

LETTER TO THE EDITORS

Organ donation after Lethal Methanol Intoxication

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Dear Sirs,

The number of patients awaiting allograft organ transplantation exceeds the number of available grafts, and therefore, rarely diagnosis of brain death must be debated.

Since 2006, two patients with methanol intoxication donated organs in Germany. Donor 1 was a 19-year-old boy, and donor 2 a 17-year-old boy. Both were primary treated for 9 days after an accidental ingestion of an unknown volume of methanol before transfer to a university hospital. They had been treated with intravenous ethanol and folic acid for 9 days and hemodialysis for 3 days. Computer tomograph scans showed in both cases severe cerebral edema, edema of the opticus nerve, and hemorrhage of the basal ganglia. According to the German Guidelines for Determining Brain Death, brain death had been determined for organ donation in both boys. Later forensic examination verified in both boys atrophy of the opticus nerve with myelinic lysis, especially in the bulbous-near areas and a progredient degeneration by macrophages with a reactive astrogliosis. A symmetric necrosis of the basal ganglia was demonstrated. Although methanol was not detectable in peripheral blood prior brain death, the methanol concentration of donor 1 had been 189 mg/kg tissue in the brain stem and 272 mg/kg tissue in the cerebellum. In donor 2, 168 mg/kg tissue in the brain stem and 99 mg/kg tissue in the cerebellum were measured.

In laboratory findings, elevated transaminases (GOT up to 176 U/l in donor 1, 73 in donor 2, GPT up to 190 U/l in

donor 1, and 108 U/l in donor 2) and pancreatic enzymes (lipase up to 267 U/l in donor 2, amylase up to 234 U/l in donor 1) were seen, and the pH was normal in both patients.

All organs had been offered to Eurotransplant, responsible for the allocation of donated organs. With the exception of both small intestines and the pancreas of donor 2, all organs had been mediated. Intraoperatively a manifest calcification of the pancreas of donor 1 was seen; therefore, the acceptance of the recipient center was cancelled. All other organs had been procured and also transplanted. Two perioperative histological examinations were performed. Liver biopsy of donor 1 demonstrated a regular architecture of portal tracts and lobules. Particularly, there was only a very mild portal tract inflammation by a few lymphocytes (known HBV infection). Fibrosis was not observed. The hepatocytes showed a slight swelling consistent with mild hydropic degeneration. However, significant steatosis was not seen. Furthermore, there were no signs of hepatocellular necrosis. The biopsy of the right kidney of donor 2 showed severe acute tubular injury but no interstitial fibrosis or tubular atrophy and no interstitial inflammation. Arteries and arterioles as well as glomeruli appeared normal (Fig. 1).

The transplantation of all organs from donor number 1 showed excellent results. There were no problems after 3 days, 4 weeks, 3, 6, 9, 12, and 24 months. The pH of all recipients had been in normal range postoperatively.

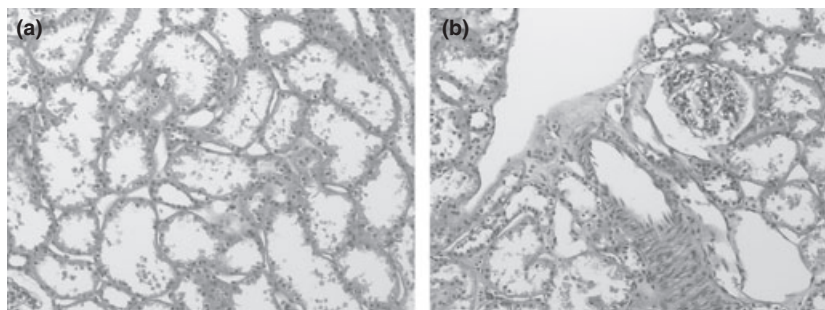


Figure 1 Biopsy of the right kidney of donor 2: (a) Kidney biopsy shows severe acute tubular injury with flattening of tubular epithelium, brush boarder loss, and shedding of tubular epithelial cells. (b) Vessels and glomerula are unremarkable (H&E stain, original magnification $\times 200$).

A tragic outcome had to be observed in the recipient of the liver of donor 2. There occurs a severe bleeding a few hours after transplantation, and therefore, the patient had to be re-operated. Cause of this bleeding was a very difficult anastomosis of the vessels after a lot of previous operations, especially Kasai operations. Four weeks after the first transplantation, the recipient died. The other patients had again an excellent follow-up and normal pH after transplantation.

There is no published case report of transfer of methanol intoxication from donor to recipient. The survival of the graft and also recipient of heart [1–4], lung [2,5,6], liver [1,2,4,5,7] and also kidney [1,4,7] from donors who die because of methanol does not differ in the short and long term from the transplants performed with organs from donors who die from other causes. Only the pancreas transplantation seems to be a contraindication [1,8].

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