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Abstracts

Guest Editors

Stephen K. Van Den Eeden, Oakland, Calif.

Lorene M. Nelson, Stanford, Calif.

Caroline M. Tanner, Sunnyvale, Calif.

Valerie McGuire, Stanford, Calif.

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Program

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Oral Presentations

O 1

MS Prevalence Is Higher in Christian than in Moslem Arabs and Druze in Israel

A. Miller, E. Kahana, I. El Said, H. Rushda, R. Shahien, W. Simri, M. Alter

Haifa, Ashkelon, Beer Sheva, Zefat, Nahariya, Israel, and Philadelphia, PA, USA

MS is common in Jewish immigrants to Israel from Europe/America and uncommon among Jewish immigrants from Arab/Asian countries. Data on prevalence of MS in Israeli Arabs is lacking but is low in other Middle Eastern Arab countries. In Greater Jerusalem, age-adjusted prevalence of 19/10⁵ in Moslem Arabs and 64/10⁵ in Israeli-born Jews was found. All citizens of Israel have ready access to modern medical facilities and diagnostic criteria are reasonably uniform. The Israeli National MS Register listed 194 Arab MS patients of whom 121 fit the Poser diagnostic criteria and were living in Israel on prevalence day (1 July 2000). Arabs living in Israel in 2000, based on the national census numbered 1,064,500: 952,000 Moslems, 110,000 Christians and 102,500 Druze. The age adjusted MS prevalence rates were 9.77, 30.27 and 7.25/100,000. Environmental factors could account for the higher incidence of MS in the Christian Arabs as they are more affluent; their lifestyle is similar to that of the Jewish population but their genetic background is also different in that they tend to marry within their own religious group. Differences in MS frequency among Israel's diverse populations offers excellent opportunities for research designed to unravel genetic and environmental causes of MS.

O 2

The Incidence and Prevalence of Multiple Sclerosis in Saskatoon, Saskatchewan, 1970–2003

W. Hader

Saskatoon, SK, Canada

Objective: To reappraise the incidence and prevalence of Multiple Sclerosis in Saskatoon, Saskatchewan over the past three decades 1970–1999. **Background:** Population based studies have reported an incidence of 9.2/100,000 in 1980–1989 and an overall prevalence of 224/100,000 clinical definite cases in 1996. The resident at onset rate was 162/100,000. **Method:** The identification of cases by long-term surveillance continued to December 2003 with information from a Multiple Sclerosis registry maintained since 1969, medical records, physicians, community and provincial resources. **Results:** 965 patients were identified from 1970 to 2003, 675 females and 290 males for a ratio of 2.3:1. On 1 January 2003, 583 (60.4%) were living, 177 (18.3%) deceased, 119 (12.3%) moved, and 86 (8.9%) status unknown. There were 594 incidence cases in the registry, 426 females and 168 males for a ratio of 2.5:1, 406 (68.4%) were living, 99 deceased (16.7%). 484/594 incidence cases were diagnosed 1970–1999. The incidence rates for the past three decades 1970–1999 were

8.7, 10.0, and 8.3/100,000. The innate risk or residence of onset rate was 171/100,000 for clinical definite cases. The prevalence for all diagnosed clinical definite cases on 1 January 2003 was 245/100,000 population. **Conclusion:** The high incidence rates were attributed to improved long-term ascertainment and appear stable over 30 years. The increased prevalence reflects an accumulation due to a greater incidence than mortality rate. Long term surveys are necessary to ascertain the true incidence of Multiple Sclerosis. Few long term incidence studies in North America and the world are reported that compare with the high risk of Multiple Sclerosis in Saskatoon.

O 3

The Influence of Cognitive Dysfunction on Health-Related Quality of Life in Multiple Sclerosis

J. Benito-León, J. Olazarán, J.M. Morales, B. Otero, J. Rivera-Navarro, for the GEDMA Study Group
Madrid, Leioa, Spain, and Veracruz, Mexico

