant hyperplasia of both adrenal glands observed in magnetic resonance imaging. Carotytype was 46 XY, t(4;9)(p16.6;p13.3) and a paternal translocation was determined.

Laparoscopic investigation showed infra-abdominal located testes, any Mullerian structure was not found. There was no increase in testosterone after three days of stimulation with hCG 1500 U/dose and gonadectomy was performed. She is still receiving hydrocortisone (14mg/m2/day) and fludrocortisone (0.1 mg/day) treatments.

Result: StAR protein deficiency is the most severe and rare form of steroid biosynthesis disorders. Mineralocorticoids, glucocorticoids and androgens can not be synthesized and ACTH level is high. Normal DHEA levels helps for differentiating from 3 beta-hydroxysteroid dehydrogenase deficiency. Carotytype analysis and advanced investigations if needed should be performed.

A rare case of early onset of Cushing disease
Agnieszka Lecka-Ambrozia1; Elzbieta Moszczynska; Mieczyslaw Szalecki3The Children’s Memorial Health Institute, Department of Endocrinology and Diabetology, Warsaw, Poland

Background: Cushing disease is the most common cause of hypercortisolaemia in adults and children over 7 years of age, whereas in children under 7 years adrenal tumours predominate. We present a case of Cushing disease in a 5-year-old boy.

Objective: The patient first presented at the age of 4,5 years with a rapid weight gain, growth arrest and symptoms of premature adrenarche. Clinical examination revealed central obesity, hirsutism, plethora, hypertension, psychological disturbances, puberty stage: A2, P2, testes 3 ml. Laboratory findings showed hypercortisolaemia (54,3 µg/dl in the morning, 39,2 µg/dl at midnight), hyperandrogenaemia, high level of ACTH (162, 375 pg/ml). CRH stimulation and Dexamethasone suppression tests were performed, confirming the pituitary ACTH overproduction. However, a head MRI didn’t revealed a pituitary adenoma.

An abdomen CT scan showed normal adrenals. To exclude an ectopic ACTH syndrome a somatostatin receptor scintigraphy was performed. There were two noncharacteristic lesions in a left lung. The levels of neurospecific enolase and chromogranin A were normal. Inferior petrosal venous sampling was unsuccessful due to atypical course of left jugular veins. Repeated head MRI showed normal pituitary gland. Due to excessive clinical symptoms of hypercortisolaemia, on the basis of the results of hormonal tests, a neurosurgical treatment was planned.

Conclusion: Although the adrenal tumours are the most common cause of Cushing syndrome in young children there is a necessity of wide diagnostic procedures in case of hypercortisolaemia and normal imaging examinations.

References:
Different skeletal maturation patterns in patients with constitutional delay of growth (CDG) and growth hormone deficiency (GHD)

Sandra Barth, Stefan A. Wudy
Justus Liebig University, Division of Paediatric Endocrinology and Diabetology, Center of Child and Adolescent Medicine, Giessen, Germany

Background: The determination of bone age is one of the most important criteria to diagnose and work clinically with short stature.

Objective and hypotheses: The study aimed to identify disparities in the level of phalangeal bone (PH), metacarpal bone (MC) carpal bone (CP) and radius/ulna (RU) - development in patients with CDG or GHD.

Methods: Left hand radiographs of patients with CDG (bone age retardation > 1 yr; no organic diseases; family history of delayed growth and puberty) were compared with those of untreated GHD patients (maximum stimulated GH peak <5µg/l). In each patient PH, MC, RU, and CP-bone age were calculated by the method of Greulich/Pyle.

Results: In the CDG cohort (13 males, 2 females, mean age 10.2 yr) bone age was retarded on average by 2.0 years. Differences in the developmental stages of PH, MC, CP and RU bone were identified as shown in table 1. Likewise, the GHD group (13 males, 2 females, mean age 5.7 yr) showed delayed bone maturation as revealed in table 1. In GHD patients primarily carpal bone development was delayed, whereas in CDG patients the maturity of metacarpal bones was primarily delayed.

Conclusions: The pattern of bone maturation as assessed by left hand radiographs is different between patients with CDG and GHD. We suggest that the extreme delay in carpal bone maturation could be used as a marker for GHD in the assessment of short stature.

<table>
<thead>
<tr>
<th>Chronicological age Mean in yr</th>
<th>PH Mean in yr (delay in %)</th>
<th>MC Mean in yr (delay in %)</th>
<th>CP Mean in yr (delay in %)</th>
<th>RU Mean in yr (delay in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with CDG</td>
<td>10.2</td>
<td>8.1 (21%)</td>
<td>7.4 (27%)</td>
<td>8.2 (20%)</td>
</tr>
<tr>
<td>Patients with GHD</td>
<td>5.7</td>
<td>4.8 (16%)</td>
<td>4.4 (23%)</td>
<td>3.5 (39%)</td>
</tr>
</tbody>
</table>

An unusual presentation in an adolescent with parathyroid adenoma: tendinitis

Selim Kurtoglu1; Leyla Akkin1; Salih Ozgöcmert1; Mustafa Kendirci1; Nilhan Solmaz2; Sema Oncu1
1Erciyes University Faculty of Medicine, Pediatric Endocrinology, Kayseri, Turkey; 2Erciyes University Faculty of Medicine, Physical Therapy and Rehabilitation, Kayseri, Turkey; 3Erciyes University Faculty of Medicine, Pediatrics, Kayseri, Turkey

Background: Primary hyperparathyroidism (PHPT) in children and adolescents is a rare condition. PHPT is usually sporadic and caused by parathyroid adenoma. Patients may present with bone pain, proximal myopathy, bony deformities, fractures, renal calculi, neck swelling or acute pancreatitis.

Case: We describe an unusual presentation for PHPT in a 15-yr-old male patient. He presented with difficulty in walking due to swelling of the ankles bilaterally. Ultrasonography revealed intratendinous calcific nodules in both achilles tendons. Serum biochemistry showed hypercalcemia and hypophosphatemia. Serum parathormone level was found high (512 pg/ml N:4.5-36).

Parathyroid scanning suggested parathyroid adenoma. Parathyroidectomy was performed and the diagnosis of parathyroid adenoma was confirmed histopathologically. The family history was negative for multiple endocrine neoplasim syndrome. The intervention was followed by normalization of phosphocalcic profile and improvement of signs and symptoms of the patient.

Conclusion: We suggest that hyperparathyroidism should be kept in mind in the differential diagnosis of tendonopathies.
LEOPARD syndrome: clinical characteristics and molecular study

Claudia Heredia1; Lidia Castro-Feijóo1; Emilia Balboa2; Jesús Barreiro3; Paloma Cabanas1; Isabel Martínez1; Francisco Barros1; Manuel Pombo1

1Hospital de Santiago de Compostela, Universidad de Santiago de Compostela, Unidad de Endocrinología Pediátrica, Crecimiento y Adolescencia, Santiago de Compostela, Spain; 2Fundación Publica Galega de Medicina Xenomorfa, Ciberer, Medicina Molecular, Santiago de Compostela, Spain; 3Hospital de Santiago de Compostela, Cardiología Pediátrica, Santiago de Compostela, Spain

Background: LEOPARD syndrome (LS) is an autosomal dominant disorder and features overlap closely with those observed in Noonan syndrome (NS). PTPN11, BRAF and RAF1 are genes known to be associated with LS. The characteristics are including lentigines and cardiac defects.

Methods: Three patients were diagnosed with LS and required the presence of lentigines with at least one of the cardinal features outlined by Vroman et al. We made a mutational analysis: Cyclic sequencing was performed after PCR amplification of all the encode regions and the exon/intron boundaries of PTPN11.

Results: There were two female (2.5 years and 7.3 years) and one male patient (13.4 years). Phenotypically, the two girls are typical faces of NS; in all patients we observed low-set ears, high palatal arch and epicanthal folds; in two patients we found pterigium colli and ocular hypertelorism. Cardiac anomalies were detected in two patients: hypertrophic cardiomyopathy (HCM) and two patients with ECG anomalies (left axis deviation and left anterior hemiblock). In all patients, reveals the presence of multiples lentigines appeared during childhood; one girl has conductive deafness, actually is solved. In the three patients had short stature before -2SDS and twice with normal growth velocity for age. One patient had mild mental retardation (IQ75-86) and other patient delayed psychomotor development. Mutational analysis: We found three different mutations in the PTPN11 gene: G466A, T468M and Y279C. These mutations have been reported in the literature associated with LS. The mother of the boy also had the same mutation as his son and once girl the mutation occurred de novo.

Conclusions: LS is a rare genetic disorder, the major features are lentigines, cardiac defects as HMC, hypertelorism, short stature and variable degree of neurological disability. All patients need close follow-up by pediatricians and might require early intervention, moreover the molecular analysis enables us to confirm the diagnosis and make genetic counseling diagnosis more accurate.

Disorders of sex development –DSD-(46,XX ovotestis) in 3 children of Africa

Amaya Rodriguez1; Amaia Vela1; Gema Grau Bolado1; Francisco Oliver1; Jose Luis Blanco2; Luis Castaño3

1Cruceros Hospital, Pediatric Endocrinology, Barakaldo, Spain; 2Crucers Hospital, Pediatric Urology, Barakaldo, Spain; 3Crucers Hospital, Research Department, CIBERER, Barakaldo, Spain

Background: The ovotestis DSD (OMIM # 235600) is characterized by histological presence of testicular and ovarian tissue in the gonads of the same individual. Karyotype is usually 46 XX (60-100%), SRY negative. The most common form of presentation is ambiguous genitalia at birth. Biopsy of gonad around its longitudinal axis is mandatory to avoid misdiagnosis of mixed forms. Frequency of DSD in Africa is high in some series (51% in South Africa vs 8% in Brazil).

Population: We report 3 cases of ovotestis DSD from Mauritania, raised as males. They have different degrees of penile curvature and micropenis, proximal hipoplasias, bifid scrotum and unilateral or bilateral cryptorchidism. In 2 of them a gonad was palpable. No uterus was found. 17OH-progesterone and DHEA-S were in the normal range. Karyotype 46 XX, SRY gene negative. Gonadal biopsy was performed in cases 1 and 3. In case 2, macroscopic diagnosis of bilateral ovotestis was made (Table 1)

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penile gonad</td>
<td>Ovotestis</td>
<td>Ovotestis</td>
<td>Ovary</td>
</tr>
<tr>
<td>Palpable gonad</td>
<td>Right</td>
<td>Left</td>
<td>No</td>
</tr>
<tr>
<td>LH</td>
<td>2</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>FT</td>
<td>6.5</td>
<td>3.9</td>
<td>6</td>
</tr>
<tr>
<td>FT/FSH</td>
<td>2</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>FT/FSH</td>
<td>6.5</td>
<td>3.9</td>
<td>6</td>
</tr>
<tr>
<td>FT</td>
<td>2</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>LH</td>
<td>6.5</td>
<td>3.9</td>
<td>6</td>
</tr>
</tbody>
</table>

Penile curvature correction was performed with penoscrotal transposition and testis/ovotestis orchidectomy, with removal of ovary and internal female genitils any (Case 1). Subsequently, two-stage urethroplasty was performed. In Case 2, treatment of micropenis with testosterone ointment 2% was carried out with good response.

Conclusions: The diagnosis of ovotestis DSD should be considered in children of African origin with ambiguous genitalia. The most common presentation is the ovotestis (44-64%). They are usually reassigned male because they have already been raised as males in their origin country.

Evolution of height in patients with classic congenital adrenal hyperplasia –CAH- and its relation to control of hyperandrogenism and dose of glucocorticoids

Amaya Rodriguez1; Natalia Panaglia2; Amaia Vela; Gema Grau Bolado3; Soraya Ibarraquere; Ixaso Rica1

1Cruceros Hospital, Pediatric Endocrinology, Barakaldo, Spain

Background: CAH is often associated with loss of height in relation to target height –TH-, which is associated with hyperandrogenism and complexity of glucocorticoid treatment.

Objective: To assess the final height – FH- in CAH patients and its relationship with the dose of steroids and control of hyperandrogenism. To determine if there is a period of age when the height impairment is greater.

Methods: 16 patients (9M/7F) with 8 salt-wasting form (SW) and 8 simple virilizing (SV) diagnosed between 1978 and 2006. 10 patients were classified according to the mutation, the rest by the symptoms. We assessed target height in SD and final height in SD. We compared 17 OHP levels and glucocorticoids dose (mg/m2) with SD of height at different ages.

Results: There were no significant differences between FH and TH neither by gender comparison nor by clinical form (SW vs. SV)-Table 1-

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>M (n=5)</th>
<th>F (n=3)</th>
<th>SW (n=4)</th>
<th>SV (n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH (SD)</td>
<td>-0.78±0.8</td>
<td>-1.32±0.5</td>
<td>-0.54±0.7</td>
<td>-1.43±0.3</td>
</tr>
<tr>
<td>FH (SD)</td>
<td>-1.1±1.4</td>
<td>-1.15±1.9</td>
<td>-0.27±1.3</td>
<td>-1.96±1.1</td>
</tr>
</tbody>
</table>

Average age (weeks) at diagnosis was 2.64 for SW and 8.14 for SV (1.5-255). No correlation (Spearman Rho) was found between height (SD) and 17 OH-Progesterone levels or mean glucocorticoids dose per body surface during the prepubertal period (Table 2).

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>2</th>
<th>4</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (SD)</td>
<td>-0.4±1.7</td>
<td>-0.3±1.4</td>
<td>0.07±0.7</td>
</tr>
<tr>
<td>Glucocorticoids/m2</td>
<td>14.8±5</td>
<td>14.5±5</td>
<td>14.7±4</td>
</tr>
</tbody>
</table>

Conclusions: No significant loss of height in relation to TH was observed in childhood. Two cases of short FH (2SD) were associated with late diagnosis (SV forms) and familial (genetic) short stature.
PAO-192
Generalised arterial calcification of infancy - a novel mutation of the ENPP-1 gene
Vishal Mehta1; Sanjay Gupta1; Rupal Patel1; David Horton1; Eamonn Sheridan1; Frank Rutsch2
1Hull Royal Infirmary, Paediatrics, Hull, United Kingdom; 2St James' university hospital, Department of Clinical Genetics, Leeds, United Kingdom; 3Munster University Children’s Hospital, Paediatrics, Munster, Germany

Background: Generalised Arterial Calcification of Infancy (GACI) is a severe autosomal recessive disorder characterized by calcification and stenosis of large and medium sized arteries. Although many affected children die in early infancy approximately 34% children would be expected to survive beyond infancy. Inactivating mutations of the Ectonucleotide Pyrophosphatase/Phosphodiesterase-1 (ENPP-1) gene have been implicated in many cases of GACI and more recently, in causation of hypophosphatasaemic rickets.

