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LETTER TO THE EDITOR

Fausto Zamboni
Sergio Livigni
Pasquale Ricci
Mauro Salizzoni

A single case of orthotopic liver transplantation with a graft from a donor with tetanus

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Sir:

The lack of available organs, contrasting with the present need by patients on waiting lists for transplantation, is stimulating strong efforts with regard to the retrieval of organs and the full exploitation of those available. This is based on the widening of margins of criteria applied in the evaluation of organs and critical revision of the cases of associated pathologies that might advise against the retrieval of the liver and other organs. The case of a liver transplantation performed with an organ retrieved from a subject who had died of tetanus seems emblematic, as it was undertaken without the support of past experiences published in the literature, and is noteworthy for the frequency – although relatively low – at which this situation may occur.

We had a case of a 68-year-old organ donor with blood group A + who was treated for tetanus. The diagnosis (see recommendations CDC 1997 a) was based on the clinical history and physical examination: the patient had been hospitalized for symptoms that had appeared 2 days before, comprising backache, dysarthria, psychomotor agitation, neck rigidity, and trism – in absence of cardiac, pulmonary, or abdominal alterations. A laceration was noted on the skin of the skull in the parieto-occipital region; the tetanus antitoxin test of the cerebrospinal fluid was negative, and the serum level of tetanus antitoxine was zero. Radiographic examination did not reveal any pathological evidence.

After being admitted to the intensive care unit, the patient incurred a crisis of tetanus, which necessitated a more invasive treatment with sedation, curarization, and mechanical ventilation. Despite the application of the tetanus protocol, the symptoms persisted – at that time trism, neck rigidity, and a neurovegetative crisis with an increase in arterial blood pressure and paroxysmal bigeminal heart rhythms. These neurovegetative symptoms progressively intensified, ending with sudden cardiocirculatory arrest on the 12th day, after surgical tracheostomy had been performed. Following lengthy reanimation efforts, the sinus rhythm and normal pressure values were established. Neurological evaluation after the cardiac arrest revealed a comatose state (GCS = 3), with absence of electrical activity upon EEG as well as a total absence of the vertebrobasilary and carotid circles upon cerebral angiography.

After the cerebral death of the patient had been ascertained, the possibility of using organs for transplantation was considered, and appropriate medical treatment was imposed to stabilize the status of the potential donor. The criteria for exclusion from donation were then evaluated. These criteria do not specifically take tetanus into consideration, but more generally refer to the systemic extension of infections. Since the typical expressions of tetanus are caused by the link between the neurotoxin produced by *Clostridium tetani* and the terminations of alpha motor neurons, and since at the time there was no clear evidence of a systemic spread of the pathogen, we did not consider the tetanus infection to be a reason for exclusion from donation.

On the 17th day, the Regional Coordination Center was informed about the case, but despite the good functionality of the organs, only the liver surgeon agreed to a retrieval, taking full responsibility, informing the receiver, and obtaining the necessary informed consent. At retrieval of the liver, both kidneys were removed for histological evaluation, which showed them having a normal aspect. Serum creatinine of the donor was 0.8 mg/dl. The recipient was a 61-year-old man with blood group A + who required liver transplantation for cirrhosis after hepatitis C. The transplantation was performed in a total time of 4.5 h, using 2250 ml of erythrocyte concentrate and 6000 ml of plasma. The total ischemia time was 3 h and 38 min, with a warm ischemia time of 18 minute. Prior to the transplantation, antitetanus vaccine was administered together with 1000 IU of human immunoglobulin.

After a regular postoperative period, the patient was discharged on the 19th day with normal hematological and chemical serum values. Three months after transplantation, the T- tube was removed following cholangiography that showed a normal aspect of the biliary duct. After 4 months the patient incurred a moderate rejection, which was treated with cortisone. Two months thereafter, serum levels of immunoglobulin against tetanus antitoxin showed a borderline sensibilization, and another dose of vaccine was administered. At present, 13 months after operation, the patient is in good general condition and is regularly examined.

The infection with *Clostridium tetani* spores is described in connection with a skin lesion. However, the diffusion of tetanospasmin did not take place within the liver or other organs, but was limited to the terminations of the alpha motor neurons. The good results undisputedly show

the correctness of the decision made. In this specific case, the retrieval of the heart, lungs, and pancreas was not undertaken due to the elderly age of the donor. Nephrectomy was performed only for histological examination, motivated by the refusal of other surgeons to exploit the kidneys for transplantation. Both the biochemical and histological results furnished proof of the good functionality of the donor kidneys. The refusal given to transplantation was therefore based on the supposed risk of tetanus infection. Obviously, the cases of donors with tetanus do not present a relevant issue when seen from an epidemiological point of view. Nevertheless, the increased demand by patients on waiting lists should convince us not to lose organs, for which there are no clinical contraindications after due verification, like in this case.

F. Zamboni (✉) · S. Livigni · P. Ricci
M. Salizzoni
Centro Trapianto di Fegato,
Ospedale Maggiore San Giovanni Battista,
Corso Bramante 88, 10126, Torino, Italy
e-mail: molinette.osp2@interbusiness.it
Tel.: + 390-11-6335487
Fax: + 390-11-6965923