Background: Little is known about the impact of cognitive dysfunction on health-related quality of life (HRQoL) of MS patients. The aim of this study was to compare HRQoL between cognitively intact and cognitively impaired MS patients. **Methods:** The GEDMA study is a longitudinal survey of MS patients recruited at 13 hospitals from Madrid, Spain. One hundred and ninety one consecutive patients (71.2% female) from the second wave of the GEDMA cohort were submitted to a wide neuropsychological battery. Abnormal performance was defined as one and a half standard deviation below the mean reported for 51 healthy subjects stratified by age, gender and educational level. MS patients also underwent the Functional Assessment of Multiple Sclerosis (FAMS). The FAMS is a factorially derived scale designed to assess six primary aspects of HRQoL of MS patients: Mobility, Symptoms, Emotional Well-Being, General Contentment, Thinking and Fatigue, and Family/Social Well-Being. The EDSS scores were assigned by each clinical neurologist. **Results:** The definitive study sample was composed of 125 relapsing-remitting and 66 progressive MS patients, being the mean age 40 ± 10.5 years. Of the 191 subjects, 114 (59.7%) were cognitively impaired and 77 (40.3%) were cognitively intact. Cognitively impaired MS patients scored significantly worse in EDSS and in all the six dimensions of the FAMS than cognitively intact MS patients. **Conclusions:** This study emphasizes the importance of cognitive examination in MS patients. Indeed, cognitive dysfunction, along with physical disability, can have a dramatic impact on several aspects of HRQoL of MS patients.

O 4

Exposure to Pesticides and Risk of Parkinson's Disease: A Case-Control Study

R. Frigerio, K.R. Sanft, B.J. Peterson, J.H. Bower, J.E. Ahlskog, B.R. Grossardt, M. de Andrade, D.M. Maraganore, W.A. Rocca
Rochester, MN, USA

Objective: To investigate the association of Parkinson's disease (PD) with exposure to pesticides (herbicides, insecticides, and fungicides) using a case-control study design. **Methods:** We used the med-

ical records-linkage system of the Rochester Epidemiology Project to identify subjects who developed PD in Olmsted County, MN from 1976 through 1995. Each incident case was matched by age (± 1 year) and sex to a general population control. For cases and controls, we collected information about farming and exposure to pesticides preceding the onset of PD using a direct or proxy telephone interview. **Results:** Information was available for 149 cases (49 direct and 100 proxy) and 129 controls (63 direct and 66 proxy). The frequency of farmers was 31.5% in cases and 24.0% in controls (OR = 1.5; 95% CI = 0.9–2.6). The frequency of pesticide use by farmers was 10.1% in cases and 7.8% in controls (OR = 1.3; 95% CI = 0.6–3.1). Inclusion of exposure to pesticides related to hobbies or other activities increased the OR slightly (OR = 1.6; 95% CI = 0.8–2.9). We observed no significant differences between cases and controls considering herbicides and insecticides separately. No significant associations were found between PD and farming specific types of crops such as cereal grains (corn, wheat, and oats), hay, and vegetables or fruits. **Discussion:** We did not confirm the association of PD with exposure to pesticides related to farming, hobbies, or other activities in this southeastern Minnesota population.

O 5

Welding and Risk of Parkinson's Disease

S.M. Goldman, A. Smith, K. Comyns, M. Korell, P. Quinlan, J.W. Langston, C.M. Tanner
Sunnyvale and San Francisco, CA, USA

Objective: To determine whether welding is associated with an increased risk of Parkinson's disease (PD). **Background:** Welding is often proposed to cause PD, but few studies have addressed this directly. Most studies investigating this association studied only welding as a full time occupation but did not investigate other occupations in which welding is a frequent task. We have used detailed job-task-based lifetime occupational histories to investigate the association of welding and PD using a discordant twin pair study design. **Methods:** Twin pairs with PD in at least one twin were identified from the NAS/NRC WWII Veteran Twins Cohort. Pairs were included if only one twin had PD and both twins were living, non-demented and consented to provide lifelong occupational and hobby histories. Job-task-based occupational and hobby histories were systematically collected from age 10 until the age at onset of PD in the affected twin. An industrial hygienist determined a priori which occupations and hobbies might potentially involve welding tasks. All subjects who had occupations or hobbies that might have included welding tasks were systematically queried regarding specific welding-related tasks they may have performed. An industrial hygienist unaware of disease status subsequently reviewed this information. Additional queries were obtained as necessary. Each twin was classified as 'ever' or 'never' having welded. Ever working at a welding task was compared in twin pairs discordant for PD. McNemar tests were used for matched pair hypothesis testing. Age at PD onset and frequency of onset <50 were compared in those who did and did not weld. Hypotheses were tested with T tests for independent means and chi square tests. **Results:** 142 pairs discordant for PD were identified. 212 of these 284 individual twins (75%) were eligible for and completed the occupational history interview. 38 individuals (18%) ever welded during their lives. The mean age at PD diagnosis was 63.3 (SD 7.8) in subjects who welded and 64.1 (SD 8.3) in those who