Case report: A female baby was born of on-consanguineous Caucasian parents, at 29 weeks of gestation with evidence of GACI on antenatal scans. She died within 24 hours of birth secondary to congestive cardiac failure. Her female sibling was born at 31 weeks of gestation and was diagnosed antenatally to have complex congenital heart disease including hypoplastic left ventricle, double outlet right ventricle, arterio-pulmonary window and idiopathic arterial calcification. A postnatal scan confirmed these findings. Due to very poor prognosis of this condition, after extensive discussion with parents and paediatric cardiologist it was decided not to actively treat her cardiac condition. Molecular analysis of the ENPP1 gene showed two novel nonsense mutations on Exon1 (c. DelGC 190/191, p. A64A fsX11) and Exon21 (c. 2230 C>T, Q744X). At two and half years of age she started showing evidence of phosphaturia and hypophosphataemia.

Discussion: Within last 20 years, anecdotal GACI cases of survival beyond infancy with spontaneous regression of calcification have been reported. Risk factors which lead to survival beyond infancy are poorly understood but hypophosphataemia and treatment with bisphosphonates was associated with survival in a large retrospective study. The presence of a novel mutation in our case is unlikely to explain the association with complex CHD but this is the first reported case of such association. In our case, the long term outcome and survival could be affected by pulmonary hypertension, despite bisphosphonate treatment.

Conclusions: Since it is a rare disease, the number of patients is low, so that further investigations are needed with larger series and long-term follow-up.

PAO-194
Pattern of inheritance and analysis of clinical and cerebral MRI features of familial cases of central precocious puberty
Mariangela Cisternino1; Laura Losa1; Vania Giunta1; Francesca Marabotto1; Gabriele Rulli1; Luisa Strocchio1; Arianna Zaroli1; Orsetta Zuffardi2
1University of Pavia, Department of Pediatrics - IRCCS Fondazione Policlinico San Matteo, Pavia, Italy; 2University of Pavia, Department of Human Genetics, Pavia, Italy

Background: Many clinical observations show that central precocious puberty (CPP) may be in some cases familial. However, the scientific support to this assumption remains sparse up to now.

Objective and hypotheses: The aim of the present study was to define a pattern of inheritance of familial CPP, and to identify possible clinical differences between familial (FPP) and sporadic (SPP) forms of CPP.

Methods: We studied 110 patients affected by CPP (104 F; 6 M). The family tree of each patient was analysed and all information regarding the age of puberty and of menarche, and the presence of CPP among first and second degree relatives was collected.

Results: Forty-one cases (37.3%; 40 F; 1 M) met the criteria for FPP and the remaining 69 cases (62.7%; 64 F, 5 M) were SPP. The FPP showed a pattern of inheritance that was autosomal dominant in 24 (58.5%) cases, autosomal recessive in only 1 (2.5%) case. The age at onset and the age at diagnosis of CPP did not differ between FPP and SPP, the girls with FPP showed a higher BMI-SDS than girls with SPP (2.77 ± 2.28 SD vs 1.72 ± 1.71SD; P=0.0402) and a greater bone age acceleration (2.12yrs ± 1.28 SD vs 1.56yrs ± 1.32 SD; P=0.0275). MRI showed CNS anomalies in 14/69 (20%) children with SPP and in 7/41 (17%) children with FPP.

Conclusions: A familial origin was found in 1/3 of cases with CPP. Girls with FPP have a higher BMI and bone age maturation than those with SPP. CNS abnormalities were found either in SPP either in FPP and do not allow to exclude the need of performing cerebral MRI in FPP. The high prevalence of FPP suggests a careful inquiry regarding precocious puberty in young siblings and first-degree cousins of a child diagnosed with CPP.
**PAO-195**

**Effectiveness of gonadotropin-releasing hormone analogue treatment in children with central precocious puberty with respect to bone age acceleration before the therapy**

Irena Bobeff*1; Diana Bobeff*2; Joanna Smyczynska*3; Barbara Pniewska-Slark*1; Maciej Hilczer*1; Andrzej Lewinski*1

*1Polish Mother's Memorial Hospital - Research Institute, Department of Endocrinology and Metabolic Diseases, Lodz, Poland; *2Medical University of Lodz, Medical Faculty, Lodz, Poland; *3Medical University of Lodz, Department of Pediatric Endocrinology, Lodz, Poland

**Abstract**

**Background:** Central precocious puberty (CPP) is defined as the onset of puberty in girls and boys before the age of 8 and 9 respectively. It has a higher incidence in girls. Bone age is almost always advanced. The treatment of choice is long term depot gonadotropin-releasing hormone analogue (Gn-RHa). The goal of mentioned therapy is to inhibit puberal development and improve the height prognosis.

**Objective and hypotheses:** The aim of this research was to evaluate the influence of GnRHa therapy in children with CPP on the height prognosis depending on pretreatment bone age.

**Methods:** The group of 62 patients with diagnosed CPP was enrolled in the study: 48 girls and 14 boys. Patients were treated with GnRH analogues depot – triptorelin 3.75 mg. For all the patients, the following pre- and post treatment parameters have been calculated and expressed as SDS: height, predicted adult height (PAH), bone age/chronological age (BA/CA) and bone age/height age (BA/HA). Patients were divided in two groups. Group A comprised those children who began their treatment with BA consistent or slightly advanced in relation with CA and HA. Group B gathered those patients whose BA was definitely advanced with respect to CA and HA.

**Results:** Height prognosis improvement was observed in group B (in children whose BA before treatment was definitely advanced with respect to CA and HA). There was no height prognosis improvement noticed in the group A whose BA before treatment was definitely advanced with respect to CA and HA. Height prognosis improvement was observed in group B (in children whose BA before treatment was definitely advanced with respect to CA and HA). Group B gathered those patients whose BA was definitely advanced with respect to CA and HA.

**Conclusions:** The therapy with GnRHa proved to be effective in improving height prognosis only in children with advanced BA.

**Results:**

- **BA/CA**
  - age before GnRHa [years]:
    - advanced: 7.4±2.2
    - normal: 9.3±1.7
  - hSDS before GnRHa: 1.84±1.14
  - PAH SDS before GnRHa: -0.95±0.35
  - therapy duration [years]: 3.7±2.2
  - hSDS after GnRHa: 1.02±1.34
  - PAH SDS after GnRHa: -0.42±1.15
  - ΔPAH SDS: 0.53±0.99

- **BA/HA**
  - age before GnRHa [years]: 7.8±2.5
  - hSDS before GnRHa: 0.97±1.15
  - PAH SDS before GnRHa: -1.40±0.93
  - therapy duration [years]: 3.7±2.3
  - hSDS after GnRHa: 0.32±1.17
  - PAH SDS after GnRHa: -0.96±0.93
  - ΔPAH SDS: 0.42±0.94

**Conclusions:** The therapy with GnRHa proved to be effective in improving height prognosis only in children with advanced BA.

**PAO-196**

**A 9 year old prepubertal girl with genital bleeding: premature menarche?**

Volker Böttcher*1; Patricia G Oppelt*2; Katharina Heusinger*2; Matthias W Beckmann*3; Helmut G Dörr*3

*1University of Erlangen-Nürnberg, Pediatric Endocrinology, Erlangen, Germany; *2University of Erlangen-Nürnberg, Gynecology and Obstetrics, Erlangen, Germany

**Background:** Isolated premature menarche is a rare condition with unknown etiology. There is a predilection of FSH secretion. Before the diagnosis is accepted, all other causes of vaginal bleeding should be excluded.

**Case presentation:** A 9 year old German girl otherwise healthy was presented with suspected genital bleeding. Vaginal bleeding was at first assumed by the mother 5 months age when she noted a blood-stained panty of her daughter. Any traumatic injuries or sexual abuse were denied. The girl did not report on abdominal pain, dysuria, incontinence or fever. Physical examination showed a prepubertal girl (height 131 cm, weight 30.3 kg, BMI 17.7 kg/m², RSA, RR 104/65 mmHg) with fine pubical hairs ( Tanner P2), no thalcaria and normal, non-estrogenized external genitalia. Basal hormone levels were in the normal range for age (LH < 0.1 mU/mL, FSH 1.3 mU/mL, estradiol < 5.0 pg/ml, FT 11.7 pg/mL, TSH 0.75 mU/mL, DHEAS 813 ng/ml). After GnRH stimulation, FSH increased more (13.2 mU/ml) than LH (5.4 mU/ml). Pelvic ultrasound showed a normal prepubertal size of uterus and ovaries. Bone age was not accelerated. The girl was presented to the pediatric gynaecologists. By vaginoscopy and urethrescopy a polypos mass was found located at the upper vaginal fornix beginning at the external urethral orifice. At the same time an exploratory excision of the polypos mass was extracted, and histologically confirmed as haemangioma. Currently, it is decided to wait and see in order not to vulnerate the sphincter of the urethra by any therapeutic procedures (e.g. laser- and cryotherapy).

**Summary:** In our case vaginal bleeding was due to a haemangioma. Thus, the diagnosis of premature menarche could be excluded.

**Conclusions:** Haemangiomas of the urethra and vagina are extremely rare in childhood. In a large series of 62 girls (< 10 yrs) genital bleeding resulted in 74% from a local lesion of the vagina (vulvovaginitis > urethral prolapse, trauma > foreign bodies, tumors). Haemangiomas were not reported (Maia et al. Int J Gynecology & Obstetrics 1995).

**PAO-197**

**Autoimmune thyroiditis and phenilketonuria: a new association**

Giovanni Corsello*1; Marina Caserta*2; Cinzia Castanae*1; Angela Mortillaro*2; Silvano Bertelloni*3; Maria Cristina Maggio*1

*1University of Palermo, Universityary Department, Palermo, Italy; *2ARNAS Civico, IV Maggiore, Palermo, Italy; *3University of Pisa, Pediatric Endocrinology, Division of Paediatrics, Department of Reproductive medicine and Paediatrics, Pisa, Italy; *4University of Palermo, Universityary Department “Materno-Infantile”, Palermo, Italy

**Background:** Phenylketonuria (PKT) is an inherited metabolic disorder characterised by an absence or deficiency of the enzyme phenylalanine hydroxylase. The neonatal screening and the early treatment, with a low-phenylalnine diet, prevent developmental delay and support normal growth. There is no evidence of endocrine disorders or of autoimmune diseases associated with PKT.

**Method:** We describe two cases of unrelated girls affected by PKT with a clinical presentation of thyroid disease.

**Results:** G.A. 14 years, born SGA showed a poor growth from the first years. GH treatment was purposed but never started for the poor familial compliance. Stature: 133,5 cm (<-4SDS); weight: 29 kg; bone age: 13 years, pubertal stage: PH2B2-3. Hormonal tests evidence: TSH: 199; fT3: 3,19; fT4: 11.7 pg/ml, FT 11.7 pg/mL, TSH 0.75 mU/mL, DHEAS 813 ng/ml). After GnRH stimulation, FSH increased more (13.2 mU/ml) than LH (5.4 mU/ml). Pelvic ultrasound showed a normal prepubertal size of uterus and ovaries. Bone age was not accelerated. The girl was presented to the pediatric gynaecologists. By vaginoscopy and urethrescopy a polypos mass was found located at the upper vaginal fornix beginning at the external urethral orifice. At the same time an exploratory excision of the polypos mass was extracted, and histologically confirmed as haemangioma. Currently, it is decided to wait and see in order not to vulnerate the sphincter of the urethra by any therapeutic procedures (e.g. laser- and cryotherapy).

**Summary:** In our case vaginal bleeding was due to a haemangioma. Thus, the diagnosis of premature menarche could be excluded.

**Conclusions:** Haemangiomas of the urethra and vagina are extremely rare in childhood. In a large series of 62 girls (< 10 yrs) genital bleeding resulted in 74% from a local lesion of the vagina (vulvovaginitis > urethral prolapse, trauma > foreign bodies, tumors). Haemangiomas were not reported (Maia et al. Int J Gynecology & Obstetrics 1995).
Two cases report of Turner syndrome associated with metabolic syndrome

Ying Zhang, Fuimin Chen, Xiaquan Lin, Xiaohong Yang
Fuzhou Children's Hospital of Fujian, Department of Endocrinology, Fuzhou, China

Background: Turner syndrome (TS) occurs in approximately one in 2500 female births and is characterized by short stature and sex hormone deficiency. However, it is becoming increasingly evident that patients with TS are also susceptible to a range disorders.

Method: We present two patients with metabolic syndrome (MS).

Results:
Case 1, A 13.3ys female patient, karyotype was 45,X/46,X,+mar. height 134cm (<-3SD), weight 40.5kg, short neck, micrognathia, shield thorax, cubitus valgus, no puberty signs. Elevation of hepatic enzymes (ALT: 60 U/L), serum cholesterol: 5.42 mmol/L, LDL: 4.58 mmol/L, HDL: 1.14 mmol/L, fasting blood glucose is intrinsic to TS and is at the core of the high risk for DM, excess insulin sensitivity. So to detect and interfere with these disorders that surgery improves quality of life in PWS by contributing in decreasing EDS and increasing mean sleep latency. If left untreated, it may result in severe complications: excessive daytime sleepiness (EDS), neurocognitive impairment, behavioral problems and pulmonary heart disease. EDS is a common feature in PWS: it begins in childhood and can interfere with school and social activities, providing a significant decline in quality of life. Efficacy and safety of adenotonsillectomy in Italian children affected by Prader-Willi syndrome

Benedetta Mariari; Bruna Cammarata; Elena Grechi; Paola Sogno Vain; Stefania Di Candia; Giuseppe Chiunello; Salvatore Toma; Francesca Palonita; Leone Giordano
1IRCCS San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Department of Pediatrics, Endocrine Unit, Milan, Italy; 2IRCCS San Raffaele Scientific Institute, Vita-Salute San Raffaele University, ENT Department, Milan, Italy

Introduction: Children affected by Prader-Willi syndrome (PWS) frequently suffer from sleep-associated breathing disorders, because of muscular hypotonia, obesity, sticky saliva, adentonsillar hypertrophy and craniofacial dysmorphism. Adentonsillar hypertrophy is the main cause of nocturnal rhoncopathy with obstructive sleep apneas (OSAS).

