SUBACUTE GLOMERULONEPHRITIS—A POSSIBLE CONTRAINDICATION TO INTERMITTENT HAEMODIALYSIS

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It is generally accepted that candidates for intermittent haemodialysis should be young adults whose renal failure is the only factor seriously limiting their life expectancy. On this ground patients with important vascular disease or systemic illness such as lupus erythematosus are usually excluded. Our past experience of subacute glomerulonephritis leads us to believe that the disease may not be confined to the kidney and may therefore be unsuitable for treatment by intermittent dialysis.

We define subacute nephritis as a disease manifested by albuminuria, haematuria and progressive azotaemia and characterised histologically by severe endothelial proliferation and intracapsular crescent formation. Twenty-three patients who met these clinical and histological criteria and did not overtly suffer from polyarteritis nodosa have been admitted to the Renal Unit in the last 6 years. Of these, 13 have come to autopsy in Newcastle and in 6 gross intrapulmonary haemorrhage was apparent. The remaining 7 all showed evidence of pul-

Fig. 1. Renal biopsy from patient 1. H and E.
monary oedema. Pulmonary haemorrhage has been a very unusual finding in our patients with fatal renal disease of other types.

It therefore seemed likely that pulmonary haemorrhage was due to the primary disease rather than uraemia. However, it was difficult to be certain as all these patients had been severely uraemic during their terminal illness and several had been grossly overhydrated. Moreover, many patients suffering from this disease are young adults and they are unsuitable for renal transplantation because the disease is liable to recur in the graft. We therefore decided to attempt intermittent haemodialysis in a small number in the hope that better control of uraemia would prevent this complication. The case histories of the first two patients are presented here.

Patient 1

A 20 year old nurse became tired and listless one week after a sore throat. Twelve weeks later she became dyspnoeic on effort and had recurrent haemoptysis. After a further eight weeks she was found to have a blood urea of 265 mg\% rising to 430 mg\% and was transferred to the AKU. Renal biopsy showed subacute glomerulonephritis (Fig. 1). She was treated with prednisone 100 mg daily for 3 weeks but progressed to total anuria and was started on twice weekly haemodialysis. Her mean plasma urea level was 242 mg\% pre-dialysis, 54 mg\% post-dialysis, and on the 6th and 7th dialyses the starting plasma urea levels were 220 and 195 mg\%, respectively.

After her seventh dialysis she became dyspnoeic while 500 ml blood were being transfused from the machine. Pulmonary oedema was diagnosed clinically and radiologically, but she failed to respond to venesection within 1 hour and to dehydration during dialysis 3 days later. During this final dialysis she had massive haemoptysis and she died 24 hours later in spite of tracheostomy and assisted respiration.

![Fig. 2. Lung at autopsy from patient 1. H. and E. and elastic.](image-url)
At autopsy the lungs were purple. They were grossly haemorrhagic in all areas and slightly friable. On microscopy they showed widespread recent haemorrhage and contained many collections of haemosiderin-laden macrophages indicating previous episodes of haemorrhage. The pulmonary vessels were normal (Fig. 2).

The kidneys were reduced in size and showed pallor of the cortex with diffuse narrowing. Histology showed the features illustrated in Fig. 1 plus some fresh haemorrhage in a few proximal tubules.

**Patient 2**

An 18 year old trainee accountant was found in the course of investigation of anaemia to have haematuria, albuminuria and a plasma urea of 44 mg% which rose to 500 mg% over 8 weeks. A diagnosis of subacute glomerulonephritis was confirmed by renal biopsy (Fig. 3). After initial treatment with peritoneal dialysis he was entered into a programme of intermittent haemodialysis. Twice weekly dialysis for 12 hours on a large twin coil reduced his plasma urea to an average of 126 mg% pre-dialysis and 25 mg% post-dialysis, during the first 3 weeks and produced striking clinical improvement. When due to undergo his seventh haemodialysis he developed catastrophic intrapulmonary haemorrhage which in spite of active resuscitation caused death within 12 hours. During this haemorrhagic episode his platelet count was 400,000/cu.mm and his recalcified clotting times (silicone fresh 175 secs, contacted 117 secs, cephalin 110 secs, Quick's 17.5 secs) were only slightly abnormal.

At autopsy both lungs showed gross diffuse haemorrhage. Histologically the alveoli in some areas were studded with red cells and fibrin. They also contained large numbers of macrophages laden with haemosiderin, indicating previous intrapulmonary haemorrhage (Fig. 4). The pulmonary arteries and veins were normal.
The kidneys showed pallor and narrowing of cortex similar to that shown in Case 1. Histologically the lesion was more advanced than in the biopsy; glomeruli were more collagenised, inflammatory infiltrate had diminished and interstitial fibrosis had progressed.

Comment
Most of our patients with subacute nephritis had no evidence of preceding streptococcal infection. Their disease is therefore of unknown aetiology and they may include examples of several disease processes—progressive ‘Ellis type I nephritis’, ‘lung purpura with nephritis’ etc.; the difficulty of excluding acute polyarteritis with certainty is well recognised. We are therefore reluctant to generalise on the basis of only two cases and we are continuing to admit patients with this syndrome to our programme. Since both patients on intermittent dialysis received systemic heparinisation and one may have been overtransfused, we shall avoid these circumstances in the future, though they have never led to pulmonary haemorrhage in our other patients.

Death from pulmonary haemorrhage is one of the most distressing catastrophes in clinical medicine. If it transpires that patients with subacute nephritis are particularly prone to this complication they should probably not be selected for intermittent dialysis. We hope that colleagues will publish their experience with intermittent dialysis in this disease, so that a fairer assessment can be made.