did not ($p = 0.67$). PD onset at age 50 or younger occurred in 2/20 who welded (10%) and 6/86 who did not weld (7%), $p = 0.65$. Lifelong occupational histories was available for 88 discordant twin pairs. In 62 pairs neither twin welded, in 7 pairs both twins welded, in 10 pairs only the twin with PD welded, and in 9 pairs only the unaffected twin welded (OR = 1.1; 95% C.I.: 0.41–3.1; $p = 1.0$). Similar relationships were seen in monozygotic or dizygotic strata. **Conclusions:** Despite the use of a more complete job-task-based measure of welding exposure, our results do not support the proposal that welding is associated with an increased risk of PD. Similarly, we found no association between welding activity and an earlier age at PD onset.

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O 6

Plasma Folate, Plasma Homocysteine, and Risk of Mild Cognitive Impairment or Dementia

Steven D. Edland, Brad F. Boeve, David Tang Wai, Robert J. Ivnik, Glenn E. Smith, Eric G. Tangalos, Ronald C. Petersen
Rochester, MN, USA

Plasma homocysteine levels are consistently elevated in dementia, and one prospective study found hyperhomocysteinemia ($>14 \mu\text{mol/l}$) predicted risk of dementia. We investigated this in 848 cognitively normal persons aged 50–98 years (mean 78 years) and evaluated annually for incident dementia or mild cognitive impairment. Cognitive status was ascertained by extensive neuropsychometric and clinical examination. Ninety-three incident cases were identified after a mean follow-up of 4.3 years. Plasma samples from these cases and a 2:1 sample of controls matched on sex, age, and year of enrollment, and unimpaired at time of onset of the case, were assayed for homocysteine, folate, and related values. Analysis was by conditional logistic regression controlling for the matched design. Plasma hyperhomocysteinemia was only weakly associated with incident cognitive impairment in our sample (hazard ratio (HR) = 1.2, 95% confidence interval (CI) 0.7–2.1). Plasma folate was marginally associated with incident cognitive impairment (HR = 0.75, 95% CI 0.54–1.04), and there was evidence of modification of this effect. Within normohomocysteinemic persons, elevated folate predicted a decreased risk of disease (HR = 0.6 per standard deviation increase in folate, 95% CI 0.4–0.9), while within hyperhomocysteinemic persons elevated folate did not predict decreased risk of disease. These data suggest that folate levels may be important in understanding the relationship between homocysteine and dementia risk, and provide further evidence that dietary or supplemental folate may decrease the risk of dementia.

O 7

Effects of Early CVD Risk Factors on Change in Cognitive Function Later in Life

Paul J. Nietert, David Bachman, Susan E. Sutherland, Jacobo Mintzer
Charleston, SC, USA

Background: Cardiovascular disease (CVD) risk factors may also play an important role in Alzheimer's disease development. This

study focused on CVD risk factors and change in cognitive functioning measured in the Charleston Heart Study cohort. **Methods:** During the 1974/1975 exam, CVD risk factors were measured, including blood pressure, body mass index, smoking status, stroke and myocardial infarction history, total cholesterol, and fasting blood glucose. During 2 subsequent examinations (in 1987 and 1991), subjects completed a mental status questionnaire and Russell's (1975) Revision of the Wechsler Memory Scale (RR-WMS). Regression models were used to determine whether CVD risk factors were significantly associated with declines in mental status or in the subscales of the RR-WMS (immediate and delayed verbal and visual recall). All models were stratified by race and adjusted for age, sex, income, education, and health status. **Results:** Among whites (161 men, 250 women), history of MI was significantly ($p = 0.045$) associated with delayed visual recall decline, while hypertension and BMI were both significantly associated with decline in immediate (HTN: $p = 0.057$; BMI: $p = 0.018$) and delayed (HTN: $p = 0.027$; BMI: $p = 0.035$) verbal recall. Among AAs (107 men, 94 women), uncontrolled HTN was significantly ($p = 0.034$) associated with decline in immediate visual recall, and total cholesterol levels were significantly ($p = 0.007$) associated with delayed visual recall decline. **Conclusion:** Early CVD risk factors may be associated with later cognitive functioning declines. CVD risk factors may impact cognitive decline differently in AAs and whites.