Material and methods: Eighty-one children underwent a complete oropharyngolaryngoscopic examination (anterior rhinoscopy, oral and nasal endoscopy with a flexible fiberscope); nine children underwent surgery because of severe adentonsillar hypertrophy (grade III or IV). All patients underwent nocturnal polysomnography and Multiple Sleep Latency Test (MSLT) preoperatively; five children underwent a second sleep study three months after surgery.

Results: No postoperative complications were observed in our group of patients. Preoperatively, mean sleep latency (MSL) was 5 minutes (range 3-8). The same study, performed after surgery, showed a significant improvement in daytime sleepiness (MSL 8.4 minutes; range 6-12).

Conclusions: None of the children in our group presented surgical complications, however caution regarding postoperative complications must be taken due to the high-risk profile related to PWS. Furthermore, our data demonstrates that surgery improves quality of life in PWS by contributing in decreasing EDS and increasing mean sleep latency.

First results from the screening for congenital adrenal hyperplasia in Bulgaria

Antonela Kostova; Iva Stoeva; Radiolaya Emilova
University Pediatric Hospital, Screening and functional endocrine diagnosis, Sofia, Bulgaria

Background: Congenital adrenal hyperplasia (CAH) is difficult to diagnose and potentially life-threatening in the neonatal period.

Objective and hypotheses: The objective of the present study is to analyze the first results from the novel Bulgarian neonatal screening (NS) for CAH for the period April 2010 - March 2011.

Methods: The level of 17-OH-Progesterone (17-OHP) in dried blood spot was assessed in all Bulgarian newborns (n=74 133). Until the end of 2010 we used only the cut-off value of 30 nmol/l for full-term infants at age 3-5 days. We began to apply the ISNS referent values since the beginning of 2011.

Results: An increased levels of 17-OHP were found in 637 cases (recall rate 0.85%). On a second assessment the results were confirmed in 410 cases (recall rate 0.55%). Most of the babies were preterm. Only 52 of them (12.6 %) had birth weight ≥ 2500 g. and 67 (15.5 %) were born after the 36 week of gestation. The diagnosis classic CAH was confirmed in 7 children. Estimated prevalence for the country- 9.4:100 000. The treatment was started at average age 15.6 (± 8.3 days). Three of the children with CAH were preterm (birth weight < 2500 g and gestational age < 36 gestational week).

Conclusions: The first data on CAH (classical forms) prevalence for the Bulgarian population obtained by NS do not differ significantly from the published data from other countries. The results show the importance of NS for the early diagnosis and initiation of treatment. Constant improvement of the existing screening logistic is possible during expansion of the screening programs.

Efficacy and safety of adenotonsillectomy in Italian children affected by Prader-Willi syndrome

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1IRCCS San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Department of Pediatrics, Endocrine Unit, Milan, Italy; 2IRCCS San Raffaele Scientific Institute, Vita-Salute San Raffaele University, ENT Department, Milan, Italy

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Conclusions: None of the children in our group presented surgical complications, however caution regarding postoperative complications must be taken due to the high-risk profile related to PWS. Furthermore, our data demonstrates that surgery improves quality of life in PWS by contributing in decreasing EDS and increasing mean sleep latency.
PAO-201

The medium and short-term effects of sinusoidal and vertical vibratory training on the musculoskeletal and endocrine system in healthy men

Musab Elmantaser1; Martin McMillan1; Sheila Khanna1; Karen Smith1; S. Faisal Ahmed1

1University of Glasgow, Department of Child Health, Royal Hospital for Sick Children, Glasgow, United Kingdom; 2Royal Infirmary, Clinical Biochemistry, Glasgow, United Kingdom

Introduction: The underlying mechanisms that explain the beneficial effect of whole body vibration (WBV) on bone health are unclear.

Aim: To compare the immediate and medium term effects of WBV using the Galileo platform (sinusoidal WBV’s) and the Juvent1000 platform (v-WBV) on muscle function, endocrine status and markers of bone turnover.

Material and method: 10 healthy men (36yrs±3.4) randomized into two groups; the first group stood on the sWBV and the second group stood on vWBV 3times/wk/months. The measurements were performed at five time-points(T) over 4 months. T0(1 month pre-WBV), T1(first day of exercise), T2(1 month post-WBV), T3(2months post-WBV) and T4(1month post-WBV).

Results: There were no significant changes in anthropometry, body composition or muscle function in the two groups at the end of the study period. The change in creatine kinase following exercise was similar in both groups. Both vibration platforms were associated with an immediate decrease(p=0.001) in cortisol following the exercise, but there was no difference in the decrement between the two devices. In the medium term, sWBV was associated with a reduction in median serum cortisol from 333 nmol/l(247,442) to 269 nmol/l(192,322)(p<0.04) whereas there were no significant changes in the vWBV group. Serum CTX, a marker of bone resorption fell significantly after 2months in the sWBV group from a median of 0.42ng/ml(0.3,0.87) to 0.29ng/ml(0.2,0.4)(p<0.03).

Conclusion: WBV is associated with a fall in endogenous cortisol and a reduction in bone resorption particularly in those subjects who were exposed to sinusoidal vibration. Longer-term comparative studies are required to further investigate the effect on bone.

PAO-202

An interesting case of delayed puberty associated with neurofibromatosis type 1 and hamartoma

Fiorella Galluzzi; Perla Scalfani; Maria Luisa Vetranio; Cristina Manoni; Salvatore Seminara

University of Florence, Department of Sciences for Woman and Child’s Health, Florence, Italy

Background: Neurofibromatosis type 1 (NF1) is one of the most common neurogenic disorder. Complications are quite variable however the most frequent are optic pathway tumors (glioma), short stature and precocious puberty.

Objective and hypotheses: We report the case of a 14 yr old boy that occurred in the 6th month of the first pregnancy of the parents.

Method: Clinical and laboratory investigations.

Results: Clinical history revealed a previous neurosurgical treatment for a ventricular hydrocephalus caused by a midbrain hamartoma, at the age of 12 yrs. The family history was negative. Upon examination, patient’s weight was 47.6 kg (<-25th centile), height was 154.7 cm (<-25th centile) significantly below his genetic target (186 ± 7 cm) and he exhibited a decrease in skeletal age therefore we excluded constitutional delay of growth and puberty. On suspicion of NF1 we also carried out dermatological examination, which revealed signs compatible with NF1; ophthalmological exam, which showed one Lisch’s nodule in the anterior segment of right eye. MRI revealed a small midbrain hamartoma, normal morphology and amplitude of ventricles and periepithelial spaces, minimum herniation of the cerebellar tonsils and no areas of pathological impregnation.

Conclusions: This case is interesting for the association of hamartoma and NF1 with delayed puberty, when usually both diseases are associated with precocious puberty.

PAO-203

A novel mutation of abcc8 gene in congenital hyperinsulinism

Nusrat Muratoglu Sahin1; Sibel Tulgar Kink1; Abdullah Kurt1; Deniz Anuk Inc2; Ayse Ecevit2; Andrew Hattersley3

1Baskent University, Pediatric Endocrinology, Ankara, Turkey; 2Baskent University, Neonatology, Ankara, Turkey; 3Peninsula Medical School, University of Exeter, Institute of Biomedical and Clinical Science, Exeter, United Kingdom

Background: Congenital hyperinsulinism (CHI) is a heterogeneous disease characterized by disregulation of insulin secretion resulting life-threatening hypoglycemia. Mutations of SUR1 gene (ABBC8) are responsible for 50-60% of CHI.

Objective and hypotheses: Herein we reported an infant who diagnosed CHI, due to a novel homozygote mutation (Q392H) in ABBC8 gene. The patient had very severe brain damage, despite early diagnosis and appropriate management.

Patient: A two-day-old baby boy was referred to our center due to resistance seizures. His parents were first degree relatives. At the admission, his hypoglycemia was detected and glucose infusion was started and elevated to 15 mg/kg/min. During hypoglycemia (glucose: 5 mg/dL) blood ketone was negative, ammonia level was normal, insulin:400 uIU/mL c-peptid:26.5 ng/mL. Blood glucose levels were elevated more than 30 mg/dl with IV glucose. He was diagnosed as CHI. Diazoxide, somatostatin and nifedipine were added to the therapy. The doses of the diazoxide, somatostatin and nifedipine were increased to maximum doses accordingly to levels of blood glucose. Glucose infusion stopped after total enteral nutrition was tolerated. During follow up, in generally his blood glucose levels were within normal limits. Although hypoglycemia was seldomly detected, his neurological status never improved. The patient was found homozygous for this mutation. The patient died due to respiration failure at 4 months of life.

Conclusions: In CHI patients, genotype-phenotype correlations are unclear. In our case hypoglycemia was detected at the second day of life and severe medical treatment was started in emergency. Although, severe hypoglycemia was seldom, his neurological status did not improve. We hypothesized that, cerebral damage of hyperinsulinemic hypoglycemia might start in in utero period due to severely affected phenotype by the novel mutation.

PAO-204

Hypercalciuria and renal function and in children affected by osteogenesis imperfecta

Francesco Dori1; Elena Monti1; Grazia Morandi1; Evelina Maines2; Milena Brugnara2; Paolo Cavazzieri2; Rossella Gaudenti2; Antoniazzi Franco3

1Pediatric Clinic, Department of Life and Reproduction Sciences, Verona, Italy; 2Pediatric Clinic, Department of Life and Reproduction Sciences, Verona, Italy

Background: Osteogenesis Imperfecta (OF) is an heterogeneous group of inherited disorders of connnective tissue characterized by bone fragility, reduced bone mass, laxity of ligaments, blue sclera and different levels of low stature. Hypercalciuria is a condition characterized by an increased urinary calcium without hypercalciemia. It is characterized by an urinary calcium excretion >4mg/kg/die or urinary Ca/Cr ratio >0.21. The relation between hypercalciuria and OF had been already analyzed in several studies.

Objective: The aim of this study is to observe the incidence of hypercalciuria
We suggested that panhypopituitarism together with stress could improve. Following this, dosages were reduced. Our final diagnosis for the replacement therapy, followed by oral administration of levothyroxine at an resonance imaging of the pituitary gland revealed an empty sella. We initiated and treatment. Her medical history was learned that she took multiple hospital. She was transferred to our hospital for further hormonal evaluation of the influence of hypercalciuria on bones of patients affected by OI. It is important, in these children, to integrate Calcium and Vitamin D. Hypercalcemia and the treatment with bisphosphonates do not cause any significant kidney alteration. The next studies with DXA are going to make a better evaluation of the influence of hypercalcemia on bones of patients affected by OI.

PAO-205

Myxedematous coma due to secondary hypothyroidism with panhypopituitarism

Leyla Telhan1; Nihal Hatipoglu1; Mehmet Boyraz2; Onder Kilicarslan2; Derya Girgin1
1Sisli Etfal Training and Research Hospital, Pediatric Intensive Care Unit, Istanbul, Turkey; 2Sisli Etfal Training and Research Hospital, Pediatric Endocrinology, Istanbul, Turkey

Introduction: Cranioopharyngiomas (CP) are rare brain tumors in children. The tumor itself or its subsequent surgical treatment causes the most common multiple hormone deficiency and replacement is frequently necessary. Myxedema coma (MC) is a rare, but often fatal endocrine emergency. The majority of cases occur in primary hypothyroidism but in central origin is extremely rare. We report the case of a patient with panhypopituitarism due to a craniopharyngioma surgery, who developed myxedema coma due to pituitary hypothyroidism. Case: A 12-year-old girl with loss of consciousness was admitted to a nearby hospital. She was transferred to our hospital for further hormonal evaluation and treatment. Her medical history was learned that she took multiple hormone replacement for two years because of CP had been operated, but took no medicine for the last three weeks. On physical examination; she was unconscious, hypotensive, bradycardic and hypothermic. Oxygen saturation was 75% without administration of supplemental oxygen. She had petechial, non-pitting edema. Peripheral blood tests detected decrease in hemoglobin, serum sodium, potassium, calcium levels. All of the pituitary hormone levels was demonstrated as decreased. A thyroid function test reported undetectable levels of both fT4(<0.67ng/dL), freeT3(<0.67pg/ml), TSH(0.002 IU/mL). Magnetic resonance imaging of the pituitary gland revealed an empty sella. We initiated replacement of electrolytes and erythrocyte then adrenocortical hormone replacement therapy, followed by oral administration of levothyroxine at an initial dose of 600 mcg. As a result, the patient's awareness level gradually improved. Following this, dosages were reduced. Our final diagnosis for the patient was MC due to central hypothyroidism together with panhypopituitarism. Conclusion: We suggested that panhypopituitarism together with stress could rapidly cause MC in children. The reason of this case presentation is that MC is a rare cause of secondary hypothyroidism with panhypopituitarism.

PAO-206

Differences in phenotype and genotype: growth in Pompe disease (PD)

Nesrin Karabul; Seyfullah Gökte; Andreas Herzog; Michael Beck
Children's hospital, Villa Metabolica, Mainz, Germany

Background: Lysosomal storage disorders are very rare diseases that are characterized by a great variability in their clinical presentation. In order to gain experience in this complex field, a center of excellence must be established that covers all aspects of these conditions such as diagnosis, treatment and research. The Villa Metabolica at the Children’s Hospital of the University of Mainz is dedicated to provide diagnosis and multidisciplinary management for all patients affected by any of the about 50 known lysosomal storage disorders. We wanted to show the differences in Phenotype and Genotype in PD. Pompe disease (also known as glycogen storage disease Type II) is caused by a deficiency of a critical enzyme in the body called acid alpha-glucosidase (GAA). Normally, GAA is used by the body’s cells to break down glycogen (a stored form of sugar) within specialized structures called lysosomes. In patients with Pompe disease, an excessive amount of glycogen accumulates and is stored in various tissues, especially heart and skeletal muscle, which prevents their normal function.

Results: Actually we have 5 patients with infantile PD, 3 were too small for their gestation age (f. e.: genotype c.1637-2A>G c.1637-2A>G. Also we examined 15 patients with adult PD, one patient is 181 cm, 3 patients are 175 cm, the other are to small for their age (familial predisposition was considered). The growth hormone (GH) insulin-like growth factor (IGF) system is impaired in these cases in PD.

Conclusions: The overall objective of our investigations is to evaluate the long-term growth and development especially of patients with infantile-onset Pompe disease under treatment.

