Renal tubular acidosis after cadaver kidney homotransplantation
In the case cited, renal tubular acidosis developed after cadaver renal homotransplantation. Prior glomerulonephritis with uremia and hypertensive encephalo-pathy necessitated bilateral nephrectomy and chronic dialysis. No clinical or morphologic features of renal tubular acidosis were present in the recipient or donor.
The studies performed included metabolic acidosis, phosphate infusion, acetazolamide administration and bicarbonate loading. Discontinuation of 3.6 g sodium bicarbonate orally per day led to marked reduction in arterial blood pH (7.32), pCC½ (27 mm Hg) and bicarbonate (16 mEq/l). Net hydrogen ion excretion was only 22.4 µEq/min. Neutral phosphate infusion increased serum phosphorous to 10.3 mg/100 ml and raised excretion from 14.7 to 63.3 µM/min, but titratable acidity increased only 12.8 µEq/min. Intravenously administered acetazolamide did not change urine volume or bicarbonate reabsorption; and when given orally (15 mg/kg) bicarbonate excretion increased only from 27.6 to 46.9 µEq/min. Intravenous bicarbonate loading increased bicarbonate excretion from 37.5 to 153 µEq/min as the percentage reabsorption of bicarbonate decreased. Phosphate clearance was 15 ml/min when the creatinine clearance was 45 ml/min. However, glycosuria (1.0 to 1.5 g/24 h) occurred without hyperglycemia and 24-h alpha amino nitrogen excretion was 1360 mg.
It is concluded that a high concentration gradient between luminal fluid and peritubular blood could not be obtained. Evidence for impaired tubular hydrogen ion production, which in turn suggested decreased carbonic anhydrase activity and diminished renal ammonia production was found in this patient with multiple tubular defects.
Author’s address: Dr. J.F. Maher, Department of Medicine, Georgetown University, School of Medicine, Washington, D.C. (USA).
The clinical significance of cytomegalovirus infection in renal transplant recipients
Cytomegalic cells resulting from cytomegalovirus infection was found in the lungs of 27 of 51 (52%) autopsied renal transplant recipients. In eight of these 27 patients, cytomegalic cells were also found in various other organs of the body. In addition, the finding of distinctive multiple small nodular lesions on chest X-ray was found to correlate with the presence of cytomegalic cells in the lungs at autopsy.
Cytomegalic cells were found in the kidney of 1 of the 51 autopsied cases and in the renal biopsy specimens of 1 of 33 survivors. In contrast, cytomegaloviruria was demonstrated by tissue culture methods in 17 of 26 (65%) of survivors tested. Virus excreted in the urine was found to be largely in the free-form rather than cell-associated.
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Cytomegalovirus-neutralizing antibody was found in the serum specimens from one patient in which the complement fixation reaction with this antigen was negative. Urine specimens were shown to serve as suitable virus preparations for neutralization studies.

Pneumonia in three patients was associated with a rise in cytomegalovirus antibody titer. The preillness serum specimen in all three cases was free of cytomegalovirus complement fixing antibody and in the one case studied was also free of neutralizing antibody. Rejection in two patients and recurrent herpes zoster in one patient was associated with a rise in cytomegalovirus complement fixing antibody titer. Preillness antibody was present in the sera of two of these three cases in contrast to the serological findings in the pneumonia cases. These results are consistent with a primary infection being present. Alternatively, it is possible that if pulmonary infection does result from the activation of the latent cytomegalovirus, symptomatic disease results only in those patients in whom antibody has essentially disappeared. The results would also indicate that asymptomatic activation of latent cytomegalovirus infection does occur in these patients. In two of the cases described the activation coincided with heavy immuno-suppressive therapy given at the time of a rejection crisis.

Author’s address: Prof. Dr. David Rifkind, University of Colorado Medical Center, Denver, Col. 80220 (USA).

Hard-water syndrome

In this report the laboratory and clinical course of patients inadvertently dialyzed against a high dialysate calcium and magnesium concentration are described. Mean calcium and magnesium concentration of the ‘unsoftened’ water was 4.0 and 1.9 mEq/l for calcium and magnesium respectively. When the water was treated with a softener, it fell to 1.0 mEq/l for calcium and 0.7 mEq/l for magnesium. When hard water was used in the preparation of the dialysate, the plasma calcium rose in all patients. The mean predialysis calcium of 4.62 mEq/l rose to a post-dialysis figure of 7.49 mEq/l. The mean predialysis value of magnesium was 2.49 mEq/l and rose to a postdialysis mean of 3.9 mEq/l.

The clinical observations noted during the episode of hypercalcemic dialysis included vomiting which occurred in 17 of 23 hemodialyses, extreme weakness and lethargy, atypical changes in blood pressure (both hypo- and hypertension) and a warm sensation to the skin (occurring during 9 of the dialyses). Clotting within the arterial-venous cannulas occurred in 3 of the 12 patients during this interval, an incidence fell to be higher than would be expected from previous experience.

Author’s address: Dr. R. M. Freeman, Renal Dialysis Unit, Veterans Administration Hospital and University Hospitals, Iom. City, la. (USA).

