

DOI: 10.15825/1995-1191-2023-2-167-169

SUCCESSFUL LIVER TRANSPLANTATION FROM A DECEASED DONOR WHO WAS ON HEMODIALYSIS FOR 10 YEARS

D.A. Altman¹, O.M. Tsirulnikova^{2, 3}, A.E. Poltorak¹, V.V. Pchelnikov², B.Kh. Sarsenbayev¹, A.S. Ryzhykh¹, I.Ya. Bondarevsky¹, E.G. Muravyeva¹

¹ Chelyabinsk Regional Clinical Hospital, Chelyabinsk, Russian Federation

² Shumakov National Medical Research Center of Transplantology and Artificial Organs, Moscow, Russian Federation

³ Sechenov University, Moscow, Russian Federation

Objective: to analyze the possibility of using the liver of a donor undergoing hemodialysis as a transplant. **Materials and methods.** A case of successful liver transplantation (LT) from a 40-year-old deceased donor, who had been on hemodialysis for 10 years for chronic pyelonephritis and nephrosclerosis, is presented. Of the known hemodialysis complications of chronic kidney disease, the donor's medical records showed anemia and grade 3 arterial hypertension. **Results.** The recipient's post-LT period had no significant differences from the postoperative period of those that received liver from donors with standard criteria. **Conclusion.** Our first experience with the use of a liver transplant from a donor who was on hemodialysis, in the absence of other risk factors, suggests that the liver of this category of donors can be used for transplantation.

Keywords. Liver donor with end-stage renal disease, liver transplantation.

INTRODUCTION

In end-stage renal disease (ESRD), practically all organs and systems of the body are affected. Obviously, donors with ESRD belong to the group of expanded criteria donors. And the use of such patients as liver donors is in line with the global trend, i.e., expansion of liver donation criteria, and such cases have not been described by Russian researchers [2]. Such a factor as ESRD is likely to have a significant impact on the quality of LT. Organs of the digestive system are most frequently affected, which is due to the influence of uremia [3]. The liver has been shown to be involved in excretion of nitrogenous products. The majority of patients with chronic kidney disease show various pathological changes in the gastrointestinal tract organs, which can be detected by instrumental and laboratory tests [4]. But given the quality of renal replacement therapy at present, there are patients for which changes in their gastrointestinal tract organs are minimal against many years of long-term hemodialysis therapy.

MATERIALS AND METHODS

A case of successful LT from a 40-year-old deceased donor, who was on long-term hemodialysis for 10 years for chronic pyelonephritis and nephrosclerosis, is presented. Of the known hemodialysis complications of chronic kidney disease, the donor's medical records showed anemia and grade 3 arterial hypertension. Cause of death was parenchymal ventricular hemorrhage in the

right hemisphere, cardiac tamponade in the III and IV ventricles, cerebral edema, and dislocation syndrome against the background of hypertension crisis. Donors with such causes of death are the most common [6]. After hemodialysis session and exclusion of uremic intoxication, cerebral death was pronounced. Given the high risk of viral hepatitis infection in patients receiving hemodialysis treatment, blood was tested by ELISA and PCR for viral hepatitis B and C, HIV infection, and syphilis. The tests detected no infections. Donor's anthropometric data were: height 178 cm and body weight 60 kg. Laboratory parameters (ALT, AST, total and direct bilirubin, blood sodium level) were within normal limits. The follow-up period in the intensive care unit was three days. Hemodynamics vasopressor support was performed with norepinephrine at a dose of 0.13 µg/kg/minute. According to ultrasound, anteroposterior dimension of the right lobe of the liver was 145 mm, that of the left lobe was 78 mm, liver parenchyma was of moderate echogenicity and normal sound conductivity, no signs of fatty hepatosis were detected. Macroscopic assessment of the liver: the liver margin was acute, no signs of fatty hepatosis were noted (Fig. 1, 2). There were also no signs of atherosclerosis of the aorta and large arteries. There were no reasons to refuse organ transplantation. The decision to procure an organ from this donor was made jointly with specialists from Shumakov National Medical Research Center of Transplantology and Artificial Organs.

RESULTS AND DISCUSSION

It has been reported that in some cases, transplantation using an available organ from an expanded criteria donor is preferable than waiting for a standard criteria donor, which is due to the negative dynamics of the