PAO-207

Menstrual cycle in adolescence and its relationship with parameters of metabolic syndrome

Isabel Boyraz1; Claudia Braga1; Lenora Leao2; Maria Cristina Kuschnir1; Daniela Rodeiro3
1UERJ, NESA, Rio de Janeiro, Brazil; 2UERJ, Endocrinol, Rio de Janeiro, Brazil

Background: Clinical evaluation of adolescents should include an assessment of the menstrual cycle (MC), with emphasis on changes in the pattern of the cycle that can represent the first sign of a systemic and evolutive disease as the metabolic syndrome (MS), whose clinical manifestation can occur only in adulthood. Objective and hypotheses: The evaluation of changes in the pattern of CM may be the opportunity for early diagnosis and initiation of preventive and effective actions. Objective: Evaluate the menstrual cycle in adolescence and its relationship with parameters of MS. Methods: Observational, comparative and transversal-cut study with 59 female adolescents aged between 12 and 19 and presence of at least one of factors: Overweight/Obesity. All of adolescents underwent a clinical evaluation with anthropometric and laboratorial data, composed of Fasting Glucose, Total Cholesterol, HDL-Cholesterol, Triglycerides, Oral Glucose Tolerance Test (Glucose 120) and Fasting insulin and Insulin post OGTT (insulin 120), Follicle- Stimulating-Hormone (FSH), Luteinizing Hormone (LH), Total Testosterone (TT), Androstenedione. Two groups were created. G-1 adolescents with irregular cycles, and G-2 with regular cycles. Results: 59 adolescents evaluated, 36 formed G-1, and 23 formed G-2. In statistical analysis it was observed -G-1 presented: Waist/Height (p=0.009), Waist (p=0.026), Fasting Insulin (p=0.009), Glucose 120 (p=0.002), insul-in 120 (p=0.0001), HOMA-IR (p = 0.0008), Triglycerides (p = 0.013), MS (p=0.0001) and POS (p=0.0001) greater and QUICK (p=0.008), G/H (p=0.002) HDL (p = 0.001) lower than G-2.9 0% of G-1 presented irregularity since menstruation irregularity since menarche Logistic regression analysis observed insulin 120 >75 (p=0.010) were significant to predict irregular cycle.

Conclusions: We believe that greater knowledge about the correlation between changes in menstrual cycle in adolescents and variables related to metabolic risk in this age group is very useful for an early screening that will enable the prevention of MS and related diseases.
PAO-209

Effect of urtica dioica leaves distillate on blood glucose of patients with type 1 diabetes
Maryam Razzaghy-Azar; Hossein Zaeri Aghmashhad
Tehran University of Medical Sciences, H. Aliasghar Hospital, Tehran, Islamic Republic of Iran

Background: Urtica dioica is an edible plant that is traditionally used for its different effects including lowering of blood glucose.

Objective and hypotheses: The aim of this study was to determine the glucose lowering effect of urtica dioica in patients with type 1 diabetes mellitus (T1DM).

Methods: This phase one study is registered as the number “IRCT2010 08174585N1” and has ethical approval. It was done on 24 patients. They were divided into 8 groups of 3 subjects and were studied in 6 days. In the first 3 days, they did not receive the solution but in the second 3 days, they drank urtica distillate in the morning once daily while they were on usual insulin therapy. The carbohydrate counting of their foods were equal on these two periods. Their blood lipids metabolism, HbA1c, HOMA index every six months.

Aim: The relation between puberty and the onset of type 2 diabetes in obese children.

Material and method: Within 2006-2010, we studied 95 children with primary obesity. We monitored: family history of DM, clinical signs of insulin resistance (obesity, acanthosis nigricans), biologically we assessed the OGTT, HOMA index every six months.

Results and discussions: At diagnosis 38 cases presented mild obesity, 32 cases medium obesity while 25 cases were severely obese. Neither one presented clinical symptoms of diabetes. We found positive family history of diabetes in 1/3 of cases medium obesity and in 6 cases (60%) without clinical evidence of bleeding disorders. The coagulation abnormalities were more frequent in patients with heart defects; however, a history of bleeding diathesis was detected in patients without cardiopathy.

Conclusions: A high frequency of coagulation abnormalities was found in NS. These abnormalities do not seem to be related with the patients’ genotype. The heart defects should not to be the only cause of the haemostatic disorders. The bleeding disorders, as well as the other phenotypic NS features, tend to decrease with age. Our advice is to screen patients with NS for bleeding diathesis to avoid bleedings and post-operative complications.
the onset of diabetes.

Conclusions: Not only obesity, as a factor of insulin resistance, favours the occurrence of type 2 DM but also puberty precipitates its onset.

PAO-212
Ovarian function in cystic fibrosis patients
Dunia Sánchez-Garrido; Raquel Corripio-Collado; Jácobo Pérez-Sánchez; Ramón Nosáas Cuervo
Hospital de Sabadell, Corporación Universitaria Parc Taulí, Paediatrics, Sabadell, Spain

Background: A lower reproductive capacity in women with cystic fibrosis (CF) has been associated with delayed puberty and amenorrhea.

Objective and hypotheses: To evaluate ovarian function in women with CF, regarding their clinical and nutritional status.

Methods: Cross-sectional study in women (3 years post-menarche) with CF controlled in our hospital. Data of menarche and menstrual cycles were collected by telephone survey. Anthropometric and spirometric data were obtained by medical history review. Blood samples were taken 3-5 days post-menstruation and after 21 days. The biochemical and hormonal parameters measured were glucose, insulin, HOMA, HbA1c, follicular estradiol (E2), FSH, LH, luteal progesterone (P), total testosterone (T), androstenedione (A4), DHEA-S, SHBG and free androgen index (FAI). Results are expressed by mean values and ranges.

Results: We studied 8 patients aged 22.1 years (15-33). Their BMI was 20.5 (18.3-23.6) and their body fat percentage was 26.4% (20.4%-33%). Mean age at menarche was 13.2 years (11-15). They had menstrual cycles every 28.3 days (21-35), lasting 5.1 days (1-7). Oligo-amenorrhea was found in 2 cases (number 5 and 6). We detected an impaired lung function (FEV1 <80%) in 3 cases (number 3, 5 and 6). One case presented CF-related diabetes (number 6) and impaired fasting glucose in 3 cases (number 4, 6 and 7) with HOMA normal ranges.

Conclusions: None had delayed puberty. We detected normal ovarian function in women with CF, regarding their clinical and nutritional status.

PAO-214
Evaluation of 1218 oral glucose tolerance tests in children and adolescents
Andreas Schuster; Jennifer Krueger; Judith Große-Sudhues; Annette Richter-Urhn
Endokrinologikum Ruhr, Pediatric Endocrinology, Bochum, Germany

Background: In our outpatient department we evaluated 1218 oral glucose tolerance tests (oGTT) for impaired glucose tolerance (IGT), impaired fasting glucose (IFG), insulin resistance syndrome (IRS) and Type 2 Diabetes (T2D).

Objective and hypotheses: The indication for oGTT was obesity (n=1052), small for gestational age (SGA) (n=36), SHOX- Gen deficiency/ Ullrich Turner Syndrome (UTS) (n=55) - and Prader Willi Syndrome (n=25) before or during growth hormone therapy, as well as IRS at follow up (n=39) and risk factors for disturbance of the glucose homeostasis (n=48).

Methods: All subjects underwent in our ambulance a two hour oGTT (1.75g glucose per kilogram bodyweight, maximum 75g). Following parameters were measured/collected: fasting-, 1- and 2-hour glucose and –insulin, HbA1c, height, weight, body mass index.

Results: The older the children the percentage of impaired fasting glucose and impaired glucose tolerance were rising up from about 12% -to 35%. We detected Type 2 Diabetes in children between eight to ten years in one percent, between 10-13 years in three cases and in group older than 13 years of age in 2.1 percent. All patients were obese. The percentage of insulin resistance defined as a fasting insulin greater than 15mU/L and/or a peak insulin greater than 150mU/L (S. Ten, J.Clin. Endocrinol. Metab. 2004;89:2526-2539) was defined as a fasting insulin greater than 15mU/L and/or a peak insulin greater than 150mU/L. In 2,1 percent, All patients were obese. The percentage of insulin resistance defined as a fasting insulin greater than 15mU/L and/or a peak insulin greater than 150mU/L (S. Ten, J.Clin. Endocrinol. Metab. 2004:89:2526-2539) was detected Type 2 Diabetes in children between eight to ten years in one percent, and impaired glucose tolerance were rising up from about 12% -to 35%. We detected Type 2 Diabetes in children between eight to ten years in one percent, between 10-13 years in three cases and in group older than 13 years of age in 2.1 percent. All patients were obese. The percentage of insulin resistance defined as a fasting insulin greater than 15mU/L and/or a peak insulin greater than 150mU/L (S. Ten, J.Clin. Endocrinol. Metab. 2004:89:2526-2539) was as higher as older the patient evaluated. The HOMA IR >2.5 climbed up from 28% in the younger pubertal group to 80% in the older subjects. The highest risk factor to develop impaired glucose tolerance, insulin resistance and Type 2 Diabetes was obesity in pubertal children.

Conclusion: In obese children change in lifestyle has to begin before onset of puberty. Performance of OGTT is important to detected insuline resistance as major risk factor to develop Type 2 Diabetes. Insulin and glucose results of non obese children differ from obese children.
at the Centre for the prevention, treatment and rehabilitation of obesity in children in the period from 27/07/2008 to 03/10/2010. Hospitalisation lasted 21 days.

**Results:** After the multidisciplinary treatment, the average reduction in body mass (p=0.05) in all adolescents was 5.92 ± 2.71 kg. During the 21-day hospitalisation, the average BMI was reduced by -2.12 ± 0.31 in all examinees, the BMI z-score was considerably lower in all examinees upon release and it was p=0.05 - 0.26 ± 0.08. % of fat was considerably lower (p=0.05) in all examinees -1.65 ± 0.23, the waist circumference was reduced by -7.85 ± 3.01. Hypertension was observed in 28% of adolescents. Two factors of metabolic syndrome were present in 27.6%, and metabolic syndrome was present in 18.3% of the examinees. The disorder in sugar transport was observed in 8.9% of the examinees.

**Conclusions:** The effects of the ‘Cigotica’ programme are very encouraging and they show that the multidisciplinary approach directed towards the reduction in energetic intake, education, change of lifestyle and habits related to nutrition and physical activity, leads to a considerable reduction in body mass, improvement in blood pressure laboratory analyses, aerobic capacities and self-confidence in obese adolescents.

**PAO-216**

**Prevalence of cryptorchism, retractile testis and orchiopexy in children**

Shakhrizida Sultanova
Endocrinology, Paediatric-endocrinology, Tashkent, Uzbekistan

**Background:** Cryptorchism represents the most common congenital defect of the male urogenital system. It may be an important cause for male infertili-ty. Very variable figures on the incidence of cryptorchism have been described in different type of studies.

**Objective:** The aim of the present study was establish the prevalence of the abnormality in Uzbekistan population living in the Tashkent city and Tashkent region.

**Patients/methods:** In total there were surveyed 3417 children and adolescents at the age from 3-14 years. The testis determination was carried out by palpation method.

**Results:** As a whole, the frequency of cryptorchism was 1.2% for boys between 3 years and 14 years. The frequency of pathology was 2.5 % for those of between 3 and 6 years, retractile testis was 5.2 %, there were no cases of orchiopexy 0.75% was at the age between 7-10 years; orchiopexy was 0.35 % and retractile testis was 0.15 %; the frequency of pure cryptorchidism drops more than 3.3 times and retractile testis does 7 times to the puberty age.

**Conclusion:** The prevalence of cryptorchism and the mean age of orchiopexy are high among schoolchildren aged 10-12. The prevalence of cryptorchism differs significantly from the prevalence reported fifteen years ago. Is it was show prevalence of cryptorchidism, on Uzbek population correlates with those of foreign sources.

**PAO-217**

**Cushing syndrome due to adrenocortical carcinoma in an infant**

Enime Dilek1; Veyssel Oz2; Digdem Bezen1; Mustafa Inan3,4; Fulya Ozpuyan1; Filiz Tutunculer1
1Trakya University School of Medicine, Pediatric Endocrinology, Edirne, Turkey; 2Trakya University School of Medicine, Department of Pediatrics, Edirne, Turkey; 3Trakya University School of Medicine, Department of Pathology, Edirne, Turkey

**Background:** Adrenocortical tumours are the most common cause of endogenous Cushing syndrome in infancy and early childhood. We present an infant with Cushing syndrome due to adrenocortical carcinoma.

**Case:** A 15 month-old female child was referred to the hospital with a history of progressively increasing weight gain, appetite, terminal hair growth on the back and limbs but arrested growth rate since 4 months. There was no history of oral intake and topical application of steroids. Physical examination revealed weight of 9 kg (25p), length of 69,5 cm (3-10p), blood pressure 80/40 mmHg, cushingoid features with moon face and facial plethora. Rest of the physical examination was unremarkable. She had no cliteromegaly. Serum assays confirmed hypercortisolism with loss of diurnal variation for cortisol secretion (8 am: 27.05 µg/dl, 03 pm: 21.64 µg/dl, 11 pm: 22.63 µg/dl) and a concomitantly suppressed ACTH level<5µg/ml. DHEA-S<15µg/dl (5-57), androstenedione [0,9µg/ml (0,8-5)], total testosterone [0,1mg/dl (0,1-1,3)] were normal. Abdominal ultrasound showed 30x40 mm intra-abdominal mass arising from the left adrenal gland. Magnetic resonance imaging also detected a solid mass sized 40x45 mm in the left adrenal gland. She was operated on left adrenalectomy under perioperative glucocorticoid coverage. Histopathological examination confirmed adrenocortical carcinoma. She was discharged after 20 days after surgery on hydrocortisone 4 mg/day. She is doing well on hydrocortisone and has not shown any sign of disease recurrence during follow up.

**Conclusions:** Although Cushing syndrome is rarely seen in infants, the paediatricians should take it into consideration in cases presenting with rapidly weight gain and decreasing growth rate in infancy.