Some urological aspects of 93 consecutive renal homotransplants in modified recipients

The survival data concerning 87 modified, non-twin recipients in whom 96 homo-grafts were performed are presented. Half of the recipients of related donors are living more than 3 years after transplantation. The overall survival for related recipients is 72% (40/56 patients) and for recipients of cadaveric grafts is 64% (18/28).

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Early in this series, the ureter was anastomosed above the ipsilateral ureteral orifice. Subsequently, the ureterocystostomy was placed lateral to the orifice. The technique is described. Sixty-three patients (75%) had significant bacteriuria after transplantation, and of those infected,
nearly equal proportions of cadaveric (11, 54%) and related donor (20, 59%) recipients had cultures that converted to less than significant. When last evaluated, 48 patients (67%) receiving a single homo-graft had urinary cultures with less than significant numbers of organisms present. Nine patients (11%) had complications that were related to reconstruction of the urinary tract. Two of these (2.4%) died as a direct result of the complications.

Sixty-four patients had successful excretory urograms at least once during the posttransplant period: 52 were normal, 4 demonstrated caliectasis, 3 showed hydro-nephrosis, 1 showed calculi and hydronephrosis, and 4 showed minor pyelo-graphic abnormalities. Of the 12 patients with abnormalities noted by excretory urography, 10 had no significant bacteriuria when last seen, and 2 patients died of extraurological causes, but both had significant bacteriuria at some time after their transplant. Cystograms performed in 14 patients demonstrated a reflux into the ureterocystotomy in 2 cases. Retrograde pyelography done in 11 patients who exhibited an abnormality of excretion proved to be extravasation in 1, acute tubular necrosis in 3, rejection in 4, and obstruction in 3.

The technique of ureterocystostomy described in this paper has provided good results in nearly all 84 patients. Complication rate is low. Bacteriuria is commonly present in the posttransplant state and may be expected to diminish or disappear after treatment. Its significance is not understood and the exact sites of infection have not been determined.

Author’s address: Dr. G. R. Prout, Jr., Department of Surgery, Division of Urology, Medical College of Virginia, Richmond, Virg. (USA).

Azotemia and glucose intolerance
Eleven subjects with chronic renal failure and 12 control patients, all without a family history of diabetes was studied. After three days of a high carbohydrate diet, oral glucose tolerance tests were performed and serum was studied for glucose, immunoreactive insulin, and insulin-like activity. Only two of the eleven azotemic subjects had normal glucose tolerance. Oral glucose evoked levels of serum insulin, as determined both by immunoassay and bioassay, of far greater magnitude in the azotemic subjects as compared with control patients. A normal response to intravenous glucagon in elevating serum glucose levels was noted in azotemic subjects. Intravenous insulin and intravenous tolbutamide produced a delayed and prolonged fall in serum glucose in azotemic subjects. The serum immunoreactive insulin response to tolbutamide in azotemic subjects was prompt and reached levels that exceeded those of control subjects. The data suggest that the glucose intolerance of azotemia is due to insulin antagonism, and is similar to that seen in patients with diabetes mellitus of the maturity onset type.

Author’s address: Dr. James M. Cerletty, Milwaukee Country General Hospital, 8700 West Wisconsin Avenue, Milwaukee, Wis. 53226 (USA).

Nonoliguric acute renal failure

One thousand and fifty case records of burned patients were reviewed. An arbitrary blood urea nitrogen (BUN) screening level of 40 mg/100 ml was employed.

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Patients who had died within 48 h of injury, in whom the azotemia occurred only within the first 48 h or terminal 24 h, and individuals in whom definite evidence of pre-existing chronic renal disease could be established were excluded from the study. An additional 97 case records of patients treated at the renal unit and not suffering from severe burns were examined. The data
was evaluated as to (1) the azotemia, (2) urine volume, (3) urine/plasma urea nitrogen ratio, (4) urine sodium concentration, and (5) renal histopathological study.

Eleven cases of nonoliguric acute renal failure, all but one following burns as well as 14 cases of postburn oliguric acute renal failure were found. Mild azotemia not attributed to parenchymal renal failure occurred in an additional ten burned patients. The urine sodium concentration exceeded 20 mEq/l in 8 of 11 patients with oliguric acute renal failure, whereas only 1 of 9 nonoliguric patients had a renal sodium concentration above the 20 mEq/l.

The study has confirmed the finding of others, i.e., acute renal failure without oliguria is generally mild and should require only conservative medical management. However, it is pointed out that if the diagnosis of renal failure is overlooked in such individuals because oliguria is not present, serious therapeutic errors may result. In addition, it is felt that a low urine sodium concentration is not helpful in distinguishing renal insufficiency from parenchymal renal failure unless oliguria is present.

Author’s address: Dr. Captain R. M. Vertel, U.S. Army Surgical Research Unit, Army Medical Center, Fort Sam, Houston, Tex. (USA).

