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Case report

Successful Kidney Transplantation from a Deceased Donor with Bacterial Meningitis Caused by *Streptococcus Pneumoniae*

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Abstract

Kidney transplantation is considered the best treatment for patients with end-stage renal disease because it provides longer life expectancy and better quality of life when compared to dialysis. A shortage of organs for transplantation has led to the increase of waiting lists and, consequently, to the expansion of criteria for suitable organ donors. Therefore, bacterial meningitis in a potential donor is not considered an absolute contraindication for kidney transplantation. We present the patient who received the kidney from a deceased donor who died of bacterial meningitis caused by *Streptococcus pneumoniae*.

Key words: kidney transplantation, donor, meningitis, Streptococcus pneumoniae

Introduction

Kidney transplantation is the best treatment for patients with end-stage renal disease because it provides longer life expectancy and better quality of life when compared to dialysis. A limited number of organs for transplantation has led to the increase of waiting lists and, consequently, to the expansion of criteria for suitable organ donors. Nowadays, deceased donors with proven active infections may be considered for organ donation [1]. We present the patient who received the kidney from a deceased donor who died of bacterial meningitis caused by *Streptococcus pneumoniae*.

Case report

A 42-year-old male developed an end-stage renal disease caused by Alport syndrome. At the age of 2 years, he had microscopic hematuria, but no further diagnostic examination has been done during the next 19 years. In 1999, erythrocyturia with 80% dysmorphic erythrocytes was found, without proteinuria. Biopsy revealed Alport syndrome. He has undergone haemodialysis since June 2019.

On 25th January 2020, our centre received an offer from the Eurotransplant. The brain-dead donor was 35-year-old, male, who died of bacterial meningitis caused by *Streptococcus pneumoniae.* Cardiopulmonary reanimation was performed at emergency department due to respiratory arrest. His medical history was uneventful. Allergy to penicillin demanded use of vancomycin 1x1g with meropenem 3x2g for 10 days. Laboratory parameters of kidney function were within the normal range, with CRP 81.9 mg/L. Abdominal ultrasound showed normal size and shape of both kidneys. He spent 11 days in the Intensive care unit and had a hypotension period of 30 minutes. Heart, liver and kidneys were offered for transplantation.

The recipient was informed that transplantation of a kidney from the infected donor increases the risk for the infection during the post-transplantation period because of the immunosuppressive therapy. Additionally, he was warned that more prolonged antibiotic prophylaxis would be needed. As the patient accepted the risk, the informed consent was obtained. He was admitted in hospital as a potential recipient of a cadaveric kidney. Miss match was 2, 0, 1. The crossmatch testing was negative.

As there were no contraindications from the recipient, kidney transplantation was done with the double-J (JJ) stenting of the ureter. The patient received antibiotic prophylaxis for 14 days, including amoxicillin/clavulanic acid 1 g twice daily starting before transplantation and continuing until the 10th post-transplant day, followed by cefuroxime 250 mg twice daily until the 14th post-transplant day. Immunosuppressive treatment included the induction with basiliximab, tacrolimus, mycophenolate mofetil and prednisone. An adequate graft function has been shown early post-transplant, with satisfactory diuresis on the 3rd post-transplant day (2000 ml/day) and serum creatinine of 200 μmol/L on the day of dismission at the 9th post-transplant day. Two months after transplantation serum creatinine decreased

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to 99 μmol/L. There were no signs of infection during the post-transplant period.

Discussion

Kidney transplantation from infected donors carries the risk of the transmission of the infection to the recipient, mainly because of the immunosuppressive therapy. Deceased donors with meningitis and encephalitis have been considered with special attention, particularly since two renal transplant recipients who died of encephalitis of unknown cause transmitted from the same donor have been reported [2,3]. However, there are several reports of successful kidney transplantations with organs from donors who died of bacterial meningitis caused by *Streptococcus pneumoniae*, *Klebsiella pneumoniae*, *Neisseria meningitidis* and *Escherichia coli* [4-9]. In these cases, donors have been treated with antibiotics directed to the cultured bacteria for 24-48 hours before transplantation, and the recipient has also received antibiotic prophylaxis according to antibiogram for 7-14 days post-transplant. Therefore, most guidelines stress the importance of appropriate prophylactic anti-microbial therapy and warn that the risk of infection transmission is higher when the causative agent of the donor's infection is not known [2].

Our case demonstrates that kidneys from a deceased donor who died of meningitis caused by *Streptococcus pneumoniae* may be suitable for transplantation if the donor has received antimicrobial therapy according to antibiogram and if the recipient follows adequate antibiotic prophylaxis for a sufficient period.

Conclusion

Bacterial meningitis in a potential donor is not considered an absolute contraindication for kidney transplantation. Adequate antimicrobial therapy administered to donor and adequate recipient prophylaxis minimizes the risk of infection transmission. Therefore, kidneys from donors with bacterial meningitis should be considered for transplantation and the clinician's decision is based on the evaluation of the ratio between potential benefit and the potential risk for each patient.

Conflict of interest statement: None declared

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