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EXPLORING THE DIFFERENTIAL MORTALITY RISK IN EUROPEAN CHILDREN WITH END-STAGE RENAL DISEASE - RESULTS FROM THE ESPN/ERA-EDTA REGISTRY

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Introduction and Aims: We aimed to describe medium-term survival in European paediatric renal replacement therapy (RRT) patients, and explore the differential mortality risk in this population, focussing on interactions between different subgroups.
Methods: Data for 7139 patients under 18 years of age were extracted from the ESPN/ERA-EDTA registry for 37 European countries for the period 1.1.2000 - 31.12.2012. All-cause mortality on RRT was studied using multivariate Cox regression.
Results: Overall survival in European children with ESRD at 1, 2, and 5 years was 97.2% (96.8%-97.6%), 96.2% (95.7%-96.6%), and 94.6% (93.9%-95.1%), respectively. Crude mortality was highest in patients starting RRT between the ages of 0-1 (41.3 deaths/1000 years, 39.8% of all deaths), and declined progressively with increasing RRT starting age. A total of 353 children died of infection (59, 16.7%), cardiovascular mortality (56, 15.9%), cerebrovascular events (19, 5.4%), and malignancies (16, 4.5%).
Girls with renal dysplasia were at increased risk of death compared to boys after adjustment for age (HR 2.56 95%CI 1.55-4.21). After adjustment for the presence of comorbidities at start RRT in renal dysplasia patients where this information was available, the HR was reduced from 2.47 (95%CI 1.14-5.35) to 2.27 (95%CI 1.11-4.64). Among those with hereditary nephropathies, boys had an increased mortality risk compared to girls (HR 3.32 95%CI 1.18-9.37), and adjustment for comorbidities resulted in a reduction of the HR from 1.31 (95% CI 0.49-3.51) to 1.24 (95% CI 0.45-3.42). Patients starting RRT with a pre-emptive transplant had a 3-fold lower crude all-cause mortality rate compared to patients starting on dialysis (6.2 deaths/1000 years for Tx). After adjustment for age, gender, and cause of renal failure, mortality risk was increased for starting RRT on HD vs. PD (HR 1.39 95%CI 0.96-2.02), and was more pronounced during the first year of dialysis treatment (HR 1.63 95%CI 1.21-2.19), and in patients starting RRT above 1 year of age (HR 1.64 95%CI 1.05-2.56). The increased mortality risk for HD vs. PD was absent in patients under care of a nephrologist for longer than 0.7 years prior to start of RRT (HR 0.99 95%CI 0.58-1.72). Cause of death varied by current treatment modality, with cardiovascular mortality (16.2%) as the predominant cause of death in HD patients and infection in Tx (22.8%) patients. In PD patients cardiovascular and infection-related causes of death were equally common (each 16.3%).
Conclusions: Although medium-term survival in these children is remarkably good, mortality risk varies depending on interactions between gender, treatment modality, age at RRT, time on RRT, and cause of renal failure, and suggests scope for further improvement through targeted preventive approaches.