Haemolytic anaemia in acute and chronic renal failure


Erythrocyte survival was studied in 51 patients with severe renal failure and in nine control subjects. In acute renal failure, $^{51}$Cr labeled red cell life span was nearly always shortened, the mean survival of the group of 14 patients with renal tubular necrosis being 35 days, that of the 6 patients with acute or subacute glo-merulonephritis being 48 days, and for the 11 patients with malignant hypertension, 34 days, as compared with a mean life span of 98 days in the control group. In chronic renal failure, erythrocyte survival was frequently shortened, a mean red cell life span being 63 days. Erythrocytes from three oliguric, severely uremic patients had a reduced survival when injected into normal recipients.

Red cell destruction appeared to occur at an intravascular site, as there was no excessive accumulation of $^{51}$Cr in the liver or spleen, and, in patients with more severe hemolysis, serum haptoglobin was diminished.

Shortened erythrocyte survival was the result of premature aging as indicated by the linear decline of erythrocyte radioactivity. Comparison of the rate of hemolysis with severity of uremia or acidosis, presence or absence of oliguria, and the nature of the renal lesions showed that the most potent factor responsible for this premature aging was closely related to a rapidly worsening uremia.

Absolute reticulocyte counts determined on 37 patients with acute renal failure and 17 patients with chronic renal failure were not significantly raised above normal despite moderately severe anemia.

Although the authors have demonstrated a significantly shortened red cell survival in uremia, they conclude that a failure of the normal erythropoietic response, rather than hemolysis alone, causes the severe anemia in uremic patients.

Author’s address: Dr. J.H. Stewart, Renal Unit and Medical Research Department, Kanematsu Memorial Institute, Sydney Hospital, Sydney (Australia).

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The thin limbs of the loop of Henle

The renal medulla of male rats, fixed by perfusion with 6% glutaraldehyde and postfixed in osmium tetroxyde, was examined at different levels by electron microscopy. The descending thin limb of the loop of Henle, identified at its origin from the proximal tubule as well as by its occurrence in the outer medulla, is composed of a single layer of interdigitating cell processes which have smaller basal, lateral, and luminal projections as well as microvilli on the luminal surface. The ascending thin limb of the loop of Henle, identified at its junction with the distal tubule, is composed of interdigitating cell processes which have very few small basal projections and short microvilli. Both types of thin segments have been found at different levels of the inner medulla, but the descending type becomes less frequent and disappears toward the tip of the pyramid. It seems likely, therefore, that the transition between the two types occurs in the descending limbs in the middle layer of the inner medulla. The basement membranes around thin limbs and medullary capillaries are frequently covered with multilayered segments of ground substance. A close association between limbs, vessels, and interstitial cells rich in osmiophilic droplets occurs in the inner medulla.

Although physiologic evidence at present indicates that the descending and ascending limbs have different functions in countercurrent concentration, certain problems arise in attempting a detailed correlation.

Authors’ address: Dr. L. Osvaldo and Dr. H. Latta, Department of Pathology, University of California School of Medicine Los Angeles, Calif. (USA).

Comparative studies about the pressor effect of intravenous infusions of $\alpha$-angiotensin and $\beta$-angiotensin


The pressor effect of intravenous infusions of $\alpha$-angiotensin and $\beta$-angiotensin was equal in 16 healthy adults and 35 out of 38 patients with essential hypertension, adrenal insufficiency, chronic renal and hepatobiliary diseases. The degradation rate of $\beta$-angiotensin by serum in vitro was $\frac{1}{4}$- to $\frac{1}{3}$- slower than of $\alpha$-angiotensin. In 3 patients with hepatobiliary diseases the pressor response of $\beta$-angiotensin was greater than that of $\alpha$-angiotensin. This does not depend on a different inactivation rate of $\alpha$- and $\beta$-angiotensin in vivo, because the relation of the degradation rate of the two compounds by serum in these 3 patients was the same as in the other patients.

Author’s address: Dr. D. Klaus, Medizinische Universitäts-Poliklinik, Liebermeisterstraße 14, 74 Tubingen (Germany).

The effects of alteration of blood-volume on the concentration of circulating angiotensin in anaesthetized dogs


The blood-bathed organ technique was used to assay the concentration of angiotensin in the blood of anaesthetized dogs. Alterations of blood volume caused inverse changes of angiotensin concentration owing to changes in the rate of generation of angiotensin which are probably due to changes of the rate of renin secretion. Haemorrhage of 14-26 ml blood/kg caused an increase of 0.25-1.5 µg/min in the

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rate of generation and an increase of 0.1-0.33 ng/ml in the blood concentration of angiotensin. The changes of angiotensin generation rate were not due to changes of renal arterial or venous pressure. They were abolished by blocking the renal nerves with lignocaine; they showed a consistent inverse correlation with central venous pressure but not with systemic arterial
pressure. It is concluded that changes of blood volume bring about changes of the rate of
generation of angiotensin by a reflex mechanism the efferent limb of which involves the renal
nerves. The afferent pathway remains to be elucidated, but the systemic baroceptors do not
appear to be of primary importance. The renin-angiotensin system is important in the
homeostatic response to changes of blood volume.

