DIALYSIS. EXTRACORPOREAL DIALYSIS: TECHNIQUES AND ADEQUACY

THE USE OF HIGH-FLUX MEMBRANES IS NOT ASSOCIATED WITH IMPROVED SURVIVAL OF PATIENTS ON HEMODIALYSIS

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Introduction and Aims: Besides advances in haemodialysis technique, mortality rates are still high in chronic kidney disease patients on dialysis (CKD5D). In this regard, the effect of the different haemodialysis membranes on survival is currently a subject of discussion. The aim of this study was to assess in COSMOS (Current management Of Secondary hyperparathyroidism: a Multicentre Observational Study) the relationship between the use of conventional low-flux or high-flux membranes and all-cause and cardiovascular mortality.

Methods: COSMOS is a 3-year, open-cohort, observational, prospective, multicenter study carried out in 227 dialysis centers in 20 European countries including 6797 patients. After exclusion of patients with missing data and those using other dialysis techniques, the present study included 5141 haemodialysis patients (3584 randomly selected at baseline) plus 1637 new patients less than 1 year on HD (31.8%) recruited to replace patients who died, were transplanted, switched to peritoneal dialysis or lost to follow-up. Patient and facility-level analyses were carried out by using Cox-regression analysis with time-dependent variables. Patient-level analysis included multivariate analysis and propensity score matching. The facility-level analysis used the case-mix-adjusted facility percentage of patients treated with high-flux membranes as an instrumental variable. The outcomes were all-cause and cardiovascular mortality and the exposure (time-dependent variable) the type of dialysis membrane (high-flux or low-flux) used in conventional haemodialysis. Three multivariate models that included up to 24 different variables to make the necessary adjustments were used.

Results: Patient-level analysis showed that in the univariate analysis, the use of high-flux dialyzers was associated with a decrease of the relative risk of all-cause and cardiovascular mortality of 20% (95% confidence interval (CI): 11-28%) and 18% (95% CI: 4-30%) respectively. After full adjustment, patients treated with high-flux membranes still showed a significant lower relative risk of all-cause and cardiovascular mortality, 0.72 [95%CI:0.57-0.91] and HR:0.54 [95%CI:0.37-0.77] respectively that remained significant after matching by propensity score (HR:0.60 [CI:0.46-0.77] and 0.57 [CI:0.38-0.85] respectively). However, the use of an instrumental variable (facility-level analysis) showed the increase in the use of conventional high-flux dialysis was not associated with improved survival neither in the univariate nor in the adjusted models (1.01 [95%CI:0.99-1.02] and 1.01[95%CI:0.98-1.03] for all-cause and cardiovascular mortality respectively).

Conclusions: The univariate, the different multivariate adjustment and the propensity-score matching analysis showed the use of high-flux membranes was associated with improved survival. However, the facility-level analysis, which reduces the effect of unknown or unmeasured confounders, showed no benefit of high-flux membranes. Study supported by Amgen and Fundación Renal Íñigo Álvarez de Toledo.