O 8

ALS and Soccer: A Methodological Approach

Adriano Chiò, Gabriele Mora

Veruno, Italy

A relationship between ALS and professional sport has been supposed since a long time. Historically, one of the first cases of ALS in sport was that of the US baseball player, Lou Gehrig. Several case control studies showed a significant excess of ALS in subjects involved in professional sport. In 1999, an Italian magistrate, Mr. Raffaele Guariniello, as a part of an inquiry on the abuse of drugs in professional sports, analyzed mortality among soccer players. The analysis was based on mortality data of 24,000 professional and semi-professional soccer players who played between 1960 and 1997. A total of 375 subjects deceased in the study period. Using standardized proportional mortality ratios (SPMRs), based on mortality rates in general Italian population, a significant excess of mortality was found for some primary malignant tumors, and for ALS (SPMR 11.59; 95% CI 6.72–19.98). Hence, a second study on ALS incidence in a more strictly defined cohort, including all soccer players who played in the major and junior soccer leagues in 1970–2003, has been planned. All cases of ALS within this cohort will be identified. Person-years at risk will be calculated, considering a person at risk from the year when he was engaged in a professional team to December 31st 2003 or to the date of death. The analysis of standardized incidence ratios will be performed using as reference age-specific incidence rates of the Italian ALS registers. Data will be stratified by period of involvement in professional soccer, decade of activity, and age.

Posters

P 1

Amyotrophic Lateral Sclerosis and Professional Sport Activities – A Population-Based Case-Control Study

E. Beghi, A. Chiò, O. Hardiman, G. Logroscino, J.D. Mitchell, R. Swingle

Milano, Torino, Italy; Dublin, Ireland; Boston, MA, USA; Preston, Dundee, UK

Several reports investigated the cause-effect relationship between traumatic events, heavy manual activities and the occurrence of amyotrophic lateral sclerosis (ALS) with intriguing results. After the reports of some former soccer players getting ALS in Italy, concerns were raised on heavy physical activity and repeated traumatic events as risk factors for ALS in this population. For this reason, we plan to investigate the causal relationship between professional sport activities and incidence of ALS. The study sample includes patients with incident ALS (definite or probable according to the El Escorial criteria) from three European population-based registries (Italy, UK and Ireland; total population about 22 million). For each patient, two controls, matched for age, sex and socio-economic status, will be selected by random digit dialing in the same area. Cases and controls will be interviewed to collect data on date of onset of symptoms, type of onset (bulbar or spinal), muscle area firstly involved, date of ALS diagnosis, family history of ALS, Alzheimer and/or Parkinson disease, occupational history, dietary habits. Professional sport activities will be investigated for type(s), duration, medical complications (traumatic events or other), and use of medications or other substances. Additional information will include non-sport-related traumatic events and exposure to metals. Analyses will be performed in the entire sample and in subgroups by type and duration of sport activity, drug use and presence of complications. In patients with ALS, professional sport activity will be correlated to type and site of onset. A conservative estimate of the number of incident ALS patients recruited over a two-year period and willing to participate is 420–440 per year with an estimated sample size of 840–880 cases and 1680–1760 controls.

P 2

Normative Values for the CERAD Word-Learning Test in a Spanish Population

J.M. Manubens Bertrán, P. Martínez-Lage Alvarez, M. Barandiarán Amillano, I. Francés Román, T. Marcellán Benavente