Author’s address: Prof. J. R. Vane, Department of Pharmacology, Institute of Basic Medical

A diurnal rhythm in plasma renin activity in man
(1966).

Plasma renin activity of recumbent normal subjects exhibits a diurnal rhythm that is not
dependent upon diurnal variations in posture or diet. Highest values were observed between 2
a.m. and 8 a.m. and lowest values between noon and 6 p.m. A change from recumbency to
upright posture led to a greater increase in plasma renin activity in the forenoon than it did in the
afternoon. The posturally induced increase in plasma renin activity could be prevented by
bandaging the lower abdomen, hips, and lower extremities. The authors noted that when a
normal subject rises at 8 a.m., his plasma renin activity increases to peak values at 10 a.m. or
noon and then falls despite continuation of upright posture. The afternoon fall in plasma renin
activity was found not to be dependent upon changes in adreno-cortical function, nor was it
tirely dependent upon retention of salt and water during the forenoon. In subjects who are
upright during the day, the diurnal rhythm mechanism appears to work in combination with
postural factors to elevate plasma renin activity in the forenoon and to work in opposition to
postural factors to depress plasma renin activity in the afternoon.

Author’s address: Dr. Grant W. Liddle, Department of Medicine, Vanderbilt University, School
of Medicine, Nashville, Tenn. 37203 (USA).

Changes in plasma aldosterone, cortisol, corticosterone, and renin concentration in a patient with
sodium-losing renal disease
By Fraser, R.; James, V.H.T.; Brown, J.J.; Davies, D.L.; Lever, A.F. and Robertson, J.I.S.: J.

A woman with recurrent urinary infection, bilateral renal calculi, and an abnormal pattern of
plasma proteins was unable to reduce urinary sodium excretion when sodium intake was
restricted.

When the intake of sodium was reduced depletion developed rapidly, and severe hyponatraemia
was associated with increased plasma renin and aldosterone concentrations, and a less marked
although definite, increase in plasma corticosterone. Plasma cortisol was unchanged during
sodium depletion, although it increased normally after the administration of corticotrophin.

Authors’ address: Dr. R. Eraser, Dr. V. H. T. James, Dr. J. J. Brown, Dr. D. L. Davies, Dr. A. F.
Lever and Dr. J. I. S. Robertson, Steroid Unit, St. Mary’s Hospital, London, W. 2 (England).

Varia

Renal Association (October 10, 1966)

in rabbits.

Twenty-three rabbits were given repeated intravenous injections of tracer labelled B.S.A. over
periods of 3-4 months. Different dosage schedules were used, but all animals had significant
quantities of circulating B.S.A. at all times. The amount of antigen circulating bound to antibody
was estimated by \( \frac{N}{S} \%SC \) precipitation, and most animals showed large amounts of

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circulating complexes (40-90%) during the stage of rapid antibody production. Twenty-two animals had proteinuria at some time over the period 14-21 days. After this period proteinuria became inconsistent and intermittent, and the animals showed progressively declining antibody production, until this finally negligible, after about 80 days.

Renal biopsies showed minor proliferative changes during the period of proteinuria, but these later disappeared completely. No animals have shown histological or functional evidence of progressive nephritis.


Antigen-antibody reactions known to be capable of producing renal lesions when they occur in vivo fall into two categories: (1) those involving native antibody and foreign antigen; (2) those involving foreign antibody reacting specifically with antigens present in kidney tissue. If autoantibodies are associated with renal disease their modes of action might be considered in broadly similar fashion. Thus autoantibody directed at a non-renal tissue antigen might give rise to continual formation of soluble complexes, inducing under appropriate conditions a chronic glomerulonephritis; or alternatively, autoantibody specifically reactive with renal glomerular antigens might prove nephrotoxic in the same way as heterologous antikidney antibody. Although it has been proposed that the renal lesions of systemic lupus erythematosus might arise as a result of the former mechanism, the supporting evidence is scanty. With regard to the occurrence of specific renal autoantibodies, the few reported observations do not include recognition of specific antiglomerular antibodies in patients’ sera.

Recent investigation of sera from cases of chronic active hepatitis have shown that they may contain autoantibodies reactive with a number of tissue-specific antigens, as well as the non-organ specific anti-nuclear and anti-cytoplasmic factors. Some of these tissue-specific antibodies will be described, their incidence in some diseases reported, and their possible significance discussed.


The high incidence and bad prognosis, with poor response to steroid treatment, of children with nephrotic syndrome in Nigeria suggests an incidence of causative diseases different from those in temperate regions. Epidemiological studies have indicated a relationship with plasmodium malariae infection. Histological studies have shown a high incidence of a form of lobular proliferative glomerulonephritis, possibly suggestive of soluble complex glomerulonephritis. The following immunological studies add support to these concepts:

(1) Immunochemically determined differential protein clearance studies show that most of these patients had moderately selective proteinuria which was markedly non-linear on a log-log plot against molecular weight of protein, and differed highly significantly ($P = 0.00045\%$) from a group of British children with the nephrotic syndrome, but a few showed the highly selective proteinuria usually seen in children with the nephrotic syndrome from temperate areas. Preliminary results suggest that only the patients with highly selective proteinuria respond to steroid treatment. If this is confirmed this test will be of
considerable value in selecting patients for this treatment, in an area where trial of steroids is
dangerous.
Antigenic estimation of the complement component Bic was normal in all the children studied.
Immunoelectrophoresis revealed the altered component Bia in fresh plasma from the majority of
the children with the poorly selective proteinuria, as has been found in acute nephritis and in
some patients with progressive proliferative glomerulonephritis, but not in the ones with highly
selective proteinuria. This provides further evidence that the disease predominant in children is
immunological in nature.
If soluble complex were circulating in these sera one would expect complement components to
be incorporated in these complexes. Bic is normally confined to the Sephadex G.200 middle
peak. In sera from some of these patients it was detected in the first (macroglobulin) peak, using
antisera absorbed with such material from normal individuals. This suggests that soluble
complex circulates in these patients, and provides a possible means of access to the antigen
involved. The possible role of this in planning specific treatment of glomerulonephritis will be
discussed.
Renal Association (January 11, 1967)
Muldowney, F. P.: Sodium diuresis after relief of obstructive uropathy.
The magnitude and duration of renal sodium loss following relief of partial urinary tract
obstruction has been investigated. The majority of cases on external metabolic balance study
failed to reduce urinary sodium loss to less than intake within five days of commencing a sodium
restricted diet (13-30 mEq. daily). This defect appeared more marked in subjects with obstructive
symptoms of more than three months duration (chronic group). In no case, however, did sodium
loss proceed to the stage of clinical salt depletion with hypotension. Measurement of total
exchangeable sodium (Nae) before and after relief of obstruction confirmed the pattern of
sodium loss in the chronic group, but no systematic change was seen in acute cases. Initial Nae
values in the chronic group were significantly raised in six of seven subjects and fell
spontaneously to normal levels 1-3 weeks following operation (with the exception of one patient
who developed bundle branch block and heart failure). Neither chronic nor acute group showed
depression of final Nae values below the normal range.
The pattern of results suggests that (a) partial urinary tract obstruction is associated with sodium
retention and (b) relief of obstruction results in reduction of body sodium stores from high to
normal levels.
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Hodson, C. J. and Craven, J.D.: The radiological aspects of obstructive atrophy.
The structural changes in the kidney which result from obstruction in the urinary tract are
sufficiently peculiar to form a basis for reliable radiologic diagnosis, with a relatively small and
uncommon differential diagnosis.
The natural history of these changes, their features and the behaviour of the kidney during their
formation will be discussed together with five important aspects: (1) what happens when the
obstruction has been removed, (2) the required time of irreversible changes to occur, (3) the
effect of temporary obstruction on the growing kidney, (4) a relatively rare atypical response to
obstruction which does not, as yet, appear to have been isolated and described, (5) the
relationship of severe vesico-ureteric reflux to this problem.
The effects of obstruction of a ureter are more commonly thought of as affecting the size of the renal pelvis and calices rather than the parenchyma of the kidney. Dilatation of these ‘bags’ occurs, but equally important is the reduction in amount of functioning parenchymal tissue and the mechanism by which this occurs. Acute complete obstruction of a ureter in man is followed by slight dilatation of pelvis and calices, interstitial oedema of the parenchyma, tubular atrophy and focal tubular disruption. (If the condition is bilateral acute uraemia results.) The kidney is not reduced in size, nor is the weight decreased. Dr. Hodson’s experiments of ligature of the ureter in pigs permits the changes in such a process to be followed sequentially. Tubular atrophy and disruption lead to interstitial oedema, low grade inflammatory reaction and fibrosis. Effects on the papillae occur later and may not be related to this initial reaction. The long term effects of such a process have not yet been studied.

Incomplete obstruction of a ureter leads to a slower atrophy of tubules with much less interstitial reaction and insignificant tubular disruption. In time this is associated with glomerular atrophy and considerable shrinkage of parenchyma.

In both these processes the smooth outline of the kidney is retained in the absence of infection. Infection leads to focal greater destruction of renal tissue and scarring.

Second Kanematsu Conference on the Kidney and Australasian Society of Nephrology Combined Meeting

From 29th November to the 2nd of December, 1966, approximately 100 nephrologists met in conference at Sydney Hospital, Sydney, under the auspices of the Keith Kirkland Renal Unit, Medical Research Department, Kanematsu Memorial Institute, Sydney Hospital, and the Post-Graduate Committee in Medicine of the University of Sydney in conjunction with the Australasian Society of Nephrology. The first Kanematsu Conference, held in October, 1963, attracted 70 nephrologists, and the proceedings were published (Bull, post-grad. Comm. Med. Univ. Sydney 20: 41-159, 1964). The Second Conference, combined with the Second Scientific Meeting of the Australasian Society of Nephrology, consisted of 23 invited papers on renal physiology, clinical nephrology and renal pharmacology and toxicology, and 20 free communications. Dr. Oliver M. Wrong, Department of Medicine, Postgraduate Medical School of London, was the invited speaker to the Conference, and Professor James R. Robinson, University of Otago School of Physiology, Dunedin, was Australian and New Zealand Post-Graduate Medical Federation Exchange Visitor.

