Mortality prediction after the first year of kidney transplantation: a perspective for improving the efficiency of recipient follow-up

Background. After the first year post transplantation, prognostic mortality scores in kidney transplant recipients (KTR) would be useful for personalizing medical management.

Methods. We studied two scoring systems, one from Spain (Hernandez et al.) and one from the United States (the Recipient Risk Score, RRS, Baskin-Bey et al.), by using two cohorts: the French DIVAT cohort (n=3439) and the Swiss STCS cohort (n=800). We also performed a parametric survival proportional hazard model in order to study the possibility of an alternative scoring system computable at 1-year post transplantation.

Results. From the French cohort, for a prognostic time at 10 years since the first anniversary of the transplantation, the scoring system proposed by Hernandez et al. did not seem to present significantly higher prognostic capacities than recipient age as single predictor (AUC=0.70 versus 0.70, p=0.467), in contrast to RRS (AUC=0.74 versus 0.70, p=0.036). The 1-year updated RRS we proposed from the DIVAT cohort included five variables with prognostic capacities (AUC=0.78, 95%CI=[0.69, 0.85]) and tended to perform better than the initial RRS (p=0.102). Nevertheless, by using the Swiss STCS cohort, their prognostic capacities at 4 years since the first anniversary of the transplantation were comparable (AUC=0.77 and 0.76 respectively, p=0.313).

Conclusions. The initial RRS was externally validated on two independent cohorts. An updated version at 1-year was also proposed and both internal and external validations have been performed. In addition to the current available scores related to the risk to return in dialysis, we therefore recommend the use of the RRS to achieve a more efficient personalized follow-up of KTR.