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PAEDIATRIC NEPHROLOGY - A

SO041 FREQUENCY, RISK FACTORS, CLINICAL COURSE AND EFFECT ON MORTALITY OF ACUTE KIDNEY INJURY IN NEWBORNS IN A THIRD LEVEL NEONATAL INTENSIVE CARE UNIT

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Introduction and Aims: Improved perinatal care increased not only the survival rate but also the frequency of acute kidney injury (AKI) in newborns. We aimed to determine the frequency, etiology, clinical course and mortality of AKI in a third level neonatal intensive care unit (NICU).
Methods: Medical records of all patients admitted to a NICU in western Turkey during 2007-2011 were evaluated and those having AKI within 0-30 days of life were determined. Birth weight, gestational age, mode of delivery, gender, maternal morbidity, hospitalization period, accompanying morbidities and mortality of all patients; and primary disease causing AKI, highest serum creatinine and prognosis of patients with AKI were recorded.
Results: There were 677 patients (M/F:392/285) and 94 (13,9%) had AKI of which 80% developed during 0-7 days of life mostly due to birth asphyxia, hypovolemia, cardiac disease, sepsis and urinary system anomalies. AKI incidence and total mortality rate were higher in patients with birth weight ≤1000 g and with gestational age <28 week. However, mortality in patients with AKI was increased independent on birth weight (42,1% in ≤1000 g vs 32,1% in >1000 g; p=0,324) and gestational age (44,1% in <28 week vs 31,7% in ≥28 week; p=0,227). Mortality tended to increase in the presence of AKI independent on the underlying cause, but this was significant only for sepsis (33,3% vs 5,9%, p<0,001; OR 7,9) and cardiac diseases (50,0 %vs 15,0%, p=0,001; OR 5,6). Hospitalization period was increased if AKI was present (39,1 vs 20,5 days, p<0,001). Serum creatinine in deceased patients with AKI was higher than those who survived (2,0 vs 1,6 mg/dL, p<0,05). Chronic kidney disease was developed in 6 (10%) patients of whom 3 had urinary tract anomalies and 3 had birth asphyxia.
Conclusions: AKI incidence in NICU was 14%, and 80% of AKI developed during the first week of life. AKI is associated with low birth weight, prematurity, birth asphyxia, sepsis, hypovolemia, cardiac diseases and urinary tract anomalies. Mortality in patients with AKI is increased independent on the birth weight, gestational age and underlying etiology.

SO042 IDENTIFICATION OF SUBGROUPS AT HIGH RISK OF GRAFT FAILURE AFTER PAEDIATRIC RENAL TRANSPLANTATION

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Introduction and Aims: Kidney transplantation (TX) is the treatment of choice for children on RRT. However, graft loss remains an important problem and therefore, the aim of this study is to identify subgroups of patients with markedly favourable or unfavourable prognosis regarding graft survival, and assess whether these subgroups are of added value to improve the prognostic power of conventional statistical analyses.
Methods: 5275 paediatric renal TX recorded in the ESPN/ERA-EDTA Registry were analyzed. 2 analyses were performed, the 1st on parameters known before TX including gender, age at TX, time on dialysis, pre-emptive TX, type of donor, and cause of renal failure. The 2nd considered also clinical measurements within 1 year after TX including eGFR, hb, blood pressure (BP) SDS and height. To evaluate 5-year graft survival, we used binary survival tree models to identify subgroups similar in graft survival and Cox regression to evaluate the prediction power of these models.
Results: 8 subgroups were identified in 1st analysis. The best survival was among patients on dialysis for less than 1.5 months (90.4%) while the poorest was among those adolescents at TX, on dialysis for a long time (51.7%). There were also differences among patients with age at TX between 4 and 13.5 yrs and low (86.9%) compared to high risk of recurrent diseases (79.3, p<0.001) as well as in those older than 13, with short-term dialysis (0.1-2.2 yrs) and receiving a deceased donation, between males (82.7%) and females (68.6%, p=0.006). For the analysis including post-TX data, time on dialysis, recipient age, eGFR and diastolic BP identified 10 subgroups. The best graft survival (97.3%) was found among those on dialysis for less than 1.6 yrs before TX, eGFR ≥ 30 and younger than 8 yrs. Among older patients, the tree found a significant (p < 0.001) difference by diastolic BP: between -0.3 and 1.2 (95.6%), lower than -0.3 (85.9%) and higher than 1.2 SDS (85.3%). The subgroups with the worst 5-yr graft survival consisted of patients with long-term dialysis, eGFR < 64 and, respectively, aged between 11 and 14 at TX (46.5%) or older than 14 (34.7%, p<0.001). In Cox analyses inclusion of the subgroups as identified by the trees significantly (p<0.001) increased the predictive power of the model as compared to multivariate analyses containing the only the single parameters.
Conclusions: Long-term dialysis in combination with adolescent age as well as long term dialysis with impairment in graft function shortly after TX were independently associated with a worse renal graft outcome. The identification of these subgroups reveals interactions between factors and carries added value for early prediction of renal graft prognosis.

SO043 FIBROBLAST GROWTH FACTOR 23 (FGF23) AND SOLUBLE KLOTHO (sKlotho) AFTER PEDIATRIC KIDNEY TRANSPLANTATION (pKTx)

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Introduction and Aims: The phosphatonin FGF23 suppresses tubular phosphate reabsorption (TPR) and the production of calcitriol. In addition to regulation of phosphate homeostasis in CKD it is biologically active and influences morbidity, progression of CKD and mortality. FGF23 effect is mediated by the co-receptor Klotho which was characterized as an anti-agent protein. Klotho can be measured as circulating sKlotho. CKD is characterized by suppression of Klotho which is thought to be an early biomarker of renal dysfunction. Data of FGF23 and Klotho after Ktx and its correlation to phosphate homeostasis are scarce, especially in children.
Methods: Intact FGF23 and sKlotho were measured longitudinally over 1 year in serum of 33 children before and after Ktx (age 9.7±4.5 years). In addition parameter of phosphate homeostasis were determined.
Results: In comparison to pre Ktx FGF23 fell from 715±438 ng/l significantly to 158±224 ng/l after 1 year post KTx (p<0.0001). sKlotho decreased initially from 1413±1263 ng/l pre KTx to 584±159 ng/l on day 3 post KTx (p<0.0001). From day 14 to 1 year post KTx a significant increase of sKlotho into the pediatric norm range (median 2406 (inter-quartil range 1710–3352) was noticed (pre KTx 1413±1263ng/l vs. 1 year post KTx 2379±1266ng/l; p<0.006).). In a mixed modell there was a significant association of serum-phosphate with sKlotho (p=0,026), creatinine and age (p<0.0001, respectively), but not with FGF23. Only renal function correlated to TPR (p=0.014).
Conclusions: These are the first data on the dynamics of FGF23 and sKlotho in pKTx indicating a normalization of sKlotho and decrease of FGF23. Further studies are needed to elucidate the multiple interactions of these parameter on phosphate homestasis and other biological actions, e.g. graft dysfunction.

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