

The instrument ready for use.

instrument has been found to be useful in all forms of hand surgery. It may easily be clamped to a hand table and is equally useful for operations performed under either local or general anaesthesia.

Comment

An instrument has been designed for securing the hand during surgery. Simple fastening on any size of hand, left or right, is permitted and access to either flexor or extensor surface is equally convenient. We have established the efficiency of the instrument in use.

Requests for reprints to T V Taylor, Department of Clinical Surgery, Royal Infirmary, Edinburgh.

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Spontaneous reversible renal artery stenosis after renal allotransplantation

Renal artery stenosis is a known complication of renal transplants. We report a patient who developed this complication which regressed spontaneously.

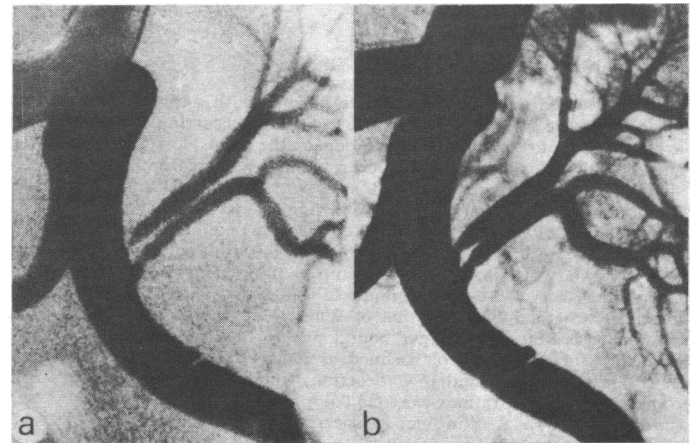
Case report

A 54-year-old man with glomerulonephritis received after 18 months of haemodialysis a renal cadaver allograft from a 19-year-old man. His blood pressure was always normal. Bilateral nephrectomy was performed before transplantation. There was one HLA-B locus incompatibility. The donor kidney, preserved with Collins's solution, had a duplication of the renal artery

on a single aortic patch. This was anastomosed end-to-side to the left external iliac artery without difficulties. Renal function improved rapidly. There were no symptoms of rejection. After four weeks the patient was discharged taking 30 mg prednisolone and 200 mg azathioprine daily. No anticoagulant or antiplatelet agents were given. Creatinine clearance was 95 ml/min, and blood pressure (BP) without salt restriction was 110/70 mm Hg. A soft bruit was heard over the graft.

Three months after operation his BP gradually increased to 160/110 and the creatinine clearance dropped to 75 ml/min. At no time did he have fever. There was no protein or fibrin split-products in the urine. The abdominal bruit had appreciably increased in intensity. Angiography showed a severe stenosis distal to the anastomosis in both renal arteries (fig 1a). The intrarenal vasculature was normal. The patient was treated with restricted salt intake and spironolactone 100 mg daily. When his BP remained high 1 g methyl dopa, 160 mg propranolol, and 80 mg hydralazine chloride were added. The diastolic pressure decreased to 95 mm Hg, but creatinine clearance dropped to 65 ml/min with a renal plasma flow (RPF) of 220 ml/min. Plasma renin activity (PRA) was 13.8 nmol angiotensin I/l/h (18 ng/ml/h) before propranolol and 11.5 nmol/l/h (15 ng/ml/h) thereafter (normal limits 1.27 ± 0.59 nmol/l/h (1.6 ± 0.77 ng/ml/h)).

After three months' antihypertensive medication this treatment was stopped for several days. Surprisingly, his BP did not rise, but its maximum level was 160/95 mm Hg. The patient was kept under strict supervision without antihypertensive treatment. His BP decreased further and was normal one-and-a-half years after transplantation, even on unrestricted salt intake. At that time PRA was 1 nmol/l/h (1.3 ng/ml/h), RPF 325 ml/min, and creatinine clearance 110 ml/min. The bruit had decreased considerably. Angiography showed that both stenoses had decreased significantly (fig 1b).



Renal angiography (a) three months and (b) one-and-a-half years after transplantation.