Pamplona Navarra, San Sebastián, Guipúzcoa, and Alsasua, Navarra, Spain

Objective: To obtain normative data for the CERAD word-learning test and investigate its reliability for the diagnosis of Alzheimer's disease. **Methods:** As part of a population-based study on aging and dementia the CERAD word-learning test was administered to a

cohort of subjects older than 70 representative of the population living in Pamplona, Spain. A subsample of 563 individuals without dementia was selected to obtain normative data on this task. Normal values for subjects younger than 70 were calculated from available published data. A sample of 106 patients with a diagnosis of Alzheimer's disease (AD) (NINDS-ADRDA criteria) and 94 normal controls coming from three memory clinics was then selected to test the performance of this test in the diagnosis of AD. Controls had no memory complaints and normal scores in the MMSE and a comprehensive neuropsychological battery. **Results:** Mean age and MMSE scores were 78.6 ± 6.9 and 17.4 ± 4.6 respectively for AD patients and 73.4 ± 9.3 and 27.3 ± 2.4 for the controls. Cutoff scores for immediate recall (3rd trial), delayed recall and word recognition were 5, 4 and 18 for subjects aged 71 to 85 and 4, 3 and 17 for subjects older than 85. Cutoff scores for people aged 50 to 70 were 6, 5 and 19. Analysis of these scores in the memory clinic sample yielded a correct classification of 97% for AD patients and control subjects (sensitivity: 96.2%; specificity: 96.8%; PPV: 97.1%; NPV: 94.8%). **Conclusion:** The CERAD word learning test is a reliable tool for the detection of memory impairment and AD in the memory clinic setting.

P 3

Epidemiological Patterns of Parkinson's Disease in Beijing, Xian, and Shanghai Regions of China: Prevalence and Related Socio-Demographic Factors

Z. Zhang-Xin
Beijing, China

Objective: Epidemiological investigations in China have reported lower prevalences of Parkinson's disease (PD) than in Europe and North America. These differences may reflect true variations in underlying disease risk or case-finding artifacts. **Design:** To assess the epidemiological patterns of PD in China, we carried out a population-based, one-stage prevalence survey in 1997–1998. **Setting and Participants:** A total of 29,454 residents (94% of eligible respondents) ages 55 and older were enrolled from 79 rural and 58 urbanized communities selected by a stratified, multi-stage cluster sampling in Beijing, Xian, and Shanghai regions. Using comprehensive case-finding methods, we assessed PD with longitudinal, prospective observation following a standardized diagnostic protocol and Calne's 1992 criteria. **Findings:** The prevalence rate (per 100 population) of PD among persons 65 and older, standardized to the USA 2000 population, was 2.05 (1.85–2.27). We estimate that there may be as many as 1.72 million persons with PD in China. In logistic regression analyses adjusting for survey design and socio-demographic covariates, we observed no geographic variation across three regional centers of China. Higher prevalence odds of PD were found among white-collar professionals as well as among persons who were widowed in early life. **Conclusion:** Prevalence of PD in China is comparable to Western countries. Lifestyles of white-collar workers and stress are major risk factors for PD in China. Our findings suggest that the burden and medication needs of PD in developing countries have been vastly underestimated.

P 4

The Incidence of Tick-Borne Encephalitis in Poland (Lublin Province)

K. Gustaw, E. Cisak, J. Chmielewska-Badaora
Lublin, Poland

Tick-borne encephalitis used to have wide distribution, including Europe and Asia. Natural foci of TBE had been localized in Lublin region as well. Moreover the high percentage of seropositive results with TBE antigens was suggested in forestry workers. The risk of the high incidence of the disease has been confirmed by the isolation of vicious TBEV strains from ticks (*Ixodes ricinus*) collected in Lublins region. The objective of this study was to evaluate the incidence of TBE in risky Lublin region. The incidence was assessed each year in the period between 1995–2001. Since the beginning of the year 1995 till the end of 2001, 116 patients underwent tick-born encephalitis with a clinical manifestation. Moreover strict connection of the symptoms with tick bites was observed. Among those cases, however clinical diagnosis was rarely parallel with prompt and proper serological examination. In only 38 cases standardized diagnosis criteria were fulfilled with serological assessment both in CNS and serum. Both farmers and urban workers suffered from disease. The incidence of the disease was 0.71 and 0.58 (of 100 000 people/one year) for farmers and urban citizens respectively. The highest incidence was observed in the year 1996. Moreover long lasting consequences of the illness have been noticed. Thus, patients suffering from encephalitis with connection with tick bites should not be kept waiting for a quick and standardized serological examination.

The study was financed by grant from the Polish Committee for Research No. 4 PO5D 03417.

