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Chronic Kidney Disease - MBD and Hypertension
E-Poster Submissions

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info@acpn2023.org

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CD4+CD25+Foxp3+ Tregs were analyzed by flow cytometry. The plasma concentrations of TNF-α, IL-1β, and IL-2 were measured using a cytometric bead array. Real-time polymerase chain reaction (PCR) was used to detect the levels of Treg-associated factors, TNF-α, IL-1β, and IL-2-related signaling molecules in CD4+CD25+T cells.

Results:
Before treatment, INS patients had a lower proportion of Tregs; lower levels of FOXP3, GITR, and CTLA-4; and elevated levels of TNF-α, IL-1β, and IL-2 (all $P < 0.05$). The expression of a TNF-α-associated signaling molecule (TNFII), an IL-1β-related signaling molecule (HIF1-α), and IL-2-associated signaling molecules (PI3K, AKT, mTOR) were up-regulated in INS patients before treatment. Glucocorticoid treatment led to remission, but most patients still had altered levels of these markers.

Conclusion:
Patients with active INS have an increased level of TNF-α, which upregulated FOXP3, and led to overexpression of TNFRII. Aberrant signaling of the mTORC1/HIFα pathway in these patients may be mediated by an increased level of IL-1β. Aberrant signaling of the IL-2/PI3K pathway may be mediated by an increased level of IL-2, and this may contribute to downregulation of Foxp3+ Tregs.

Fibroblast growth factor 23 as a marker of cardiovascular complications in children with chronic kidney disease

Altynay Balmukhanova, Al-Farabi Kazakh National University, Kazakhstan

Introduction. Chronic kidney disease (CKD) is a complex medical and social problem worldwide due to high prevalence and mortality rates. According to the ESPN/ERA-EDTA, the prevalence of CKD stages 3-5 in children is about 55-60 pmarp. Moreover, CKD usually causes different severe complications, which significantly affect long-term survival. Unlike many complications of CKD, hypertension can be present in the earliest stages of the disease. Some pediatric studies show that the development of left ventricular hypertrophy (LVH) in children starts early and progresses as renal function declines. Nowadays, there has been a scientific and practical interest in Fibroblast growth factor 23 (FGF-23) which is mostly considered a mineral-bone biomarker. Therefore, our study aimed to investigate the association of FGF-23 with blood pressure and LVH in children with CKD.

Methods. There were 73 children with CKD stages 1-5, the average age was 9,79±0,58 years. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were determined by 3 times measurement and calculating the mean value. FGF-23 was determined in serum by a multimatrix ELISA kit (Biomedica Medizinprodukte GmbH, Austria). Statistical analysis was performed using SPSS version 26 (IBM, USA).

Results. Significant positive correlations were found between the FGF-23 level and the registered SBP and DBP ($r=0.414$, $p<0.001$, $r=0.337$, $p=0.004$). These results may serve as confirmation that FGF-23 directly affects sodium reabsorption and the renin-angiotensin-aldosterone system by decreasing calcitriol. LVH was revealed in 38.4% of study participants. The median value of FGF-23 in the group of children with LVH was 7.75 [3.18-18.38] pmol/l whereas in the group without LVH was 1.4 [0.6-2.4] pmol/l, $p<0.001$. There was also a strong relationship of an increase in FGF-23 depending on the presence of LVH (coefficient 0.552, $p<0.001$). The results indicate that FGF-23 is capable of causing disturbances in the structure of the myocardium, and subsequently in function, which is reflected in studies with the participation of adult patients.

Conclusion. Our findings confirm that FGF-23 level should be considered as a predictor of hypertension and LVH development. More careful attention to children with a high level of FGF-23 is needed regarding cardiovascular disorders.

Analysis of risk factors of protein energy wasting in children with chronic kidney disease

Liang Ying, Beijing children ‘s hospital, China

Objective: To retrospectively analyze the clinical characteristics of protein and energy wasting PEW in children with chronic kidney disease in a single center and explore the risk factors of protein energy wasting in children with chronic kidney disease.

Methods: The clinical data of children with chronic kidney disease hospitalized in our center from January 2018 to January 2023 were retrospectively analyzed to explore the incidence of PEW in children with chronic kidney disease and analyze the risk factors.

Results:
(1) A total of 231 children with chronic kidney disease were included, including 138 boys and 93 girls, with a median age of 9.9 years (1m20d to 17y6m), 6 cases of CKD stage1 (2.60%), 14 cases of CKD stage 2 (6.06%), 51 cases of CKD stage 3 (22.08%), 36 cases of CKD stage 4(15.58%), and 124 cases of CKD stage 5 (53.68%).

(2) A total of 30 children were diagnosed with protein energy wasting (PEW). The overall incidence of CKD-