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ORIGINAL ARTICLE

Colonization of preservation solution in kidney transplantation: Clinical impact and risk of secondary acute graft pyelonephritis

Colonisation des solutions de conservation en transplantation rénale : influence sur les pyélonéphrites aiguës secondaires du greffon

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KEYWORDS
Preservative solution;
Renal transplantation;
Acute graft pyelonephritis

Summary
Introduction. — Bacterial colonization of preservative solutions (PS) remains poorly described in renal transplantation. We investigated the bacterial colonization of the PS and its influence on graft pyelonephritis within one year from the renal transplantation.
Patients and methods. — We cultured 2 samples of PS from 424 patients who underwent a renal transplantation. The follow-up period was one year. An acute graft pyelonephritis was defined as a positive bacteriological urine analysis, with temperature higher than 38.5 °C or graft pain.
Results. — In total, 424 samples of PS were tested and 195 were positive for colonization (46%). Forty-five patients developed an acute graft pyelonephritis during the follow-up period (10.6%), of which, 21 (46.7%) showed a colonization of their PS. Twenty-four had no colonization (53.3%). This difference was not significant ($P = 0.697$).

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Discussion. — Our data suggest that the bacterial colonization of PS samples does not seem to increase the risk of acute graft pyelonephritis in renal transplant recipients.
Level of evidence. — —3.

MOTS CLÉS
Liquide de conservation ;
Colonisation ;
Transplantation rénale ;
Pyélonéphrite ;
Infection transmise par le donneur

Résumé
Introduction. — La colonisation des liquides de conservation demeure peu étudiée en transplantation rénale. Nous avons analysé la colonisation bactérienne des liquides de conservation ainsi que son influence sur le développement d'une pyélonéphrite du greffon dans l'année suivant sa transplantation.
Matériels et méthodes. — Deux échantillons de liquide de conservation pour chacun des 424 patients transplantés rénaux participants ont été envoyés en bactériologie pour analyse. Pendant un an après l'intervention, nous avons repéré les pyélonéphrites développées chez ces patients. La pyélonéphrite du greffon était définie par une culture positive de l'examen cytobactériologique des urines dans un contexte de fièvre supérieure à 38,5 °C et une douleur du greffon.
Résultats. — Sur les 424 échantillons testés, 195 étaient colonises (46 %). Quarante-cinq patients ont développé une pyélonéphrite du greffon durant la période de suivi (10,6 %) ; parmi eux, 21 avaient un liquide de conservation initialement colonisé (46,7 %) alors que 24 présentaient des liquides de conservation de leur greffon stériles (53,3 %). Cette différence n'était pas significative ($p = 0,697$).
Conclusion. — Notre étude suggère que la colonisation bactérienne d'un liquide de conservation n'est pas pourvoyeuse de pyélonéphrites du greffon après une transplantation rénale.
Niveau de preuve.— 3.

Introduction

The prevalence of infection following transplantation may be explained by numerous risk factors, for example immunosuppressive therapies. During the last 30 years, hospitalization due to infection in the 2 years following transplantation, has exceeded that of hospitalization due to acute rejection [1]. This is exemplified in renal transplantation, in which nearly half of the number of hospitalizations are due to infections [2,3], the majority of which are urinary tract infections (UTI) [4].

Fungal colonization of the conservative liquid has been observed in solid organ transplantation. Furthermore, the frequency of donor-derived candidiasis is estimated to be 1/1000 in renal transplantation and may be caused by a colonized preservative solution (PS) [4]. Several cases have been described in mycology, but the issue of bacterial colonization in renal transplantation has poorly been discussed.

The present study aimed to determine the impact of the bacterial colonization of preservative solution (PS) samples on the development of a graft pyelonephritis in renal transplantation.

Material and methods

All patients who underwent renal transplantation in our center between January 2010 and December 2013 were eligible for inclusion in this study. All the grafts came from cadaveric donors. Exclusion criterion was a lack of information concerning the postoperative follow-up.

Before transplantation, two samples of 20 mL (milliliters) of PS were collected by an urologist and analyzed for bacterial or fungal contamination.

Specimens were examined microscopically for the presence of bacterial or fungal agents. Each sample was cultured in a thioglycolate broth and on 2 blood agar plates that were incubated aerobically and anaerobically, respectively, at 37.1 °C for 5 days. Cultures were examined daily for the presence of bacterial or fungal colonies until specimens were examined microscopically for the presence of bacterial or fungal agents.

In total, 0.1 mL of sample was cultured in a blood agar and chocolate agar that were incubated aerobically, and on blood agar plates that were incubated anaerobically at 37 °C for 5 days.

One mL of samples was cultured on two Sabouraud dextrose agar with chloramphenicol slants were incubated at 37 °C and 30 °C for 30 days.

Cultures were examined daily for the presence of bacterial or fungal colonies.

In parallel, 5 mL of samples was cultured on one aerobic and one anaerobic blood culture bottles were seeded with 5 mL of samples each and incubated for 5 days in the BacTec FX System.

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