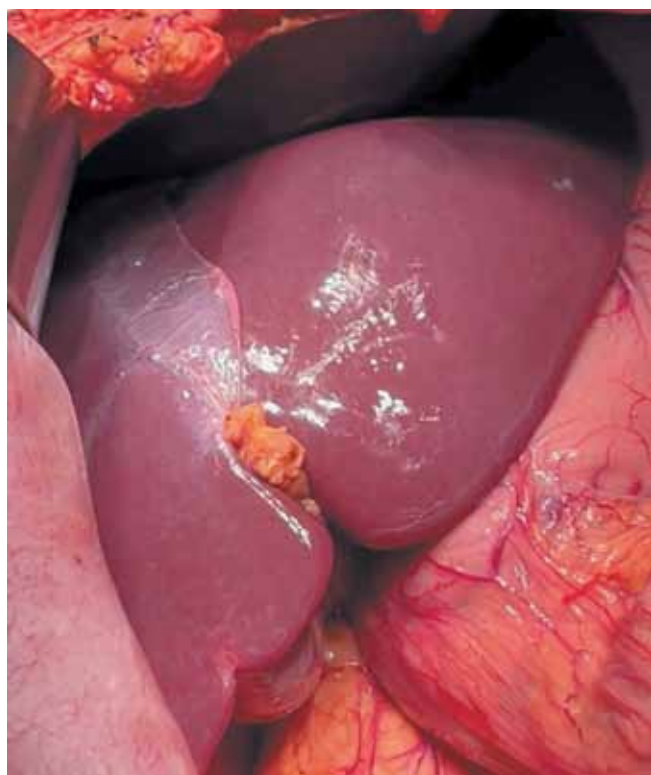


Fig. 1. Visual assessment of a liver from a donor who was on long-term hemodialysis

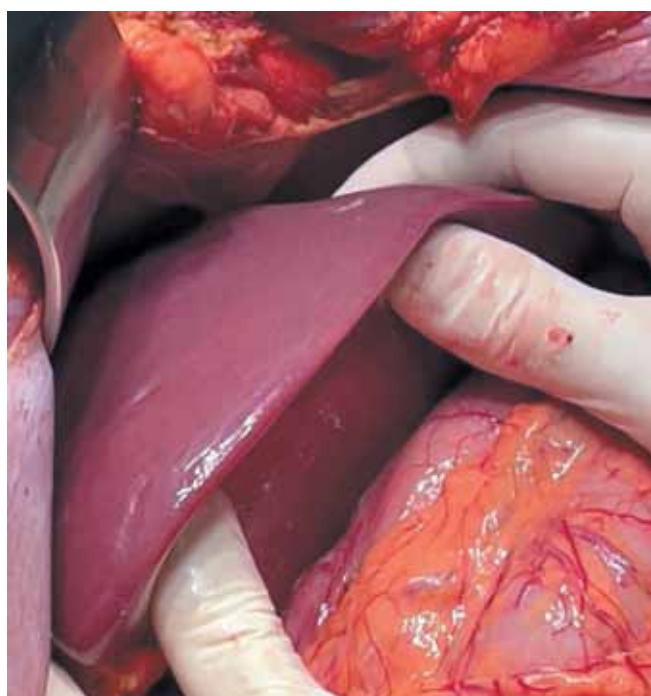


Fig. 2. Edge of the left lobe of the liver of a donor who was on long-term hemodialysis

patient's condition while waiting for surgery [1]. And in our case, the postoperative period of a patient requiring LT from this expanded criteria donor as soon as possible did not differ significantly from the postoperative period of those that received liver from standard criteria donors. The recipient's length of intensive care and the dynamics of laboratory parameters are comparable with those of other recipients.

A retrospective assessment of the morphological picture in the graft also confirmed the absence of signs of fatty hepatosis, it revealed single zonal necrosis, and the portal tracts were weakly fibrosed.

CONCLUSION

The first experience of using a liver transplant from a donor who was on long-term hemodialysis treatment, in the absence of such risk factors as age, transaminase levels, hemodynamic instability, duration of cold ischemia time, significant steatosis and hypernatremia [5], suggests that the liver of this category of donors can be used for transplantation. This reduces the LT waiting time for waitlisted candidates.

The authors declare no conflict of interest.

REFERENCES

1. Flores A, Asrani SK. The donor risk index: A decade of experience. *Liver Transpl.* 2017; 23 (9): 1216–1225. doi: 10.1002/lt.24799.
2. Minina MG, Voronov DV, Tenchurina EA. Evolution of liver donation in Moscow. Movement towards expanded donor selection criteria. *Russian Journal of Transplantation and Artificial Organs.* 2022; 24 (3): 102–110. [In Russ, English abstract]. doi: 10.15825/1995-1191-2022-3-102-110.
3. Ryss ES, Ryabov SI, Lutoshkin MB, Panina IYu. Pishchevaritel'naya sistema. *Lechenie khronicheskoy pochechnoy nedostatochnosti.* Pod red. S.I. Ryabova. SPb.: Foliant, 1997: 11–25. [In Russ].
4. Levey AS, Coresh J, Balk E, Kausz AT, Levin A, Stef-fes MW et al. National Kidney Foundation practice guidelines for chronic kidney disease: evaluation, classification, and stratification. *Ann Intern Med.* 2003; 139 (2): 137–147. doi: 10.7326/0003-4819-139-2-200307150-00013.
5. Nemes B, Gámán G, Polak WG, Gelley F, Hara T, Ono S et al. Extended criteria donors in liver transplantation Part I: reviewing the impact of determining factors. *Expert Rev Gastroenterol Hepatol.* 2016; 10 (7): 827–839. doi: 10.1586/17474124.2016.1149061.
6. Gautier SV, Khomyakov SM. Organ donation and transplantation in the Russian Federation in 2021 14th Report from the Registry of the Russian Transplant Society. *Russian Journal of Transplantation and Artificial Organs.* 2022; 24 (3): 8–31. [In Russ, English abstract]. doi: 10.15825/1995-1191-2022-3-8-31.

The article was submitted to the journal on 31.03.2023