Discussion

Several mechanisms have been held responsible for the development of renal artery stenosis in patients who have had renal transplants—for example, vessel damage by clamping, intimal dissection during renal perfusion, or reaction to suture material.^{1,2} Localised vascular rejection has also been postulated as causing stenosis,^{3,4} because in resected large arteries lesions have been seen similar to those observed in smaller renal vessels undergoing chronic rejection—for instance, cellular intimal proliferation and subintimal fibrosis.

Raphael⁵ described a patient who had had a transplant and developed hypertension and renal artery stenosis shown angiographically. No details were given, but apparently the stenosis resolved spontaneously within a year and the BP became normal. A kidney biopsy specimen showed the changes of rejection, but no mention was made of vascular changes.

The cause of both stenoses in our patient remains a matter of conjecture. Vascular injury at nephrectomy cannot be ruled out, although transplantation was uneventful and no signs of injury were visible. If the arteries had been damaged by clamping with resulting oedema and cell proliferation in the vessels, one would have expected an earlier onset of hypertension. If the hypertension had been the result of secondary fibrosis with narrowing of the lumen, spontaneous regression would have been highly unlikely.

The long period between transplantation and the onset of hypertension is consistent with a mild and presumably self-limiting rejection reaction against the donor vessel wall, but, apart from an impaired creatinine clearance and RPF and the hypertension, no other signs of rejection were observed. A kidney biopsy was not performed. Nevertheless, it is unknown whether local vascular rejection in the

main artery is accompanied by abnormalities in the small renal vessels. Because operation entails a high risk for the allograft, one should bear in mind that stenosis may regress spontaneously.

- ¹ Schacht, R A, *et al*, *American Journal of Surgery*, 1976, **131**, 653.
² Smellie, W A B, Vinik, M, and Hume, D M, *Surgery, Gynecology and Obstetrics*, 1969, **128**, 963.
³ Lindsey, E S, *et al*, *Annals of Surgery*, 1975, **181**, 604.
⁴ Doyle, T J, *et al*, *Surgery*, 1975, **77**, 53.
⁵ Raphael, M J, *et al*, *British Journal of Radiology*, 1969, **42**, 873.

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Prognostic value of the oculovestibular reflex in fulminant hepatic failure

The mortality rate of patients with fulminant hepatic failure when treated by conservative measures alone is at least 80%. Nevertheless, prediction of the outcome in the individual case is difficult, and, although recent reports have indicated that serum α -fetoprotein,¹ C¹⁴ cholic acid kinetics,² and the galactosamine elimination test³ may be useful, there is some overlap. Serial electroencephalogram monitoring is still probably the most reliable method available but requires specialised personnel and equipment. In the present study changes in the oculovestibular reflex, a simple and easily performed bedside test, were shown to be of equal value.

Patients, methods, and results

Thirty patients with fulminant hepatic failure with signs of grade IV encephalopathy on admission were investigated (table). In addition to standard supportive treatment, three of the patients were treated by repeated daily periods of charcoal haemoperfusion and 17 by polyacrylonitrile haemodialysis. Monitoring of motor responses to compression of distal interphalangeal joints was performed as a means of assessing pain responsiveness. Pupillary light responses and oculocephalic and oculovestibular reflexes (OVR) were performed to assess brain stem function. The oculocephalic reflex was determined by rapid to and fro movements of the head in the vertical and horizontal planes, and the oculovestibular reflex by irrigating the external auditory canal and tympanum with iced water (20 ml).

The oculovestibular reflex was present on admission in 26 patients, and remained throughout the duration of coma in 10. Nine of the 10 patients recovered consciousness, the other dying from a massive gastrointestinal haemorrhage. Although the OVR was not lost in any of the nine patients, transient losses of motor responses to pain (three patients), pupillary light responses (one), and oculocephalic responses (two) were observed.