**PAO-218**

**Do children with growth hormone deficiency diagnosed on the strength of one growth hormone stimulation test grow better than patients diagnosed on the strength of two stimulation tests on GH replacement therapy?**

Sunseia Nayak1; Al Ny; Swati Upadrashta; Urmii Das; Poonam Dharmaraj; Joanne Blair; Mohammed Didi1;2
Alder Hey Childrens Hospital, Paediatric Endocrinology, Liverpool, United Kingdom

**Background:** A recent consensus statement recommends the use of two growth hormone (GH) stimulation tests for the diagnosis of GH Deficiency (IGHD) in childhood. Some clinicians have used a single GH stimulation test because of the high frequency of distress that such tests cause children and the lack of a strong evidence base to the recommendation, while others have followed the recommendation.

**Objective:** To compare the change in height (Ht) Standard deviation score during the first year of GH treatment in subjects diagnosed with Idiopathic Isolated GHD (IGHD) following one GH stimulation test (GHST) to those diagnosed following two GHSTs.

**Methods:** A retrospective case note review of all patients diagnosed with IIGHD was undertaken in a single tertiary endocrine centre between 2003 and 2009. Patients were categorised in to those who had 1 test (Group1) and 2 tests (Group 2). Height at diagnosis, 3-8 months and 9-15 months after starting treatment with GH was identified. Ht SDS at baseline and change in Ht SDS (ΔHt SDS) at each time point during treatment was compared using the Mann Whitney U test.

**Results:** 19 patients were studied. Results are summarised in table 1. Data presented as median(range). Table 1. Ht SDS at diagnosis and ΔHt SDS for patients at the three time points during treatment with GH.

<table>
<thead>
<tr>
<th>Group 1 [n=12]</th>
<th>Group 2 [n=7]</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ht SDS at diagnosis</td>
<td>-2.7 (-0.9 to -4.5)</td>
<td>-2.5 (-1.9 to -3.5)</td>
</tr>
<tr>
<td>ΔHt SDS 3-8 months</td>
<td>0.2 (0.1 to 0.4)</td>
<td>0.5 (0.3 to 0.8)</td>
</tr>
<tr>
<td>ΔHt SDS 9-15 months</td>
<td>0.3 (-0.1 to 0.8)</td>
<td>0.3 (0.1 to 0.8)</td>
</tr>
</tbody>
</table>

**Conclusions:** Patients with IIGHD diagnosed on the strength of one and two GHST show no difference in the growth response in the first year when on optimal GH replacement therapy.

**PAO-219**

**Prevalence of metabolic syndrome (IDF 2007 criteria) in obese children and adolescents**

Didem Bezen1; Emine Dilek1; Filiz Tutunculer1; Necdet Su2;3
1Trakya University School of Medicine, Pediatric Endocrinology, Edirne, Turkey; 2Trakya University School of Medicine, Biostatistics, Edirne, Turkey

**Background:** Metabolic syndrome (MS) frequency is increased in proportion to the increasing prevalence of obesity in children and adolescents.

**Objective and hypotheses:** This retrospective study was performed to de-
term the prevalence of MS and its risk factors in obese children and adolescents.

Methods: A total of 198 (101 males, 97 females) obese children from 10 to 16 years old were involved in the study. International Diabetes Federation (IDF 2007) criteria were used to diagnose the MS classification. Each patient underwent auxological evaluation, blood pressure (BP), blood samples and oral glucose tolerance test (OGTT). Homeostasis model assessment of insulin resistance (HOMA-IR) has been calculated. Patients were divided into two groups according to the presence of MS.

Results: The overall prevalence of MS in our study was 38% with no intersex difference. Mean age was 12.7±1.62 years. Eighty nine percent (n=176) of the patients were pubertal and MS was more often in this group. The prevalence of high systolic BP was 30%, high diastolic BP 25%, hypertriglyceridemia 20%, low HDL-C 48.5%. Impaired glucose metabolism was identified in 17.6% of patients; 21 of them having impaired fasting glucose (IFG) and 14 of them having impaired glucose tolerance (IGT). There was no silent type 2 diabetes. Hepatic steatosis prevalence was 44%. All of the anthropometric measurements and BP levels were found higher in the MS group than those in the non MS group as expected. When we analyzed the cardiovascular risk factors; fasting blood glucose levels, insulin resistance, levels of total cholesterol, prevalence of IGT, hyperinsulinemia were significantly higher but HDL level was significantly lower in MS group when compared to non-MS group. LDL-C levels were found to be similar between two groups.

Conclusions: MS prevalence at diagnosis is high (38%) in obese children. When cardiovascular risk factors are considered, the increase in the MS frequency gets more important for the future of children.

PAO-220

Central precocious puberty unresponsive to LHRH analogue treatment in a patient with chromosomal anomaly and cerebropathia

Alessandra di Lascio1; Silvia Laura Carla Meroni1; Elena Grechi1; Gianni Russo1; Maria Pia Guarnieri1; Stefano D’Amigo1; Giuseppe Chiumello1
1San Raffaele Scientific Institute, Department of Pediatrics, Milan, Italy; 2C. Besta Neurologic Scientific Institute, Department of Neurology, Milan, Italy

Background: The treatment of central precocious puberty (CPP) is based on LHRH analogues (LHRH-a) with a good hormonal inhibition.

Objective and hypotheses: Our aim is to describe the case of a children with chromosomal alteration, cerebropathia and CPP, who does not respond to the treatment with LHRH-a.

Population: The children, born at 38 gestational weeks, showed hypospadias, microcephaly and some dysmorphic notes. He presented a neuropsychic delay and seizures, so at the age of 2 years he started antiepileptic treatment. The karyotype was 46XY, the array CGH showed [del(1)(q41)] and [del(7)(q36.1q36.3)]. At 6 months of age he developed pubic hair and then LH peak 18.3 mU/ml, testosterone 1.94 ng/ml, normal adrenal function and microcephaly. He started treatment with LHRH-a.

Results: The treatment with LHRH-a did not permit an adequate inhibition of the hypotalamus-pituitary-gonadal axis and it also caused an advancement of the pubertal development (basal LH 4.3 mU/ml, testosterone 6.27 ng/ml, in presence of a good compliance). At 2 years and 2 months the treatment with LHRH-a was stopped and the treatment with luteoloe and cyproterone acetate was started.

Conclusions: In our patient the treatment with LHRH-a failed to induce hormonal inhibition. To our knowledge, similar cases are not reported. The possible causes of this failure are unclear: the genetic alteration, the potential alteration of pharmacokinetic of LHRH-a and the cerebropathia may be involved. Investigations to assess the reliability of these assumptions are in progress.

PAO-222

A rare cause of precocious puberty: β-hCG secreting tumor

Silvia Laura Carla Meroni1; Alessandra di Lascio1; Matilde Ferrario1; Gianni Russo1; Maura Massimino2; Giuseppe Chiumello1
1San Raffaele Scientific Institute, Department of Pediatrics, Milan, Italy; 2National Scientific Turro Institute, Department of Pediatrics, Como, Italy

Background: Beta human chorionic gonadotropin (β-hCG) secreting tumours are a recognized cause of precocious puberty (PP), almost exclusively in boys. These tumours may occur in gonads, liver, retroperitoneum and mediastium or within the central nervous system (CNS).

Objective and hypotheses: We present one case of PP due to β-hCG secreting tumour, whose site was difficult to determine.

Population: The boy came to our attention at age 6 years. Neurological examination was normal. Physical examination showed scrotal hair, enlarged penile and testes (4 mL) size and gynecomastia. Hormonal test revealed suppressed levels of gonadotropins at LHRH test (FSH peak 0.6 mU/mL, LH peak 0.5 mU/mL), increased testosterone 3.47 ng/mL, normal adrenal function, prolactin α- and β-fetoprotein and slightly higher β-hCG (6.8 U/L; nv 0-5 U/L).

Results: Hormonal picture was compatible with gonadotropin-independent PP due to β-hCG secreting tumour. To determine its site testicular and abdominal ultrasound, thoracic CT, abdominal and CNS NMR were performed. These studies didn’t reveal any suspicious lesion, with the exception of a cyst-like aspect of pineal gland. A lumbar puncture was performed and revealed slightly higher β-hCG (11.3 U/L).

Conclusions: The abnormal cerebrospinal fluid (CSF) serum ratio of β-hCG was consistent with a CNS germ cell tumour. Although the tumour was not clearly identified, he underwent four courses of multi-agent chemotherapy (bleomycin, etoposide and cisplatin) and ventilricular radiotherapy. β-hCG and testosterone values fell to within the normal range after the first course, indicating significant regression of the tumour. Nowadays the clinical and hormonal picture is stable.
Congenital hyperbilirubinemia caused by neonatal thyrotoxicosis in an infant

Background: Neonatal thyrotoxicosis (NT) caused by maternal Graves disease is a rare disorder. In the newborn, characteristic signs and symptoms include tachycardia, irritability, poor weight gain, and prominent eyes. Rarely, infants with NT present with thrombocytopenia, jaundice and hepatosplenomegaly. We report an infant with hemorrhagic diathesis and congenital hyperbilirubinemia, who was diagnosed with NT due to maternal Graves disease.

Case: One-month-old baby was admitted to our hospital for further evaluation of a bleeding after vaccination. He was born vaginally at 38 gestational weeks to a 23-year-old primagravida mother, with a birth weight of 2550g. It was learned that her mother had Graves disease for 2 years and did not take propylthiouracil regularly during pregnancy. Physical examination revealed weight of 3100g (3p), height of 51 cm (3p), head circumference of 34 cm (3p), -2.2SD, prominent eyes and 2x2cm hematoa at left inguinal region. The other physical findings were unremarkable. Laboratory studies showed normal hematological and coagulation parameters but mildly elevated transaminases (ALT 74IU/l, AST 55IU/l) and conjugated bilirubin (3.8 mg/dl) levels. Blood and urine culture were negative as were titers for toxoplasmosis, rubella, CMV, herpes, hepatitis B and C. Metabolic screening tests were negative. Thyroid function tests revealed that the infant was suffering from NT (T4 2.5 mg/dl (0.63-2), T3 F 4.9 pg/ml (1.8-4.2), TSH 0.17 mIU/ml (0.4-4.6) and T3-Ab 54U/l (0-9)). We decided to follow up him without treatment, because he had only biochemical thyrotoxicosis but not clinical. After 2 months, his congenital hyperbilirubinemia level resolved as well as thyroid hormone levels returned to the normal range.

Conclusions: We suggest that as infants born from mothers with Graves may develop different clinical signs, they should be followed up carefully and closely after birth.

Auxometric and biohormonal data of patients with Turner syndrome undergoing treatment with Somatropin

Background: 95% of Turner syndrome patients are known to have a final adult height 20 cm below the median parental height. It has been proven that these patients respond to rhGH treatment, despite the fact that they are not GH deficient.

Objective and hypotheses: Analysis of the effects of Somatropinum therapy on the growth of Turner Syndrome patients and identification of the parameters that influence growth.

Methods: We analyzed a group of 30 patients with Turner syndrome who were treated in our board between 2002 and 2010. We measured and calculated: height, median parental height, growth velocity under treatment, bone age, IG-1, predicted adult height without treatment, predicted final height when study was carried out.

Results: Mean age was 8.4 yrs (4.5 - 14 yrs); mean initial height was -3.18 SD below normal and 0.12 SD when compared to other girls with Turner syndrome of the same age; the mean period of treatment was 3.26 yrs (1-7 yrs) and the mean dosage was 0.327 mg/kg/week (0.27-0.42); growth velocity per year of treatment averaged at 7.02 cm and growth velocity per year of bone maturation at 5.94 cm. Predicted adult height (PAH) without treatment had an average of 142.6 cm, while the predicted final height, when the study was carried out had an average 150.7 cm. Thus, the mean benefit of the therapy is 8.1 cm.

Conclusions: We analyzed the significant correlations between the height benefit of the therapy and a series of auxometrical parameters. Even if we noted that IG-1 rose to considerably higher levels during the therapy, this phenomenon did not correlate significantly with the gain of centimeters per year of treatment or per year of bone maturation, which leads us to believe we may encounter a certain degree of resistance to the action of IG-1 in some patients. Under treatment the patients recovered an average of 1.98 SD from the growth retardation compared to normal adult females and an average of 1.95 SD from the genetic target height.

Does Letrozole in boys and GnRHa in girls with idiopathic short stature (ISS), constitutional precocious puberty (CPP), or being born small for gestational age (SGA) improve their prospective adult height?

Objective and hypothesis: To investigate the hypothesis that Letrozole in boys and GnRHa (leuprolide acetate) in girls are able to improve the prospective adult height (PAH).

Method: We retrospectively compared growth data of girls with CPP (n = 14)
median treatment period 2.4 years) and ISS (n=7, median treatment period 1.7 years) as well as data of boys with ISS (n=8, median treatment period 1.8 years) and SGA (n=5, median treatment period 3.0 years) before, during and after treatment. Girls born SGA (n=2, median treatment period 1.9 years) had an additional treatment with growth hormone. Near final height or adult height was reached by n=8 patients.

**Results:** Girls with CPP (n=4), treated with GnRHa, showed an improvement of their near final height or adult height in median by 6.2 cm. In girls born SGA (n=2), treated with GnRHa and growth hormone, the final height improved by median 8.9 cm. One boy with ISS, treated with letrozole, had an improvement of adult height by only 1.9 cm. However, one boy born SGA, showed an improvement of adult height by 15 cm according to Bayley-Pineau. A transient decrease of bone density, as measured by the DEXA method, was observed. A patient questionnaire revealed no other relevant side effects due to the treatment with both Letrozole and GnRHa. Fig 1+2 show the reached gain of height.

**Conclusions:** Both medications seem to be able to improve the PAH. However, a small number of patients failed to improve the prospective adult height. In some patients, the adult height was reached and was higher than calculated before. Therefore, the therapy should be continuously supervised by a paediatric endocrinologist. Prospective controlled trials are necessary in future to confirm the results.

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**PAO-227**

**The one year catamnesis in children from mothers after combine treatment of thyroid cancer**

Iulia Davydova1; Tatyana Kurilina2

1Institution of Pediatrics, Obstetrics & Gynecology, Extragenital pathology & perinatal rehabilitation, Kiev, Ukraine; 2Institution of Pediatrics, Obstetrics & Gynecology, Neonatology, Kiev, Ukraine

**Background:** The frequency of the thyroid cancer in Ukraine is 36:100000 per year and in twice more in women with the tendency to growth.

**Objective and hypotheses:** The protocol of the combine treatment include different variation of the extended thyroidectomy (in 2nd trimester), radioiodine therapy, suppressive therapy by thyroxin (2,3 mg/kg).