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Papers by invitation on ‘Renal Physiology’ were given on water and solute handling by G. D. Thorburn (intercellular fluid pathways)1, B. D. Stacy (sodium)2, J. A. Young (micro-puncture studies)1, S. Posen (calcium)1, and J. R. Robinson (urea)2; on the nervous control of the renal circulation by P. I. Korner1; and on renal/adrenal hormones by O. M. Wrong (extra-renal actions of aldosterone), G. S. Stokes (renal pressor mechanism)2, and Mary F. Lockett (isolated perfused cat kidneys)2.

Papers by invitation on ‘Clinical Nephrology’ were given on chronic dialysis by J. R. Lawrence and on kidney transplantation by P. R. Knight, Priscilla Kincaid-Smith and R. M. Mitchell2; cases were presented by D. Jeremy, G. F. Murnaghan, J. H. Stewart and P. R. Knight; papers on renal secretion of hydrogen ion were given by J. R. Robinson (normal control)1, O. M. Wrong (renal tubular acidosis)1, A. Z. Györy (citrate utilisation)1 and R. K. Pak Poy (uric acid stones).
Papers by invitation on ‘Renal Pharmacology and Toxicology’ were given on testing new drugs by M. J. Rand (pre-clinical aspects)\(^1\), on nephrotoxicity by H.H. Pearson (non-fatal phenacetin nephritis)\(^2\), A.F. Burry (phenacetin and papillary necrosis) and D.M. le Quesne (antibacterials including merthiolate), and on drug poisoning by E. G. McQueen (new approaches to treatment)\(^1\). Free communications accepted for publication were given by O. M. Wrong (colonic metabolism of urea)\(^2\), J.R. Blair-West (renin, angiotensin and aldosterone in sodium depletion)\(^2\), K. D.G. Edwards (clinical assessment of diuretics)\(^1\) and C. Armstrong (ion exchange resins in aspirin poisoning)\(^2\).


\(^1\) Accepted for publication by Bull postgrad. Comm. Med. Univ. Sydney.

\(^2\) Accepted for publication by Med. J. Aust.

Kidney Club of the Netherlands (December 1966, Meeting)
Ten Bokkel Huinink, J.A. and van Zeyst, J.A.M.: Hereditary shrunken kidneys. Report of a family in which 9 members suffered from an apparently recessive hereditary nephropathy. Clinically, the course was characterised by-hypertension and death in uremia at a relatively early age. Biopsy and post-mortem studies showed widespread arteriosclerosis. Arguments were put forward to consider the vascular renal process as the cause rather than the result of the hypertension.

Troelstra, J.A.: Some aspects of tubular functional disturbances in hereditary disease. General survey and case records. In a patient with Wilson’s disease severe phosphate loss and amino-aciduria improved after penicillamine and diet therapy. Two patients with cystinosis were shown suffering from severe non specific aminoacid-uria, phosphaturia and glucosuria. In one of them vitamin D resistant rickets improved with moderate doses of vitamin D and oral phosphate.

\(^3\) Arisz, L.: Differential protein clearances in idiopathic proteinuria. Correlations of clearance determinations with biopsy findings in 43 patients with proteinuria were generally in agreement with the results reported by Hardwicke. All patients with minimal lesions had heavy proteinuria and a ‘selective pattern’. In membranous glomerulonephritis significant correlations were found between the severity of the anatomical lesion and the mean daily protein loss as well as the selectivity of protein clearances with the biopsy data.

Fourth Conference of the European Dialysis and Transplantation Association (Paris, June 24-25, 1967)
Review of haemodialysis in Europe. In his annual report Drukker (Amsterdam) recorded that 81 centres were now running ‘chronic programmes’ in Europe and the number of patients on regular haemodialysis had doubled to 621. Although the majority were still using hospital dialysis as an end in itself, one third of the units were now running in conjunction with a transplant programme and six had started home haemodialysis training schemes. There had been a striking fall in mortality in newly accepted patients but even in Kill centres (which includes the majority of those using regular dialysis long term) there was still a 15% mortality in the first 6 months. Prominent among the complications were cannula problems (50% of units now employ long
term anticoagulants), neuropathy, pseudogout, metastatic calcification and secondary hyperparathyroidism. Nineteen units reported hepatitis outbreaks involving 45 patients and 26 staff.

Dialysis facilities were under-utilised, the average centre operating at only 2/3 of capacity. The main limitation is staff time—the average patient occupies 60% of one nurse’s full time and 30% of a doctor’s.

Home haemodialysis. Progress reports from the Royal Free (Baillod), Seattle (Rae) and Birmingham (Hilton) and a first report from the National Kidney Centre (Shaldon) gave details of 60 patients already established in the home for up to 3 years. The mortality, at about 1 per 20 patient years, and the morbidity were lower than in hospital dialysis, rehabilitation was faster and diet more liberal (up to 80 g protein per day) owing to unrestricted dialysis time. Schedules of 3-4 nights per week with about 10 h on the machine each time were standard; the burden on the patient was reduced by re-using the dialyser up to 6 times after antiseptic wash-through.