P 5

Prevalence of Parkinsonism and Essential Tremor in a Population of Nonagenarians

J. Benito-León, F. Bermejo-Pareja, M.T. Jiménez-López,
S. Vega, E.D. Louis
Madrid, Valladolid, Avila, Spain; New York, NY, USA

Background: Few prevalence studies on parkinsonism or essential tremor (ET) have surveyed persons aged 90 and over so that the prevalence of these conditions in the oldest old is poorly understood. Several studies have suggested that the prevalence of these conditions may even decrease with advanced age. We examined the prevalence of parkinsonism and ET in a population of nonagenarians from central Spain. **Methods:** Of the 409 (143 men, 266 women) persons aged 90 and over registered in a cohort of Spanish elderly people, adequate clinical information for parkinsonism and ET was obtained from 281 and 296 subjects, respectively. The remaining subjects were lost to the study, because of refusal, address change or death without adequate information. The diagnoses of both ET and Parkinson's disease (PD), based on standardized criteria, were reviewed to increase reliability across neurologists. **Results:** There were 24 subjects with ET and 17 subjects with parkinsonism: 5 affected by PD and 12 affected by other types of parkinsonism (e.g., drug-induced parkinsonism, Parkinson Plus syndromes, vascular parkinsonism). The prevalence was 8.1% (95% CI 5.5–11.8) for ET; 6.0% (95% CI 3.8–9.5) for parkinsonism; and 1.5% (95% CI 0.8–4.0) for PD. No

gender difference was found in either ET or PD. **Conclusion:** ET and parkinsonism were highly prevalent in the oldest old, affecting approximately 16% (one in six) of individuals in this age group. The prevalence of ET was greater than that of PD and greater than that for all forms of parkinsonism combined.

P 6

Pre-Natal Risk Factors in Multiple Sclerosis

S. Warren

Edmonton, AB, Canada

Prenatal risk factors have received little attention in multiple sclerosis (MS). Speculation has revolved around a viral infection in pregnant women since exposure to infections might vary by season of gestation. A viral hypothesis predicts that more MS patients would be born in Spring/Summer because their mothers were exposed to viruses in Fall/Winter, and that any association with season of birth would be stronger in sporadic than familial cases. Moreover, if variation with season of birth is the result of a neurodevelopmental effect, onset age and disease outcome should vary by birth season. MS patients who consecutively attended the University of Alberta MS Clinic (N = 165) were matched to non-blood relatives or friends/associates on: age, gender, race and risk zone before age 15. Data was collected on birth season, MS family history, onset age and disability status (ambulatory without aids/not). The distribution by season of birth was similar for patients and controls, and evenly spread across Spring (March–May), Summer (June–August), Fall (September–November) and Winter (December–February). However, more patients with an MS family history than controls were born in Fall/Winter (OR = 2.0, 95% CI = ± 0.8), while there was no relationship observed when patients with sporadic MS were compared to controls. There was no relationship between season of birth and either onset age or disability status among MS patients. Although not in the expected direction and modest, the excess of Fall/Winter births among patients with an MS family history might be further explored.

P 7

Prevalence of Dementia in a Population of Nonagenarians. Data from the NEDICES Cohort Study

F. Bermejo P, J. Benito-León, E. Carrillo, T. Moreno, J. Porta-Etessam, R. Trincado for the NEDICES Study Group
Madrid, Spain

Background: With the population aging, neurologists are attending many more nonagenarian patients now and there is a need for epidemiological data in this age group. Few prevalence studies on dementia have surveyed persons aged 90 and over so that the prevalence of these conditions in the oldest old is poorly understood. We examined the prevalence of dementia in a population of nonagenarians from central Spain. **Population/Method:** This investigation was part of the Neurological Disorders in Central Spain (NEDICES), a population-based survey of prevalence, incidence, and determinants of major age-associated conditions of the elderly. Of the 409 (143 men, 266 women) persons aged 90 and over, registered in this cohort, ade-

quate clinical information for dementia was obtained from 382 subjects. Diagnosis were made according to DSM-IV criteria. **Results:** There were 114 subjects with dementia (34 men, 80 women); 72 affected by possible or probable Alzheimer's disease (AD), 14 affected by mixed or vascular dementia, and 28 affected by other types of dementia. The prevalence of dementia was 34.9% (95% CI 29.9–40.2). No gender difference was found. **Conclusions:** Dementia was highly prevalent in the oldest old, affecting approximately one in three of individuals in this age group. Sex was not a risk factor for dementia. AD was the most common cause of dementia. It is important for neurologists and geriatricians to be aware of this condition in their elderly patients, as this condition can cause significant disability.