**Method:** Complex observation in neonatal period and one year follow-up performed in 50 infants from mothers after combine treatment of thyroid cancer.

**Results:** The most frequent complication of gestation period were threat of abortion, discoordination of the delivery, distress of the fetus, postpartum hemorrhage. Optimal development of the placental complex due to using of gestagens in the treatment complex of threat of abortion decreased morbidity of children during first month of life. In neonatal period 60% of newborns received treatment of prolonged jaundice, 34% - severe allergic reactions, 18% - hypoxic-isch晨ic encephalopathy. Most every newborns had vegetative disorders (abnormality of microcirculation, regurgitation, breach of cardiac rhythm on the electrocardiogram, heightened disposition to sweating). The data of one year catamnesis in 3, 6, 9, 12 months show direct close correlation between frequency of neurological pathology, allergic reaction, vegetative dysfunction and exhaustiveness of the postoperative hypothyroidism compensation, peculiarities of medication of threat abortion. The physiotherapy of perinatal encephalopathy must have been made out in 36% of infants 3-6 months of life. Common conditions for all children from mothers after combine treatment of thyroid cancer are high frequency of rachitic, acute respiratory infections, disorders of feeding and decreasing of frequency & duration of breast-feeding.

**Conclusions:** All this peculiarities make it possible to include children from mothers after combine treatment of thyroid cancer in high risk group for creation prophylactic-treatment arrangements for them.

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**PAO-228**

**New onset type 1 diabetes in the pediatric population of a second level hospital: 12 years’ review and evaluation of recent treatment and connection between hospitals**

Ana Laura Fitas1; David Lito2; Patrícia Ferreira2; Rosa Pina3; Florbela Cunha4

1Hospital de Dona Estefânia, Hospital de Reynaldo dos Santos, Pediatrics, Lisboa, Portugal; 2Hospital de Reynaldo dos Santos, Pediatrics, Vila Franca de Xira, Portugal; 3Hospital de Dona Estefânia, Endocrinology, Lisboa, Portugal

**Background:** In the pediatric department of a Lisbon area’s second level hospital, new onset diabetes is managed in coordination with the tertiary hospital’s endocrinology team.

**Objective:** To characterize the children with new onset type 1 diabetes (1999-2011). To describe treatment procedures (2009-10) in order to evaluate the compliance to the 2008-Diabetic Ketoacidosis (DKA) National Protocol. To assess the need for improving the management of new cases without DKA.

**Methods:** Retrospective study. Clinical files were reviewed.

**Results:** 41 children were admitted, 3.4 new cases/year, with a modest increasing tendency. 61% females; median age 9 years. 90% previously healthy, only one obese child; 15% had type 2 diabetes in non-first degree relatives. All were admitted from the emergency department (44% referred with symptomatic hyperglycemia; 1 incidental finding). Classic new onset symptoms were the most common: polydipsia-93%; polyuria-83%; weight loss-68%; polyphagia-37%; lethargy-27%; 44% presented with DKA (severe in 10%). Median hospital stay was 2 days, with subsequent referral to endocrinology (66% to ward; 29% to consultation) and 5% to PICU. Concerning treatment after 2008 (n=13), insulin perfusion was administered to all ketoacidotic patients, with median duration of 6 hours. Insulin perfusion in non-ketoacidotic patients was variable (prescribed to 44%). All but 2 patients started IV iso-
tomic saline with potassium. Saline was replaced by 5-10% dextrose when initiating insulin (91% after at least one hour of IV hydration). One patient required HCO3 correction before transference to PICU. Intermediate-acting insulin was always started after 24h.

**Conclusions:** These epidemiological and clinical aspects are according to published reports. Overall compliance with DKA guidelines is satisfactory. The lack of uniformity in the management of new cases without DKA highlights the need for implementing uniform procedures and improving the connection pathways between second and tertiary level hospital in the management of new onset diabetes.

**PAO-229**

**Adequacy of implementation of recommendations of dietary intake in children with type I diabetes mellitus**

Lina Kapustina1; Anzhalka Solntsava2

1Belarusian State Medical University, Medico-psychotherapeutic faculty, Minsk, Belarus; 2Belarusian State Medical University, Department of Children’s Diseases, Minsk, Belarus

**Background:** Nutrition in diabetes mellitus type I in children is an important factor in treating the disease.

**Objective and hypotheses:** The aim of our study was to identify communication and the adequacy of the diet with the peculiarities of the clinical and metabolic status in children with type I diabetes.

**Methods:** An analysis of diet 1 day in 28 children with type I diabetes. Energy expenditure determined by the computational method of WHO at a rate of physical activity. Actual energy consumption calculated on the menu layout. The data obtained was subjected to statistical analysis in Excel, Biostat.

**Results:** Table 1: Actual feeding of children

<table>
<thead>
<tr>
<th></th>
<th>Girls prepubertal period (16.7%)</th>
<th>Girls pubertal period (83.3%)</th>
<th>Boys prepubertal period (30%)</th>
<th>Boys pubertal period (70%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
<td>Excess</td>
<td>Lack</td>
<td>Excess</td>
<td>Lack</td>
</tr>
<tr>
<td>Energy value (%)</td>
<td>66.7</td>
<td>33.3</td>
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<td>Proteins (%)</td>
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<tr>
<td>Fat (%)</td>
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</tr>
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</tr>
<tr>
<td>Magnesium (%)</td>
<td>100</td>
<td>0</td>
<td>73.3</td>
<td>26.7</td>
</tr>
</tbody>
</table>

**Conclusions:** In children prepubertal period dominated by an increase in energy value, at puberty - a decline. Excessive intake of protein, including animals, in children prepubertal period. Carbohydrate intake increased in girls prepubertal period. Fat intake increased in boys prepubertal period. Girls prepubertal period, an increase calories by excess consumption of protein and carbohydrates, the boys - protein and fat. At puberty there is an increase calories from fat and carbohydrates. Girls and boys prepubertal period body mass index as normal 33.3% and 66.7%, and at puberty there is a tendency to increase 53.3% and 57.1%. Excessive food intake in boys and girls to dominate the dinner 83.3% and 100% respectively.

**PAO-231**

**The relation between skinfold thickness and leptin, ghrelin, adiponectin and resistin levels in infants of diabetic mothers**

Mustata Kara1; Zerrin Oztak2; Hakan Doneray2; Behzat Ozbek2; Fatih Akçay2

1Atatürk University, Department of Pediatrics, Erzurum, Turkey; 2Atatürk University, Department of Pediatric Endocrinology, Erzurum, Turkey

**Background:** Type 1 diabetes mellitus (T1DM) is the most common endocrine problem in childhood, with increasing worldwide incidence. The risk of developing diabetic ketoacidosis (DKA) is higher in children because of non-specific and non-classical signs and symptoms.

**Objective and hypotheses:** This study was designed to review trends in presentation and incidence of childhood diabetes in the last 10 years in southwestern Iran.

**Methods:** During a detailed review of compiled records of Abuzar Children’s Hospital from Jan 2000 to Dec 2009, the following clinical information relevant to diabetes were extracted and analyzed: admissions for diabetes, all data regarding demographics, clinical status, laboratory findings, hospital course, morbidity, and mortality.

**Results:** Excluding 129 repeated admissions, 297 cases were enrolled for analysis: 223 new and 74 known cases. Among the new cases, 67.3% presented with DKA, without any gender bias. Among the DKA subjects, 45% had some degree of unconsciousness, and the mortality rate was 4%. The mortality risk was significantly higher in the <2-year group and in girls (boy:girl=1:7; p=0.039). Despite the increase in the number of medical centres that manage diabetic children, there is a regular increase (nearly 50.5% rises over 5 years-Figure) in the disease incidence.

**Conclusions:** Most of the new cases of T1DM presented with DKA, and this is similar to the trend seen in other developing countries. With an increasing incidence of DM, more attention to education of families and periodic retraining of health staff is essential to enable earlier diagnosis and management of new subjects, and to reduce morbidity and mortality rates associated with the disease.
Conclusions: This finding suggests that coexisting celiac sprue is one of the malabsorption of her bowel habits and improved her metabolic and nutritional status. The patient was placed on a gluten-free diet, which rapidly lead to the normalization of serum calcium. The histocompatibility antigen HLA-DQ2 was founded. Disease was suggested at endoscopy, and confirmed by histological findings of duodenal biopsy. The Chevostek and Trousseau signs) without significant changes in calcemia. The patient has been on calcium and vitamin D supplementation.

Results: The two sexes were equally represented in both the childhood sample (46.5% M and 53.4% F) and the follow-up sample (46.7% M, 53.3% F). Of this cohort of obese children, at follow-up, 24.7% were obese, 32.6% were overweight and 42.7% were of normal weight. Mean than half, 52.8% were overweight and obese at follow-up. Examining the sexes separately, 7.9% of the women were obese and 22.5% were overweight whereas 16.9% of men were obese and 10.1% were overweight.

Conclusions: These data, based on this particular sample of obese children, that they were investigated and received dietetic counseling in a tertiary center, suggest that more than half of this cohort have body mass index higher than normal, at young adulthood. Furthermore we conclude that obesity is more prevalent in men, whereas overweight is more prevalent in women. The limitations of the present study is the relative small sample size (the study is ongoing) and the absence of control group in order to assess whether early intervention has a positive effect on long term weight control.

Aim: The aim of this study is to answer the question whether an obese child becomes an obese adolescent and/or obese young adult.

Methods: It's a follow-up study of obese children followed in our department for the time period 1997-2006. We contacted 234 (109 M) of them during the last trimester of 2010, and they were asked to answer a semi-structured questionnaire. The questionnaire included questions regarding sociodemographic data of the family, current height and weight of the index case, factors that in their opinion affect weight control. At present 141 cases were contacted, from them 43 were not available because of address change, 3 refused to participate and 22 were excluded because of young age (<16 yrs old). The response rate is 96.6%. To analyze the data we used descriptive statistics.

Results: The two sexes were equally represented in both the childhood sample (46.5% M and 53.4% F) and the follow-up sample (46.7% M, 53.3% F). Of this cohort of obese children, at follow-ups, 24.7% were obese, 32.6% were overweight and 42.7% were of normal weight. More than half, 52.8%, were overweight and obese at follow-up. Examining the sexes separately, 7.9% of the women were obese and 22.5% were overweight whereas 16.9% of men were obese and 10.1% were overweight.

Conclusions: These data, based on this particular sample of obese children, that they were investigated and received dietetic counseling in a tertiary center, suggest that more than half of this cohort have body mass index higher than normal, at young adulthood. Furthermore we conclude that obesity is more prevalent in men, whereas overweight is more prevalent in women. The limitations of the present study is the relative small sample size (the study is ongoing) and the absence of control group in order to assess whether early intervention has a positive effect on long term weight control.

Background and aim: Obesity is a common feature in patients with type 1a pseudohypoparathyroidism (PHP) and affected patients typically also have short stature. We describe a patient with PHP who developed morbid obesity with tall stature in early infancy.

Methods: 6 months female infant with history of abnormal weight gain and increased appetite was referred for endocrinological evaluation. She was born 38 weeks gestation with birth weight 4500 gram and rapid weight gain at 1 month. She was only breastfed from birth. Frequently nursed due to crying 3kg/last 1 month. Prenatal history unremarkable. No vitamin D taken by mother during pregnancy or child after birth. On physical examination at 6 months of age length was 70cm (1.45SD) weight was 13 kg (4.8SD) and head circumference was 48(>2SD). She had no dysmorphic feature but she had a hard subcutaneous nodule in her lumbar area and umbilical hernia. Laboratory investigation showed the following values: serum calcium: 6.8 mg/dL(8.6-10mg/dL), phosphorus: 7.6mg/dL (4.2-7mg/dL), magnesium: 3.7 mg/dL (1.6-2.6mg/dL), alkaline phosphatase: 333 U/L (145-420U/L), parathyroid hormone:400 pg/mI (9-69pg/mI), albumin: 3.7 mg/dl (4.5mg/dl), 25(OH)D: 55 ng/ml (15-80ng/ml), thyrotropin: 6.87 mlU/ml (0.5-2.5 mIU/ml), free thyroxin: 0.69 ng/dl (0.8-1.8ng/dL), cortisol: 2.65 ug/dL (4.27ug/dL), corticotropin: 12.9 pg/mL (10-60), leptin: 23 ng/mL. Excessive weight gain, mild hypothroidism and increased parathyroidism and decreased serum calcium suggested a diagnosis of Pseudohypoparathyroidism type 1a.

Conclusion: Hypothalamic G-protein coupled melanocortin receptor may mediate the central effects of lepin. GNAS mutation result in undiagnostic of MCR4 It explains the obese, hyperphagic and tall stature phenotype and suggest that the genetic mutations which underlie PHP may be a more common cause of severe obesity.

Aim: The aim of this study is to answer the question whether an obese child becomes an obese adolescent and/or obese young adult.

Methods: It’s a follow-up study of obese children followed in our department for the time period 1997-2006. We contacted 234 (109 M) of them during the last trimester of 2010, and they were asked to answer a semi-structured questionnaire. The questionnaire included questions regarding sociodemographic data of the family, current height and weight of the index case, factors that in their opinion affect weight control. At present 141 cases were contacted, from them 43 were not available because of address change, 3 refused to participate and 22 were excluded because of young age (<16 yrs old). The response rate is 96.6%. To analyze the data we used descriptive statistics.

Results: The two sexes were equally represented in both the childhood sample (46.5% M and 53.4% F) and the follow-up sample (46.7% M, 53.3% F). Of this cohort of obese children, at follow-up, 24.7% were obese, 32.6% were overweight and 42.7% were of normal weight. More than half, 52.8%, were overweight and obese at follow-up. Examining the sexes separately, 7.9% of the women were obese and 22.5% were overweight whereas 16.9% of men were obese and 10.1% were overweight.

Conclusions: These data, based on this particular sample of obese children, that they were investigated and received dietetic counseling in a tertiary center, suggest that more than half of this cohort have body mass index higher than normal, at young adulthood. Furthermore we conclude that obesity is more prevalent in men, whereas overweight is more prevalent in women. The limitations of the present study is the relative small sample size (the study is ongoing) and the absence of control group in order to assess whether early intervention has a positive effect on long term weight control.

Background: Hypocalcemia may present as an asymptomatic laboratory finding or as a severe, life-threatening condition. Chronic hypocalcemia may be well tolerated by the patient, but treatment nonetheless remains necessary in order to prevent long-term complications.

