Use of albumin dialysis in the treatment of hepatic and renal dysfunction due to paracetamol intoxication

Sir,

Paracetamol is the most commonly self-administered poison in the UK. Paracetamol intoxication results in varying degrees of acute liver cell failure (ALCF). Complication of ALCF with the hepatorenal syndrome increases the mortality to in excess of 90%, in the absence of liver transplantation.

Case. A 30-year-old male chronic schizophrenic, presented to the general physicians 36–48 h after ingesting 40 g of paracetamol. His paracetamol level at this time was 0.46 mmol/l. He was acidotic with a venous bicarbonate level of 17 mmol/l. There was evidence of severe hepatic injury with an ALT of 11 968 IU/l (peaking the following day at 18 876 IU/l). His bilirubin was 117 μmol/l and hepatic synthetic function was grossly deranged, as evidenced by an INR of 4.0 (peaking 2 days later at 7.0). Serum creatinine was elevated at 364 μmol/l. The patient was persistently hypoglycaemic and required a glucose infusion. Initial management consisted of intravenous N-acetyl cysteine, 5% glucose fluid challenge (to elevate central venous pressure to 8 cm H₂O) and a single dose of 500 mg of frusemide (with no effect on urine output).

Discussion took place with the local hepatic transplant centre. They declined the transfer of the patient, on the grounds of his chronic psychiatric illness. It was therefore decided to treat the patient with albumin dialysis using the molecular absorbents recirculating system (MARS®, Teraklin AG, Germany). This system is described in more detail in a variety of publications [1, 2]. A standard dialysis monitor manages the extracorporeal blood circuit and generates the dialysate solution. The MARS® monitor was connected to a Hospal Integra® dialysis monitor and we performed a course of five consecutive 8-h treatments.

Over this treatment period there were considerable improvements in both clinical and biochemical indices. His level of consciousness returned to normal after two treatments. His acidosis was corrected, bile acids fell from 108 μmol/l to 22 μmol/l (Figure 1), plasma ammonia fell from 140 μmol/l to 51 μmol/l, INR fell from a peak of 7.0 to 1.1 and bilirubin to 176 μmol/l. He was discharged after 26 days, having required dialysis alone for a further 9 days. Serum creatinine and liver function tests had returned to within normal limits within 1 month of discharge from hospital.

Comment. Albumin dialysis has been demonstrated to have clinical utility in the treatment of hepatorenal syndrome and acute or chronic liver failure associated with intrahepatic cholestasis [2]. Although many patients with severe disturbance of hepatic and renal function do recover spontaneously after paracetamol intoxication, this patient fell into a high-mortality group. The presence of severe acidosis, INR > 7 and encephalopathy on presentation result in 80–90% mortality without transplantation and > 50% mortality even with hepatic transplantation [3]. The use of albumin dialysis allowed time for hepatic regeneration, possibly aided in

stable, anuric, euvoalaemic and encephalopathic (grade II). Repeat paracetamol level was 0.46 mmol/l. He was acidotic with a venous bicarbonate level of 17 mmol/l. There was evidence of severe hepatic injury with an ALT of 11 968 IU/l (peaking the following day at 18 876 IU/l). His bilirubin was 117 μmol/l and hepatic synthetic function was grossly deranged, as evidenced by an INR of 4.0 (peaking 2 days later at 7.0). Serum creatinine was elevated at 364 μmol/l. The patient was persistently hypoglycaemic and required a glucose infusion. Initial management consisted of intravenous N-acetyl cysteine, 5% glucose fluid challenge (to elevate central venous pressure to 8 cm H₂O) and a single dose of 500 mg of frusemide (with no effect on urine output).

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the abrogation of further hepatic injury and allowed his care to take place in a non-ITU environment (with the attendant cost/resource implications).

We suggest that this therapy might have a place in the routine management of severe paracetamol poisoning, allowing bridging to either transplantation, or hepatic regeneration (where transplantation is not available/feasible).

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