P 8

Symptomatic Medication Use in Multiple Sclerosis Patients: Data from the GEDMA Study

Julián Benito-León, José Manuel Morales, Beatriz Otero, Jesús Rivera-Navarro, for the GEDMA Study Group
Madrid and Leioa, Spain, and Veracruz, Mexico

Background: The aim of the study was to evaluate the frequency of medication prescription for the major symptoms related to MS in order to better understand the needs of patients. **Patients and Methods:** The GEDMA study is a longitudinal survey of MS patients recruited at 13 hospitals from Madrid, Spain. Patients included in the second wave (310 subjects) were interviewed with a standardized questionnaire about the type and use of therapies. **Results:** Of the 310 subjects, 142 (45.8%), with a mean age of 43.9 ± 11.5 years and a mean EDSS score of 5.0 ± 2.2 , were taking at least one symptomatic medication; of these 142, 86 (60.6%) were also receiving disease-modifying treatments, meanwhile 104 (73.2%) were using complementary and alternative strategies for facing multiple sclerosis symptoms. One hundred and sixty eight (54.2%) subjects, with a mean age of 37.8 ± 9.5 years and a mean EDSS score of 2.9 ± 2.2 , were not using symptomatic therapy; of these 168, 100 (59.56%) were also receiving disease-modifying treatments, meanwhile 92 (54.8%) were using complementary and alternative strategies for facing MS symptoms. The most commonly treated symptoms were mood disorders (42.3%), spasticity (32.4%), pain (27.5%), bladder dysfunction (24.6%), while fatigue (15.5%) was less frequently treated with medication. **Conclusions:** This study highlights the frequency of medication prescription for symptoms such as mood disorders, spasticity, pain and bladder dysfunction, while other common symptoms, such as and fatigue, may be undertreated. Furthermore, complementary and alternative strategies are more frequently used by patients who receive symptomatic medication.

P 9

CSF Tap Test in Patients with NPH and Vascular Parkinsonism

T.A. Treves, A.E. Yankovsky, R. Djaldetti, J. Zoldan, A. Asvadurian, E. Melamed
Petach Tikva, Israel

Objective: Compare the response to CSF tap test (CSF-TT) in patients with normal pressure hydrocephalus (NPH) with and with-

out vascular parkinsonism (VP). **Background:** NPH and VP share common symptoms and both diseases may be associated with deep white matter lesions (DWML). Improvement in motor and mental functions after CSF-TT has been shown to be good predictor of further response to shunting in patients with NPH, but its value in patients with associated signs of VP is still to be determined. **Methods:** Vascular background and brain CT findings of consecutive patients admitted for NPH between 1999 and 2003 were recorded. The patients underwent motor and cognitive examinations before, 2 h and 24 h after CSF tap (40 ml). Associated VP was diagnosed in the presence of parkinsonian gait, DWML and at least one vascular risk factor. Patients with and without VP were compared in terms of vascular risk factors, clinical and imaging signs. **Results:** From the 45 patients with NPH, 74% had associated VP. Vascular risk factors were present in 62% of the patients. After CSF tap, improvement was observed in 9 patients (19% of patients with VP and 27% of patients without). There were no significant differences between CSF-TT responders and non-responders except for duration of gait disturbance, which was shorter in patients who improved after CSF-TT ($t=2.8$, $p < 0.05$). However, duration of gait impairment was not found to be predictor of improvement after CSF-TT (logistic regression). **Conclusion:** No indicator of CSF-TT response was found in patients with NPH, with or without VP.