Objective: We present a case study of a patient with primary hypoparathyroidism who is surprisingly resistant to the usual treatment consisting of calcium and vitamin D supplementation.

Methods: We report the case of a 14-year old girl, in which the diagnosis of primary hypoparathyroidism was retained because of the association of low PTH coupled with severe hypocalcemia with seizure and brain calcifications.

Results: The patient was treated with intravenous calcium gluconate with a good response. Then, she was treated with oral calcium gluconate and alfalcidol with persistence of the clinical symptoms of hypocalcemia (paresthesia, Chevostek and Trousseau signs) without significant changes in calcemia. The patient’s serum analysis indicated the presence of immunoglobulin A antibody against gladin. Diagnosis of gluten-sensitive enteropathy or celiac disease was suggested at endoscopy, and confirmed by histological findings in duodenal biopsy. The histocompatibility antigen HLA-DQ2 was founded. The patient was placed on a gluten-free diet, which rapidly lead to the normalization of her bowel habits and improved her metabolic and nutritional parameters.

Conclusions: This finding suggests that coexisting celiac sprue is one of the mechanisms responsible for the malabsorption associated with idiopathic hypoparathyroidism concluding in a rare association.
Background: Graves’ disease is the most common cause of thyrotoxicosis in children, which can have many negative effects on both physical and psychological development. Antithyroid drug (ATD) therapy is recommended as the initial treatment but still exist many controversies concerning optimal duration of ATD therapy.

Objective and hypotheses: The aim of our study was the retrospective evaluation of ATD therapy in children with Graves’ disease.

Methods: The medical history of 35 children (29 girls) in mean age of GD diagnosis 12.1 years was analyzed. Total duration of treatment, time to initial remission, number of relapses, way of ATD therapy discontinuation and block and replace treatment were taken into consideration.

Results: Mean time of observation was 2.5 yrs (max. 5.83 yrs.). The initial hormonal remission was achieved in 30 (85.7%) children.

Mean ATD therapy duration for hormonal remission was 4 months. Only in 14 (34.3%) discontinuation of ATD was possible and mean time free from ATD was 6 months.

Mean number of relapses 2.42 was observed. In 34.3% of children ATD dose reduction was fast (by 50% during a weeks), 34.3% of children had prolong ATD low dose therapy (form 1.25 to 2.5 mg/d for several months), in 54.3% of children combination of L-thyroxine with ATD was used.

No differences concerning time of initial remission, time and number of relapses depending on way of ATD dosage was found. 5 children from that group were qualified to radioiodine therapy.

Conclusions: ATD therapy in children is effective way to achieve initial clinical and hormonal remission in GD thyrotoxicosis but longer permanent remission (after ATD discontinuation) than 6 months is unusual. The late outcome of ATD therapy seems to have no relationship to way and duration of dosage.

Results of Gn-RH analogs (triptorelin) therapy in girls with idiopathic true precocious puberty

Juliana Gherian1; Camelia Procopiuc1; Cristina Patricia Dumitrescu1; Nina Dumitriu1; Corina Neamtu2

1”C.I.Parhon” National Institute of Endocrinology, Pediatric Endocrinology, Bucharest, Romania; 2M.S.Curie” Children Hospital, Endocrinology, Bucharest, Romania; 3”C.I.Parhon” National Institute of Endocrinology, Ultrasonography, Bucharest, Romania

Background: True precocious puberty (PP) has negative psychological consequences and is often associated with a reduction of final adult height.

Objective and hypotheses: To study the efficiency of triptorelin treatment (3.75 mg i.m. monthly) over clinical features, hormonal profile and predicted adult height (PAH) in girls diagnosed with idiopathic true PP.

Methods: 12 conducted a retrospective study over patients diagnosed with idiopathic true PP in the pediatric endocrinology department in the last 5 years; we only considered patients treated for at least 6 months continuously.

Results: We identified 42 patients (aged 3 to 8.6 years at the beginning of treatment), which were treated for an average period of 25 months (6-51 months). Growth velocity during treatment was between 3.8 cm/years and 11.8 cm/year, (average 6.4 cm/years); the bone age had a slow rate of progression during treatment (0.85 years bone age/ 1 year chronological age).

The predicted adult height (PAH) at the end of therapy was significantly higher than the predicted final height at the beginning of the therapy. The PAH at the last evaluation during triptorelin therapy was negatively and significantly correlated with the difference between bone age and statural age at the beginning of treatment; we also identified correlations between PAH and bone age at the beginning of therapy (negative correlation) and between PAH and midparental height. 8 patients were re-evaluated after cessation of therapy (between 3 months and two years, at a chronological age of 9.5 - 12 years);

their growth velocity was between 5.5 and 8.2 cm/year (average = 6.9 cm/an) and none of them was menstruate.

Conclusions: Triptorelin therapy has proved to be efficient in regression of pubertal signs, in restoring prepubertal hormonal profile and improving final height; it is mostly efficient in patients with high midparental height and low bone age at the beginning of therapy.

Final height in patients with congenital adrenal hyperplasia due to 21-hydroxylase deficiency

SueLY Keiko Kohara1; TatADzwa Masaya2; Paul DimitrI3; Neil WIlIght; Jerry WaIes2

1’UNIVILLe, Pediatrics, JoinviIe, Brazil; 2Sheffield Children’s Hospital, Endocrinology, Sheffield, United Kingdom

Background: Achievement of optimal growth is one of the major problems in the management of children affected by congenital adrenal hyperplasia (CAH) due to 21-hydroxylase deficiency (21-OHD). The current literature reports that patients with classic CAH often do not achieve their target height (TH) and that they are obese. Glucocorticoid replacement is vital for preventing adrenal crisis and reducing androgen excess, but results in growth inhibition when administered in larger doses. If the androgens are not supressed, there is advancement of bone age with premature fusion of the epiphyses and ultimate short stature.

Aim: The aim of this study was to evaluate final height (FH) of patients with the classic form of 21-OHD and compare to TH.

Methods: We reviewed the growth charts of patients with CAH who had attained FH.

Results: We evaluated 14 patients who had attained FH. 7 salt-wasting (SW) and 7 simple virilizing (SV). Five patients were male. Mean age at onset of treatment was 2.6y. Target height was available in twelve patients and mean TH-SDS was -0.15±1.1. Mean FH-SDS was -0.58±1.24. Corrected FH (FH-SDS – TH-SDS) was -0.66. All the patients were treated with hydrocortisone. Two patients were overweight at FH. The last bone age done at a mean chronological age of 13 years were advanced more than 1 year in 6 patients.

Conclusions: We concluded that mean FH of our CAH patients was within normal range, but in 8 patients was below the genetic target, as reported in the literature. Only one patient was obese.

Response of C-peptide/ insulin during a mixed meal test in combination with repaglinide to identify the diabetes type and the option for oral treatment

Diemud Simm1; Henk-Jan Veeze2; Henk-Jan Aanstoot1

Diabetes, National Center of Diabetes in Children and Young Adults, Diabetology, Rotterdam, Netherlands

Background: The aetiology and type of diabetes is not always clear in young diabetes patients. While clinical features, autoimmune antibodies (IC, GAD, IAA and insulin) as well as molecular diagnostics for Mody 1 – 6 help to distinguish diabetes forms, a subgroup remains without a certain diagnosis.

Objective and hypotheses: For such cases we aimed to develop a method to evaluate β-cell function and subsequent options of treatment by repaglinide, a short acting insulin secretagogue (maximum plasma concentration within 0.5 – 1h, half life 1h) which also stimulates early insulin secretion and is thus suitable to be combined with a β-cell provocation. A mixed meal test combined with incremental dosages of repaglinide was previously applied by Lawrence S. Coma et al. to show the effectiveness of the medication in type 2 diabetes.

Methods: Seven patients with unclear aetiology of diabetes and 1 healthy control person underwent after an overnight fasting period a MMTT with Sustacal 6 ml/kg (max.: 360 ml) ingested in combination with repaglinide 1 mg directly before the meal intake. Glucose, insulin and c-peptide were determined after fasting and 30, 60, 90, 120, 150 minutes after test start, i.e. repaglinide medication and start meal intake.

Results: In this pilot study we identified five patients who responded with sufficient insulin release to change medication from insulin to repaglinide.

Conclusions: We conclude that this test identifies individuals with repa-
glide responsive diabetes in whom traditional tests couldn’t clarify the aetiology and thereby were placed on insulin therapy. Using this test we can offer an oral treatment option despite in some of the cases the molecular diagnosis is not yet clear.

**PAO-240**

**Incidence and clinical characteristics of the new cases of type 1 diabetes in Galicia, Spain**

*Claudia Heredia1, Jesús Barreiro1, Aurora Pávaro1, Pablo Lázaro1, José Luis Chamorro1, Pablo Fanha1, María Mercedes Rodicio1, Alicia Cepedano1, Maravilla Santos1, Ines宁静1, Credo Lourdes2, Paloma Cabanas2, María José Pita2, Marian Rodriguez2*

1Hospital de Santiago de Compostela, Universidad de Santiago de Compostela, Unidad de Endocrinología Pediátrica, Creixendo y Adolescencia, Santiago de Compostela, Spain; 2Hospital Provincial de Pontevedra, Pediatría, Pontevedra, Spain; 3Hospital Infantil Teresa Herrera, Pediatría, A Coruña, Spain; 4Hospital Xeral-Cies, Pediatría, Vigo, Spain; 5Hospital Cristal Piñor, Pediatría, Ourense, Spain; 6Hospital Da Costa, Pediatría, Burela, Spain; 7Hospital Xeral Calde, Pediatría, Lugo, Spain; 8Hospital Arquitecto Marcide, Pediatría, Ferrol, Spain; 9Hospital Virxe da Xunqueira, Pediatría, Cee, Spain; 10Hospital Comarcal Montforte, Pediatría, Monforte, Spain; 11Hospital del Barbanza, Pediatría, Riveira, Spain

**Objective:** Studying the epidemiology of childhood-onset type 1 diabetes (DM1) less than 15 years of age in hospitals of Galicia (Spain) during the period 2001-2010.

**Methods:** We identify new cases with DM1 criteria diagnosed by a paediatrician in Galicia Autonomous Community from January 2001 to December 2010 and conducted a data collection protocol to hospitalization include age, prior to the debut diabetic symptoms, duration, associated autoimmune diseases, family history and biochemical parameters at diagnosis.

**Results:** We identified 559 subjects with childhood-onset DM1 during 2001-2010 and distributed by sex: 44.3% females and 55.6% males. The annual incidence rate was 17.2/100,000/year (range: 15.0-19.4); younger than 5 years were 151 children (21.7% from 8 months to 4.9 years); 179 (32%) were 5-9 years and between 10-14.9 years were 224 patients (40.8%). Nineteen patients (3.3%) had celiac disease, 15 patients (2.68%) autoimmune thyroiditis (6 subjects hypothyroidism) and 72.7% of patients tested positive for at least one autoantibody (insulin autoantibody, GAD antibody or insulinoma-associated protein 2 (IA2). In relation to family history: 31 children have a first-degree relative with DM1 and 16 with DM2. The debut diabetic symptoms are shown in table 1.

<table>
<thead>
<tr>
<th></th>
<th>0-4.9 years</th>
<th>5-9.9 years</th>
<th>10-14.9 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyuria (%)</td>
<td>97.6</td>
<td>96.4</td>
<td>97</td>
</tr>
<tr>
<td>Polydipsia (%)</td>
<td>97.6</td>
<td>94.9</td>
<td>100</td>
</tr>
<tr>
<td>Enuresis (%)</td>
<td>75.4</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>Weight loss (%)</td>
<td>68.5</td>
<td>78</td>
<td>87</td>
</tr>
<tr>
<td>Hypoglycemia (%)</td>
<td>32.5</td>
<td>55</td>
<td>64</td>
</tr>
<tr>
<td>Average glycemia (mg/dL)</td>
<td>475</td>
<td>386.3</td>
<td>536.4</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>8.9</td>
<td>10.9</td>
<td>11.8</td>
</tr>
<tr>
<td>Diabetic ketoacidosis (DKA) (%)</td>
<td>34.4</td>
<td>29.6</td>
<td>24.1</td>
</tr>
</tbody>
</table>

**Conclusions:** The incidence peak was found in the 10 to 14 years age-group and a third of the children was diagnosed with DKA. The 0-4.9 years group was diagnosed in less time and with lower values of HbA1c. The most common symptoms were polydipsia, polyuria and weight loss. The incidence remained stable over the 10 years.

**PAO-241**

**Use of 70/30 premixed insulin in DM1 pediatric patients with a basal bolus regimen with multiple snacks**

*Marta Ferrer-Lozano1, Mercedes Rodriguez-Riquel1, Gracia M. Lou-Françès1, Maria D. Cañas-Redondo1, Jose I. Perales-Martínez1, Sofia Congost-Marín1*

Children's University Miguel Servet Hospital, Paediatric Diabetes and Endocrinology, Zaragoza, Spain

**Background:** Metabolic control is related with the number of short-acting analogs bolus administered, as we reported in a previous study [3 bolus (n:33) HbA1c: 8.54±0.8; And 24 bolus (n:73) HbA1c: 7.52±0.8; p<0.001]. In our country, children have 4-5 meals/d, with midmorning and midafternoon snacks. Some of them, especially adolescents, refuse to receive more bolus/d, and have snacks without insulin. In these patients a premixed 70/30 insulin at breakfast and/or lunch could better satisfy insulin requirements, improving glycemic profile and HbA1c.

**Objective and hypotheses:** To analyze the characteristics of a regimen using a premixed insulin 70/30(NPH), related to insulin requirements (U/kg/d), time of the injection and its effect on metabolic control.

**Methods:** 28 DM1 patients with a basal-bolus regimen, 3 short-acting analogs/d and poor metabolic control were proposed to change to 70/30 premixed insulin at breakfast and 21 patients were included. Mean age 15.14±2.49 years (range 9-17). Diabetes evolution: 7.52±4.19 years (1-16). 11 males (52.4%), 10 females (47.6%), 2 prepubertal (9.5%), 19 pubertal (90.5%).