A major factor in the success of home haemodialysis has been the reduction in transfusion requirements when blood is no longer given to maintain an arbitrary PCV. Verroust and Crockett (London) reported a total experience of almost 70 patient years without transfusion except to replace acute blood loss or to relieve symptoms which were seldom intolerable unless the PCV fell below 15%. In over 90% of patients an acceptable PCV (average over 20%) could be maintained without regular topping up, though there was often an initial fall in PCV when transfusions were stopped. Great economy in blood sampling and thorough wash-out of good quality Kuf dialysers were essential for success. Iron therapy was required in some patients who were started on dialysis in the ‘no-transfusion era’.

Arterio-venous shunts and fistulae. Infection and clotting remain the major problems of the Quinton-Scribner shunt. Anderson (Edinburgh) found staphylococcus aureus the commonest pathogen in shunt infections and the same organism was usually present in the nares or other carrier sites. Recurrent infection in chronic carriers could sometimes be prevented by regular hexachlorophene bathing and antibiotic nasal cream. Prophylactic antibiotics were ineffective. Kopp (Frankfurt) 78

Varia reported success with a different approach—elimination of skin antiseptics and treatment of the skin with a lanolin ointment.

Gombos (Washington) found that most of the flow resistance in A-V shunts is due to the vein which remains contractile in response to cold; the vein is also the commonest site of recurrent thrombosis. Streptokinase proved valuable in removal of such thrombi when used locally in high concentration and covered by systemic steroids to prevent reactions (Anderson, Edinburgh; Kjellstrand, Lund). Subsequent failure of the shunt was much less likely if long term anticoagulants were started at once. A new shunt site, utilising the lateral femoral circumflex vessels, and an all silastic shunt, was described by Hochzenbein (Munster).

The Cimino-Brescia A-V fistula has gained widespread acceptance in centres using blood pumps, particularly those aiming at eventual transplantation, where a local infection may postpone operation and waste a cadaver donor. In the experience of Verberckmoes (Louvain); Meric (Toulouse); Dossetor (Montreal and Carmody (Dublin) the fistula was preferred to the shunt by staff and patients who had tried both. Blood flow through the dialyser was slightly lower than with the Quinton-Scribner shunt but the A-V leak between dialyses was greater;
Klinkmann (Rostock) recorded cardiac outputs up to 131 per minute, requiring the revision of one fistula.

Technique of dialysis. Lyman (Menlo Park) described the preparation of block co-polymer membranes with much greater selectivity in the lower molecular weight range than cellulose membranes. Their clinical application was held up by ignorance of the toxic substances in uraemia. Grimsrud (Seattle) and Simpson (Birmingham) showed by studies in test cells that current membrane supports use only a fraction of the potential of our present membranes. Grimsrud described successful clinical trials with his foam-nickel support dialyser which can cut dialysing time by about one third compared with the Kiil, with about half the priming volume. Its excellent performance at low blood flow rates is attractive for pumpless dialysis. The concentric 4-coil kidney (Hoeltzenbein, Munster) and a parallel coil modification (Nakamoto, Cleveland) had given satisfactory performance in clinical trials; they can be used without a blood pump. The Hoeltzenbein screening mesh has also been incorporated in a shorter version of the standard twin-coil and Boelaert (Louvain) and Pearson (Newcastle) reported a considerable increase in dialysance and ultrafiltration with a reduction in priming volume. Since these latest dialysers utilise 50 to 80% of the maximum potential of their membrane areas, the search for a more permeable membrane than Cuprophane is at last becoming relevant.

Peritoneal dialysis. Deane (New York) described a new technique for repeated peritoneal dialysis, using an epithelialised track kept open by a prosthesis. Reinsertion of the catheter was a nursing procedure and had been continued for up to 9 months without infection. Lee (Manchester) reported that plasma lactate levels, often raised before dialysis, rose further in many patients treated with commercial dialysis solutions which contain about 40 mEq/l of lactate. He suggested that this may be a cause of some post-dialysis convulsions. Another constituent of current fluids which may have undesirable effects is dextrose, added for its osmotic effect but particularly troublesome to diabetics. Jirka (Prague) showed that dextran could be used in place of dextrose in acute experiments on dogs. Mirouze (Montpelier) found peritoneal dialysis very useful in acute-on-chronic renal failure, but confirmed the popular view that it is only the last resort therapy for terminal renal failure. Bonomini (Bologna) who used a regime of 50 to 60 h dialysis per week for maintenance therapy found that protein loss was 20-30 g per week. He noted a heavier and less selective loss in patients with chronic glomerulonephritis. Acute renal failure and intoxications. Luke (Glasgow) used haemodialysis in the most severe 2% of a series of over 1000 cases of barbiturate intoxication and achieved an impressive mortality of under 0.3%. One patient survived a blood phenobarbitone level of 58 mg%. Jüngers (Paris) found that the commonest cause of severe gastro-intestinal haemorrhage complicating acute renal failure was single or multiple acute ulcers, commoner in stomach than duodenum. The haemorrhage was controlled surgically in all 5 patients operated on, with 3 eventual survivals. Lange (Marburg) noted mild hypoproteinaemia when oliguria recurred during the diuretic phase; a second diuresis followed albumin infusion in 2 patients.