Comparison of clinical and laboratory data between the two groups (mean \pm SD)

	Recovery of consciousness	Non-recovery of consciousness	Significance
Duration of symptoms prior to admission (days)	10.1 \pm 10.9	7.7 \pm 7.8	NS
Duration of grade IV encephalopathy (days)	1.6 \pm 0.6	1.4 \pm 0.5	NS
Prothrombin time (s prolonged)	88 \pm 36	72 \pm 23	NS
Albumin (g/l)	32.5 \pm 9.2	34.1 \pm 5.1	NS
Bilirubin (μ mol/l)	230 \pm 161	171 \pm 72	NS
Alkaline phosphatase (IU/l)	146 \pm 66	176 \pm 55	NS
Serum aspartate transaminase (IU/l)	1200 \pm 914	1200 \pm 1074	NS

NS = Not significant.

Conversion: SI to traditional units—Bilirubin 1 μ mol/l \approx 0.058 mg/100 ml.

The four patients with no OVR on admission died within 2-7 days. Of the 16 patients in whom the reflex subsequently disappeared, 12 died within 1-4 days. In the remaining four patients who also died assessment of the reflex was invalidated by the use of pancuronium during ventilatory support. Of the 20 patients who failed to recover consciousness, positive limb responses to pain in two and positive pupillary light responses in six were observed at some stage during the course of the illness.

Formal 8-channel EEGs were obtained on at least two occasions (total 19) in eight patients. In two of these patients the EEG recordings were persistently isoelectric and the OVR was absent throughout. In two others, cortical activity persisted, the OVR remained throughout, and they recovered consciousness. In the remaining four patients the EEG recordings progressively deteriorated, the OVR disappeared, and the tracings became isoelectric before death. A single EEG recording was obtained in an additional 10 cases. In six, cortical activity was seen at a time when the OVR was present. In two, the readings were isoelectric when the OVR could no longer be obtained. In the remaining two, some activity was present on the EEG recordings at a time when the OVR was absent but both patients died shortly afterwards.

Discussion

There was no relation between the absence or presence of motor responses to pain, pupillary light responses, and oculocephalic reflexes, and the subsequent recovery of consciousness. In contrast, loss of the oculovestibular reflex in 16 patients was irreversible and all subsequently died. Those who recovered consciousness, however, showed a persistently positive response throughout grade IV encephalopathy. Unlike the biochemical tests referred to in the introduction, the prognostic value of the OVR in fulminant hepatic failure was absolute, and as such its prognostic value appears to be similar in FHF to that reported in head injuries⁴ and "medical" causes of coma such as strokes, uraemia, and encephalitis.⁵ Moreover, the OVR has the advantage over EEG monitoring in that it is a simple and easily performed bedside test requiring less specialised personnel and equipment.

¹ Murray-Lyon, I M, *et al*, *Gut*, 1976, **17**, 576.

² Horak, W, *et al*, *Gastroenterology*, 1976, **71**, 809.

³ Ranek, L, Andreassen, P B, and Tygstrup, N, *Gut*, 1976, **17**, 959.

⁴ Poulsen, J, and Zilstorff, K, *Acta Neurologica Scandinavica*, 1972, **48**, 282.

⁵ Caronna, J J, *et al*, *Transactions of the American Neurological Association*, 1975, **100**, 25.

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Persistent diarrhoea and hypoalbuminaemia associated with cytomegalovirus enteritis

Symptomatic cytomegalovirus (CMV) infection restricted to the gastrointestinal tract of adults is uncommon.¹ It may occur as a primary event or, more usually, as secondary to either a local² or a debilitating systemic disease.³ This report describes the occurrence of severe intractable diarrhoea and hypoalbuminaemia with CMV enteritis in a patient with no evidence of pre-existing local or systemic disease.

Case report

A 68-year-old woman presented, four months before death, with a one-year history of dysphagia, mild anorexia, weight loss, and more recent onset of diarrhoea. Her health before this had been good. The results of barium swallow, meal, and enema; oesophagogastroscopy; and sigmoidoscopy were normal. Her haemoglobin at this time was also normal. Two months later she complained of increasing diarrhoea, weight loss, and mouth ulcers and was admitted for further investigation. She was pale and thin with angular