**Results:**

<table>
<thead>
<tr>
<th></th>
<th>Before change</th>
<th>After change</th>
<th>Mean of differences</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin requirements (U/Kg/d)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>8.48±0.85</td>
<td>7.8±0.87</td>
<td>-0.68</td>
<td>0.001</td>
</tr>
<tr>
<td>Annual mean</td>
<td>7.92±0.80</td>
<td>(6.6-9.7)</td>
<td>-0.9±0.65</td>
<td>0.000</td>
</tr>
<tr>
<td>p 1st control</td>
<td>-1.01±1.7</td>
<td>0.07±0.65</td>
<td>-1.01±0.65</td>
<td>0.000</td>
</tr>
<tr>
<td>p Annual mean</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Premixed insulin administered at breakfast in 33% of the patients, at lunch in 42.9%, and at breakfast and lunch in 23.8%.

**Conclusions:** In DM1 patients having multiple snacks who refuse to receive more than 3 bolus, the change to a regimen with 70/30 premixed insulin at breakfast and/or lunch improve significantly their metabolic control, reducing HbA1c. The change from a short-acting analog to 70/30 premixed insulin does not vary total insulin dose significantly.

**PAO-242**

**Disorder of sex development in southern Nigeria: a report of four cases and constraints in management**

*Tamunopriye Jaja1, Iforo Yarhere1, Ifeoma Anochie2*

University of Port Harcourt Teaching Hospital, Paediatrics, Port Harcourt, Nigeria

**Background:** Disorder of sex development (DSD) is a congenital condition in which development of chromosomal, gonadal, or anatomic sex is atypical. The prevalence of DSD is about 1% among live births and about 0.1-0.2% present with marked genital ambiguity. In most developing countries, the exact incidence is not known. This is because some cases are missed at delivery, which is mainly by traditional birth attendants and amongst clinicians, poor awareness is a major challenge.

**Objective and hypotheses:** To report four cases of DSD seen in a tertiary hospital in Southern Nigeria and highlight management constraints.

**Methods:** Case notes of patients with ambiguous genitalia seen at the Paediatric endocrine unit between January 2008 and December 2010 were analysed. Literature was reviewed for comparison with current trend in investigations and management. Parents were interviewed using a structured questionnaire and results analysed.
Results: Of 62 children seen with various endocrine disorders during the study period, 4 (6.4%) had ambiguous external genitalia. Their ages at presentation ranged from 6days to 16 years. The commonest initial clinical diagnosis was congenital adrenal hyperplasia. Confirmatory diagnosis was not done in any of the patients due to financial constraint and non availability of facilities for performing the investigations in our centre. Three (75%) were lost to follow up while one patient died from chronic renal failure. Reasons for default were religious 2 (50%), financial constraints in investigations 4 (100%), lack of diagnostic tools 3 (75%), and unwillingness to continue follow up 2 (50%).

Conclusions: There is still delay in diagnosis of ambiguous genitalia in our environment. Lack of diagnostic facilities, belief in spiritual attacks and high cost of confirmatory test have led to high rate of loss to follow up.

**PAO-243**

**The TRH test identifies hypothalamic defects of the thyroid axis in children within euthyroid state**

Ana de la Puente Arévalo; Julio Guerrero-Fernández; R Mora; Jose Maria Izurzaeta; R. Gómez; Antonio Buño; Maria Antonia Molina; Isabel González Casado; Ricardo Gracia Botthelier; Jose Carlos Moreno

1 La Paz University Hospital, Pediatric Endocrinology, Madrid, Spain; 2 La Paz University Hospital, Biochemistry and Clinical Analysis, Madrid, Spain; 3 La Paz University Hospital, Molecular Thyroid Laboratory, ING EMM-Institute for Medical and Molecular Genetics, Madrid, Spain

**Background:** Congenital Central Hypothyroidism (CCH) has a prevalence of 1:16.000 neonates. 40% of cases are isolated pituitary or hypothalamic deficiencies. CCH is not screened for in Europe where TSH is mainly used as screening. Besides, it is not routine to discriminate between secondary or tertiary CCH using the TRH test. Pituitary CH is due to TSbH and TRHR genes mutations, while hypothalamic CH remains genetically “orphan”.

**Objective and hypotheses:** To test the discriminative capacity of the TRH test in the etiology of CCH.

**Methods:** After 7 µg/kg TRH, TSH and PRL were determined at -15, 0, 15, 30, 60, 120 and 180 min. and FreeT4 and TotalT3 at 0 and 180 min. We analyzed TSH peak, its return to basal levels and dynamics of TSH increase (ratios 15’/0’ and 30’/0’) and fall (ratios 30’/60’ and 180’/0’) upon Van Tijn. The test was performed in: 1. A 20 month old girl with postnatal progressive growth retardation (<1.7SD weight and height), hyperplasia and reduced TSH related to her FT4 (TSH 1.2 mU/L, FT4 0.92 ng/dl). 2. A 12 year old boy with hypothymia-bradichardia-sweating crises and sporadic hyperthyrotopinemia (TSH 5.4-8 mU/L) and 3. An 11 year old boy with hyperthyrotopinemia (TSH 9.82 mU/L) and hyperglyceremia (109 mg/dl) (TRH defect suspicion).

**Results:** Patients 1 and 2 had type 3 TSH response (hypothalamic defect) with 15’/0’ ratios of 23.8 and 9.1 (N=6-5) respectively, without return to basal TSH after 3 h. (180’/0’ ratios of 2.87 and 1.7). Patient 3 had type 0 response (thyroid defect) with 15’/0’ and 180’/0’ ratios of 4.6 and 0.8, respectively.

**Conclusions:** The 180 min. TRH test identifies hypothalamic defects of the thyroid axis even in the biochemically euthyroid state. Tertiary hypothyroidism can present as mild TSH elevation or as TSH decreases (even within normal values) relative to FT4 levels.
A case of short stature due to phosphatodisabetes
Ekaterine Kvaratskeli; Maia Rekhvashvili; David Metreveli; Medea Tsanava; Rolf Peter Willig
*Center for Endocrinology, Metabolism, Nutrition, Pediatric Endocrinology, Tbilisi, Georgia; Center for Endocrinology, Metabolism, Nutrition, Endocrinology, Tbilisi, Georga; Tbilisi State Medical University, Pediatric Nephrology, Tbilisi, Georgia; *Endokrinologikum Hamburg, Pediatric Endocrinology, Hamburg, Germany

Results:
Discovered according to standard medical protocols for this pathology.

Methods:
397 children from 0 to 18 years of age with diagnosr DM1 were evaluated for complications.

Objective and hypotheses:
The female patient from healthy parents, born without complications at term, normal weight and length. Psychomotor development until the age of 2 years was normal. Since the age of 2 years deformation of legs and difficulties with walking have been observed.

Methods:
The patient was consulted by Pediatric Orthopedist, Nephrologists and Endocrinologist. The blood biochemical findings revealed normal pH, normal calcium (Ca)2-, potassium (K)-, sodium (Na)-concentrations, very low phosphate (P) - with markedly elevated alkaline phosphatase (AP)- and slightly elevated parathyroid hormone (PTH)-concentration; urine test indicated impaired tubular function: mild glucosuria, proteinuria, erythroctruuria and markedly increased phosphaturia. Phosphatodisabetes was 52%, phosphate clearance/creatinine clearance 0.52, renal threshold phosphate concentration (TmP/GFR) 0.25mmol/l. Genetic tests results not available yet.

Results:
The diagnosis of phosphatodisabetes made on the basis of clinical-laboratory data. The therapy with Inorganic phosphate (100mg/kg/d) and 1,25(OH)2VitD 50-60ng/kg/d had been started. Childs walking abilities improved with treatment, the deformation of legs decreased, but O-legs and other skeletal deformations are still remarkable. Auxological parameters are not satisfactory. Physical growth is below the normal range (height SDS -3, 84); the patient’s predicted height less than target height. Biochemical monitoring performed regularly under the treatment, serum phosphate remains below normal, serum AP is still elevated.

Conclusion:
This case is in line with other publications and indicates the need for additional treatment with growth hormone.

Background:
Primary hypophosphatemic rickets is rare disorder caused by inborn defect of renal tubular reabsorption and usually manifested in childhood and infancy with stunted growth and deformities of lower limbs.

Objective and hypotheses:
The aim of the study was to investigate particularities of DM1 according to gender, date of birth, onset of disease and complications according to gender, date of birth, onset of disease and complications.

Methods:
397 children from 0 to 18 years of age with diagnose DM1 were discovered according to standard medical protocols for this pathology.

Results:

<table>
<thead>
<tr>
<th>Disease Type</th>
<th>Total %</th>
<th>Boys %</th>
<th>Girls %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic retinopathy</td>
<td>31.8</td>
<td>50.8</td>
<td>49.2</td>
</tr>
<tr>
<td>Diabetic nephropathy</td>
<td>34.6</td>
<td>46.7</td>
<td>53.3</td>
</tr>
<tr>
<td>Diabetic angiopathy of the lower extremities</td>
<td>14.4</td>
<td>49.1</td>
<td>50.9</td>
</tr>
<tr>
<td>Peripheral nephropathy</td>
<td>27.0</td>
<td>51.4</td>
<td>48.6</td>
</tr>
<tr>
<td>Central nephropathy</td>
<td>2.0</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Choroidopathy</td>
<td>5.6</td>
<td>54.5</td>
<td>45.5</td>
</tr>
<tr>
<td>Mauriac syndrome</td>
<td>0.5</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>

Conclusions:
There is practically the same prevalence of onset of DM in all age groups among boys, with an increase in number of cases at 8 and 12 years of age in girls, and decrease at the age of 15 to 17 years. Children born in spring and summer months have higher risk of developing DM1. The onset of the DM1 usually occurs in autumn and winter months. Most commonly children develop nephropathy, retinopathy, and peripheral neuropathy. 1/3 of all patient would have these complications. Gender is not a risk factor for chronic complications' development in DM1. Though girls seem to develop diabetic nephropathy more frequently than boys, but have lower risk of choriopathy and Mauriac syndrome.

Background:
Diabetes Mellitus (DM) is one of the hardest diseases and is not only a medical, but social problem. DM takes the third place on mobility and mortality in developed countries. Children and adolescent make 8 to 10% of all patients with diabetes. One out of 500 children or one out of 200 adolescent has diabetes.

Objective and hypotheses:
The objective of the study was to investigate particularities of DM1 according to gender, date of birth, onset of disease and complications.

Methods:
397 children from 0 to 18 years of age with diagnose DM1 were discovered according to standard medical protocols for this pathology.
tremors, and fluctuating mental status. Her thyroid function studies revealed a Free T3 of 747 pg/dl, Free T4 of 4.8 ng/dl, and TSH of <0.01 uu/ml. She was started on Methimazole, Propranolol, and Potassium Iodide for thyroid storm. Antibody testing revealed anti-TPO of 1355.5 iu/ml, anti-thyroglobulin of 291.8 iu/ml, and TSI of 335% baseline. She was diagnosed with Grave’s disease and continued treatment with Methimazole and Propranolol.

**Conclusions:** Graves’ disease accounts for 10-15% of all childhood thyroid disorders, with incidence ranging from 0.1-3.0 in 100,000 children. Approximately 1-2% of patients with hyperthyroidism progress to thyroid storm when physiologically stressed. To our knowledge cases of asymptomatic Grave’s disease with initial presentation of thyroid storm in pediatric patients are not commonly reported.

**PAO-249**

**Complication of subcutaneous fat necrosis of the newborn**

*Nazanin Hazhir; Robabeh Ghergherehchi*

Tabriz University of Medical Sciences, Students’ Research Committee, Tabriz, Islamic Republic of Iran

**Background:** Subcutaneous Fat Necrosis (SCFN) of the newborn is uncommon, self-limited disorder that occurs in full term infant who experienced a perinatal distress in the first weeks of life. It can be complicated by life threatening hypercalcemia and other rare complication such as hypoglycemia, thrombocytopenia, hypertriglyceridemia, anemia and fever. SCFN with hypercalcemia frequently has been reported.

**Objectives:** To describe a case of subcutaneous fat necrosis with all of the above complications.

**Methods:** We recorded risk factors concerning the mother, pregnancy and delivery, clinical aspects of SCFN and early and late outcomes.

**Results:** The child was born at term. Lesions appeared on the 22th day of life. Delivery was complicated by meconium aspiration. Complications were hypoglycemia, hypercalcemia, nephrocalcinosis, dyslipidemia, thrombocytopenia and fever.

**Conclusions:** Physicians caring for infants with subcutaneous fat necrosis of the newborn should be aware of the above associations in order to provide prompt and appropriate treatment to prevent associated, undesirable sequelae.

**Figure 1:** The erythematous subcutaneous nodular plaque on the middle of the back and arm.

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**PAO-250**

**Nutritional status in PKU patients in Mazandaran province: is it acceptable or not?**

*Peiman Eshraghi1; Ali Abbaskhanian2; Sahar Taghavi3*

1Mashhad University of Medicine, Pediatric Endocrinology, Mashhad, Islamic Republic of Iran; 2Sari University of Medicine, Pediatric Neurology, Sari, Islamic Republic of Iran; 3University of Pharmacy, Biotechnology, Mashhad, Islamic Republic of Iran

**Background:** Phenylketonuria is one of the most frequent metabolic diseases which is transmitted as autosomal recessive pattern. Appropriate diet with restricted phenylalanine is the base of treatment, so special formulas and diet replace phenylalanine containing foods. Limited native studies exist about the results of such treatment means protein limitation and replacing an expensive and unavailable foods. This study was designed to evaluate nutritional status the calorie, protein, carbohydrate and fat of patients’ diet and iron storage and iron deficiency anemia in PKU patients.

**Objective and hypothesis:** This is a cross sectional study which evaluated all of the PKU patients in Mazandaran province during 2009-2010 in metabolic clinics in Babol and Sari. Nutritional status was evaluated according to 72 hours diet recall sheet which is the method for recording nutrients eaten within 3 days. Nutritional and demographic information was studied according to questionnaire and blood sampling results and iron deficiency anemia.

**Results:** Twenty one PKU patients were studied which 7 ones (33.3%) were female and 14 ones (66.7%) were male with mean age of 7.26±6.64 years. Iron deficiency and iron deficiency anemia was present in respectively in 10 (47.1%) and 6 patients (28.6%). Five patients (23.8%) were underweight and 4 patients (19%) were short stature.

**Conclusion:** Energy, protein, carbohydrate, fat and iron deficiency was significant in patients; According to the price of special foods in our country, families cannot prepare enough foods. So, attention to nutritional demands in PKU patients to reduce malnutrition and iron deficiency is critical.