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Factors responsible for delayed graft function and the impact of HLA-DR incompatibilities on rejection episodes in the early posttransplant period of renal allografts

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Abstract The analyses in this study demonstrated a significant effect of HLA-DR matching on the number of rejection treatments in the first 3 months after renal transplantation.

Key words HLA-DR matching
ATN · Rejection
Renal transplantation

Introduction

The donor recipient selection is primarily based on HLA-DR matching. Although in general, the best graft survival is obtained in the HLA-DR identical group, it is a well-established fact that the majority of the HLA-DR mismatched grafts also survive 1 year after transplantation. Consequently, the question arises whether DR matching, apart from graft survival, influences the clinical course. The possible negative influence of delayed graft function (DGF) on the posttransplant results remains controversial. However, most preservation studies dealing with DGF do not control for acute tubular necorosis (ATN) and the rejection episodes. To answer those questions, the clinical data of 1078 recipients of renal allografts. Those grafts were prospectively randomized in a multicenter study for Histidine-Tryptophane-Ketoglutarate (HTK), University of Wisconsin (UW) and Euro-Collins (EC) preservation solutions.

Materials and methods

Donors and recipients were typed with the Eurotransplant standard serumset for the HLA antigens. DGF was defined as the need for two or more dialysis treatments in the 1st postoperative week. Acute rejection was diagnosed in the transplantation centers according to standard clinical criteria. A biopsy was done to confirm the diagnosis of ATN or rejection. Severity of graft rejection episodes was estimated by the number of rejection treatments per patient.

Results

The incidence of DGF was 24% (132/544) in the HTK, 20% (79/266) in the UW and 32% (110/268) in the EC group ($P = 0.0001$). Technical complications were observed in 2% of all groups. Recipients were divided in 3 groups depending on the non-technical causes of DGF: ATN alone was observed in 12% (66/544) of the HTK, 15% (39/266) of the UW and 20% (53/268) of the EC group. REJ alone was observed in 6% (34/544) of the HTK, 10% (26/266) of the UW and 13% (34/268) of the EC group. ATN + REJ was observed in 4% (21/544) of the HTK, 5% (14/266) of the UW and 8% (21/268) of the EC group ($P = 0.02$). In the overall group with zero mismatches for the DR antigens 54% (348/633) did not need any rejection treatment compared to 52% (202/387) in the DR mismatched group, who required one or more rejection treatments ($P = 0.03$).

Conclusions

We concluded that DR Matching has a significant influence on the rejection episodes. The incidence of ATN as an indicator for perfusion damage was lower in the HTK- and UW-preserved kidney grafts than in the EC-preserved kidney grafts.