

SHORT REPORTS

Prognostic value for immediate function of one-hour renal allograft biopsy

Transplanted cadaver kidneys, in contrast to renal homografts from living donors, may not function for a considerable time due to non-immunological damage during collection and preservation. Knowledge of the degree of kidney damage when transplanted could influence the management of early oliguria or anuria after transplantation, and help to differentiate immunological from non-immunological causes. In this study biopsy specimens of transplanted kidneys, taken within one hour of revascularisation, were examined to evaluate the histological features which may be correlated with post-transplant anuria requiring dialysis.

Methods and results

Biopsy specimens from 50 transplanted cadaver kidneys were available through Eurotransplant to the Academic Hospital, Rotterdam. Forty kidneys were preserved by a non-pulsatile method (NP). Mean ischaemia time was 13 h 2 min (range 4 h 6 min-25 h 9 min). Ten kidneys were preserved by a pulsatile method (P). Mean preservation time was 12 h 50 min (range 6 h 5 min-24 h 59 min).

The transplanted kidneys were biopsied 30 to 60 minutes after revascularisation. One-half of each specimen was used for light microscopy using conventional staining methods, the other for immunofluorescence studies. Six biopsies were studied by light microscopy alone.

The biopsies were assessed blind and later correlated with the dialysis requirements till renal function occurred. The characteristics evaluated were the severity of glomerular and tubular damage, the degree of glomerular and peritubular polymorphonuclear leukocyte (PMN) infiltration, and interstitial oedema. The interstitial oedema was graded on an arbitrary scale 0, +, ++, and +++, the grade being: 0 no oedema, + mild focal oedema, ++ moderate diffuse oedema, and +++ severe oedema. Comparisons were made between NP and P kidneys.

No relationship was found in the NP kidneys between the dialysis requirements and peritubular PMN infiltration or tubular lesions such as swelling and ballooning of cells, shedding of cells into the lumen, or nuclear loss. Glomerular PMN infiltration on glomerular lesions such as mesangial swelling or collapse of capillary loops also had no correlation with early function. The most significant feature was the occurrence of interstitial oedema (see table). All patients requiring more than five dialyses had severe interstitial oedema in their initial biopsy specimen. Only eight patients whose initial specimen showed any interstitial oedema had immediate renal function, and in only three of these was it as much as ++ (see table). There was also good correlation in the P kidneys between the amount of interstitial oedema and post-transplant dialysis requirements, but the number of kidneys was small (10). Immunofluorescence studies were of no prognostic significance.

Distribution of interstitial oedema and dialysis requirements in non-pulsatile perfused (NP) kidneys

Interstitial oedema	Numbers of patients needing haemodialysis after transplantation			
	0	1-5 Times	>5 Times	Total
0	11	1	0	12
+	5	8	1*	14
++	3	3	3*	9
+++	0	0	5	5
Total	19	12	9	40

*One patient in each group had a non-functioning transplanted kidney removed because of infection.

Discussion

Kincaid-Smith *et al*¹ found that the long-term prognosis of transplanted kidneys could be related to the number of PMNs in the glomeruli in early biopsy specimens. Perloff *et al*² and Millard *et al*³ could find no such relationship. All these investigators, however, attempted to correlate the early histological changes with subsequent immunological events to determine which changes might be significant prognostically as regards rejection episodes and long-term prognosis.

We were interested in assessing whether any information could be obtained from the immediate post-transplant biopsy by which the

duration of the oliguric period after transplantation could be anticipated. No correlation could be found between glomerular changes or PMN infiltration and immediate impaired renal function after transplantation. Most biopsy specimens showed varying degrees of tubular degeneration but tubular changes without interstitial oedema did not appear to influence the need for prolonged dialysis.

A good correlation was obtained between interstitial oedema and the dialysis requirements regardless of the duration or method of preservation. That perseverance with prolonged dialysis in cases showing interstitial oedema is worth while is shown by the fact that these kidneys ultimately functioned well.

Dr K M Hawking is a recipient of the Gillson Scholarship in Pathology, Society of Apothecaries of London.

¹ Kincaid-Smith, P, *et al*, *Lancet*, 1968, 2, 748.

² Perloff, L J, *et al*, *Lancet*, 1973, 2, 1294.

³ Millard, P R, Herbertson, B M, and Evans, D B, *Lancet*, 1970, 2, 113.

Departments of Pathology, Medicine, and Surgery, Academisch Ziekenhuis, Rotterdam, Netherlands

I W McDICKEN, MB, MRCPATH, pathologist

K M HAWKING, MB, physician

L D F LAMEYER, MD, physician

A P R BLOK, MD, pathologist

D L WESTBROEK, MD, surgeon

Primary spontaneous pneumothorax and smoking

A spontaneous pneumothorax is called primary or idiopathic when occurring in apparently healthy people, usually young men aged 15-40.¹ Although radiographic signs of lung disease are absent one or more cystic lesions (blebs or bullae) are usually found in the top of the lung, often bilaterally, at operation or necropsy. Rupture of one of these lesions may be the cause of the pneumothorax. A congenital defect or an acquired lesion secondary to localised stress, injury, or degenerative changes have been suggested as the pathogenetic mechanisms in these cystic lesions.² Because most of our patients with primary spontaneous pneumothorax were heavy smokers and no conclusive data were available we compared the smoking habits of 44 consecutive patients with primary spontaneous pneumothorax with those of other patients and normal people.

Methods and results

We studied 44 consecutive men (group 1) who were admitted with primary-spontaneous pneumothorax in 1966-73. There was no evidence of emphysema, cysts, bullae, or other radiographic abnormalities apart from the pneumothorax. No patient had been treated for chronic obstructive lung disease or asthma. Group 2 consisted of 44 men aged 18-40 years with several types of diseases except those which might be related to smoking who were treated at the same time. Patients with chronic obstructive lung disease, ischaemic heart disease, or gastroduodenal disease were excluded. Group 3 consisted of 489 normal men aged 18-40 years. All subjects were asked how much tobacco (in cigarettes, cigars, or pipes) they smoked. Smokers were understood to be people who smoked at least one cigarette (or 1 g of tobacco) a day for one year. Ex-smokers were those who had stopped smoking at least a month earlier.

Over 90% of the patients with primary spontaneous pneumothorax (group 1) admitted to smoking five or more cigarettes a day, which was much more than patients in group 2 (54%) or 3 (53%) (see table). Especially heavy smoking (>15 cigarettes/day) was more common in group 1 (66%) than in group 2 (36%) or 3 (33%). The mean cigarette consumption (\pm SD) in group 1 (17 ± 8) was considerably higher than in 2 (10 ± 10) or 3 (10 ± 11). In group 1 only two patients (both aged 18) had never smoked before; one of them had oligophrenia. There was no reason to suppose that patients with primary spontaneous pneumothorax had exaggerated their smoking habits.

Discussion

It is difficult to compare the smoking habits of a group of patients