Chronic renal failure. Maggiore (Pisa) found that patients with polycystic disease had significantly higher haemoglobin levels than those with the same degree of renal failure from other causes, and that their transfusion requirement on regular dialysis was correspondingly low. Kamp Nielsen (Copenhagen) in a study of 22 patients with severe renal failure (GFR 0-11
ml/min) found evidence of sensory neuropathy, mainly in the lower limbs, in about half. All patients had reduced sensory nerve conduction velocity even in the upper limbs.

The relationship of neuropathy to magnesium metabolism was studied by Kaye (Montreal) and Fleming (Dundee) with conflicting results. Fleming found that nerve conduction times decreased when serum magnesium was restored to normal, but Kaye found a low incidence of clinical neuropathy in the centres with the highest water magnesium content and, by implication, the greatest hypermagnesaemia. The 1-1.5 mEq/l of magnesium which is commonly added to tap water to make dialysis fluid results in a final level of 1.5-2 mEq/l depending on the hardness of the local water. There was agreement that this regularly produced considerable hypermagnesaemia and Fleming suggested omitting magnesium from the bath water since the loss during dialysis was balanced by a positive dietary balance at other times.

Roodvoets (Leiden) found hyperlipaemia in patients on regular dialysis; this increased during dialysis until the serum was milky. The lipaemia and an impaired glucose tolerance were attributed to the recurrent acute glucose load associated with dialysis, but the insulin rise on glucose loading remained intact. Traeger (Lyon) who reported a battery of platelet function tests before and after regular dialysis found no fall in platelet count and an improvement in some of the tests.

Sieberth (Cologne) noted inadequate respiratory compensation for acidosis in patients on regular haemodialysis owing to dysequilibrium between blood and CSF bicarbonate which is not fully corrected between dialysis. Rubini (Los Angeles) found that the rate of accumulation of hydrogen ion was maximum on the day after dialysis and then fell off progressively; he observed the same phenomenon with urea, creatinine and uric acid and suggested a catabolic effect of dialysis as one explanation. An alternative hypothesis was provided by Deane (New York) who found a high extra-renal loss of urea in chronic uraemics which diminished when the blood urea was lowered by dialysis. Scholtz (Berlin) supported this view by showing that urea production rate did not rise after dialysis. He also failed to show any hyperconcentration of urea in cellular water. Both of these studies with labelled urea indicated rapid equilibration throughout the body but the slight delay at the erythrocyte boundary may be important in haemodialysis since Grossman (Frankfurt) found that urea clearance in the twin coil diminished as haematocrit rose.

Varia

Renal preservation. Better histological preservation after freezing was reported by Carruthers (Leeds) using a further refinement of Farrant's DMSO technique. The laborious task of testing new techniques by re-implantation may be curtailed since Dossetor (Montreal) found several biochemical estimates which correlate well with predicted viability. Renal transplantation. Nelson (Boston) found the lymphocyte transfer test helpful in excluding unsuitable donors, but slow. The more convenient mixed lymphocyte culture test did not predict graft survival significantly. Albertsen (Aarhus) studied the early post-transplant diuresis and attributed it to excessive solute load, predominantly sodium. A Fanconi-like tubular defect was described by Orlowski (Warsaw) in 4 recipients of cadaver grafts. By careful selection of cadaver donors Marshall (Melbourne) achieved immediate renal function in 22 of 24 recipients with 20 survivors. In the collected European series reported by Parsons (Leeds) short term survivors were about 60% of those receiving cadaveric grafts and 80% of those with live donors. Mortality in the second year was low at 2 out 30 patients. About 40% of European patients with failed grafts are now treated by regular dialysis long term or pending retransplantation. The value of such an integration of dialysis and transplant facilities
was illustrated by Vantelon (Paris) from the results at Necker. The main problem is the
overloading of facilities by patients for whom suitable grafts cannot be found. Traeger (Lyon)
suggested selecting only the more favourable patients on the basis of ABO and leucocyte groups.
If those with a high chance of finding a suitable match in the first 6 donors are chosen this will
leave about half the uraemic population untouched. The need for a hospital dialysis unit
streaming its new patients in roughly equal numbers to transplant and home haemodialysis was
clearly implied.

First Annual Meeting of the American Society of Nephrology
The first annual Meeting of the American Society of Nephrology was held at Los Angeles,
California, October 18-19, 1967. The program included: General Sessions (Membrane transport,
Immunologic pathology of renal disease, Renal physiology, Clinical nephrology), Symposia
(Chronic dialysis, Mechanism of action of aldosterone, Glomerulo-tubular balance, Renal
transplantation, Role of reflux in pyelonephritis, Nature and mechanism of action of the
natriuretic third factor) and 80 Free Communications. A more detailed report will be given in a
subsequent issue of Nephron.