ADVANTAGES OF EPITOPE BASED SELECTION OF RENAL GRAFT RECIPIENT: A SINGLE CENTRE EXPERIENCE

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INTRODUCTION AND AIMS: Selection using epitope mismatches (EpMM) has good potential in recipients with pre-existing antibodies, and also in kidney allocation in network of transplant centres with a large common waiting list. In Russia, every transplant center has its own separate waiting list. Is the use of EpMM advantageous compared to the use of broad antigen mismatches (BA MM) in a single transplant centre?

METHODS: We perform the retrospective single-center study to research the link between the risk of graft loss and number of EpMM. We included 789 adult recipients of cadaveric kidney graft (AB0 compatible only). HLA-genotyping (A, B, DR loci) was performed in all cases. Median follow-up was 8.1 (IQR 4.8; 10.4) years. We used a Poisson regression to estimate the risk of graft loss.

RESULTS: In most cases (54%) the transplantation was performed with 3-4 BA MM. Survival analysis showed a higher number of BA MM to be associated with an increased risk of graft loss (log rank p<0.001) (fig. 1). Each HLA molecule has a unique set of epitopes. The number of EpMM has wide range even in a fixed value of BA MM. This suggests that recipients with the same number of BA MM can differ significantly in their compatibility with the graft on epitope level (fig. 2). Even after the adjustment for number of BA MM and other factors, the increasing of number of EpMM was significantly associated with increase of graft loss incidence rate ratio, as well as de novo DSA cumulative incidence (fig. 3). So, for example, in a case of 4 BA MM (N=249, 31.6% of cases) the median number of EpMM was 24 (IQR 20–30, min-max 10–43). We noted significant difference in survival rate between patients with 10–24 and 25–43 EpMM (p=0.012) (fig. 4). EpMM allow for more accurate prediction of the risk of graft loss: the area under the ROC curve was 0.812 [0.766; 0.858] vs. 0.649 [0.59; 0.707] in BA MM. This approach allows to identify patients at high risk of graft loss (over 20 EpMM) amongst patients, who were previously considered to have low immunological risk (i.e. 1-2 BA MM). In our analysis we considered the transplantations, which was performed in 1994–2016. Immunosuppressive therapy during this period has changed significantly. Curiously, the five-year periods of transplantation is a significant predictor of long-term graft survival in multivariate models with BA MM (the significance of the immune factor gradually decreases with time), but is insignificant in the model with EpMM.

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CONCLUSIONS: Even in routine practice of a single transplant centre with a small waiting list the use of EpMM may be beneficial. It will allow to choose the optimal option - the minimal number of EpMM amongst a few potential recipients with the equal numbers of BA MM. Thus, allowing to increase the graft survival rate and reduce the risk of its loss.