P 10

Causes of Acute Onset of Progressive Cognitive Decline

*T.A. Treves, Eyal Leshem, J. Streifler, R. Djaldetti, E. Melamed
Petach Tikva, Israel*

Objective: Evaluate the etiologies of acute onset of cognitive decline. **Background:** Acute onset of cognitive decline is generally associated with cerebrovascular events and stepwise deterioration. The onset of primary degenerative dementia should be progressive, although patients with Diffuse Lewy Body Disease (DLBD) may present with acute confusion. Acute onset of permanent amnesia has also been reported in a patient with Alzheimer's disease (Miller Fisher, 2002). We examined the causal distribution of sudden onset of cognitive decline with further deterioration. **Methods:** Consecutive patients referred to our Memory Disorders Clinic in 1999–2003 who reported having had an acute onset of cognitive decline and followed for at least 6 months were included to the study, provided they had no previous stroke, aphasia, Creutzfeldt-Jakob disease, Parkinson's disease, TGA, brain concussion or epilepsy. All patients underwent brain imaging at onset of their cognitive decline. Diagnoses of Alzheimer's disease (AD), vascular dementia (VD), mild cognitive impairment (MCI), DLBD, corticobasal degeneration (CBD) or frontotemporal dementia (FTD) were made by established criteria. Chi-square test (χ^2) was used for the analysis of the distribution of signs among the different patient groups. **Results:** There were 63 patients. Acute disorientation for place as presenting symptom was reported by 29 patients (46%), acute confusion by 16 patients (25%), memory decline in 15 patients [(24%), 7 of them after surgery and 2 of them following bereavement]. Memory deficits with focal signs were

observed in 3 patients (5%). Vascular risk factors were present in 76% of the patients. Most of the patients with acute disorientation for place had vascular risk factors (86%, $\chi^2 = 3.2$, $p = 0.07$) and they were defined as vascular MCI ($n = 11$), VD ($n = 8$), mixed type dementia ($n = 4$), AD ($n = 3$), CBD ($n = 2$), and FTD ($n = 1$). Acute confusion was reported by 2 patients further diagnosed as AD, 2 with FTD, 2 with DLBD, one patient with pseudodementia; the other patients were defined as VD ($n = 7$) or mixed type dementia ($n = 2$). Half of the patients with acute confusional state as presenting symptom of their cognitive decline had vascular risk factors (mostly those diagnosed as VD or mixed dementia, $\chi^2 = 5$, $p = 0.02$). Postoperative cognitive decline was reported by 2 patients diagnosed as AD, 2 as VD, 2 as MCI and one patient diagnosed as FLD. Memory decline after bereavement was reported by one patient diagnosed as AD and one patient as MCI. Acute onset of cognitive decline represented 2% of the patients with AD of our Memory Clinic registry, 24% of VD, 3% of MCI and 2% of DLBD and CBD. **Discussion and Conclusion:** Acute disorientation for place was the most frequent presenting symptom of acute onset of cognitive decline, being highly suggestive of vascular origin. AD with sudden onset seems possible.

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Psychometric Investigation of the Modified NIHSS Using Rasch Analysis

*S. Perera, S.M. Lai, P.W. Duncan, D. Reker, L. Richards
Kansas City, KS, USA*

Objective: To psychometrically investigate development of the modified National Institutes of Health Stroke Scale (mNIHSS) from the original NIHSS. **Background:** mNIHSS was developed from NIHSS by removing observed level of consciousness (LOC), facial palsy, limb ataxia and dysarthria items based on interrater kappa and concurrent validity with Barthel Index and modified Rankin scale. **Methods:** 816 stroke survivors were evaluated within 28 days of stroke and followed for 3 months. Whether (a) removal of the 4 items from NIHSS was justified, and (b) alternative items could have been removed based on item fit and redundancy were determined using Rasch analysis. Concurrent validity of new scales with the Orpington prognostic score (OPS) was evaluated using Spearman rank correlation. **Results:** Observed LOC is similar to LOC commands (logit 2.29 vs 2.28), facial palsy is similar to arm and leg motor (logit -0.71 vs. -0.78 to -0.58), and dysarthria is similar to sensory pin prick (logit -0.92 vs. -0.89) in difficulty. Limb ataxia is a severe misfit (fit statistic = 1.68). Instead of observed LOC, LOC commands could have been removed due to both redundancy and misfit (fit statistic = 1.47) to obtain another version (mNIHSS-II). Although LOC questions could have been further removed due to misfit (fit statistic = 1.43) to obtain an even shorter version (mNIHSS-III), it may be an important item in severe strokes. Correlations of NIHSS versions with OPS were 0.74–0.76 ($p < 0.0001$). **Conclusions:** The abbreviation of NIHSS can be psychometrically supported, and mNIHSS has good concurrent validity with the OPS. Alternative abbreviations of NIHSS are possible.