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Renal involvement in systemic diseases in children: Contribution of cardiovascular comorbidity

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Introduction: Despite the significant progress achieved in the treatment and outcome of children with renal involvement due to systemic diseases (lupus, vasculitis), many questions remain in the early detection of cardiovascular complications, the leading cause of death in these patients in adulthood.

Aim: This study is contributed to find out the risk of developing cardiovascular disease (CVD) in patients with lupus nephritis (LN), IgA Henoch-Schonlein purpura nephritis (HSPN) and ANCA-associated nephritis.

Materials: 49 children were enrolled in the study: 24 with lupus (2 boys, 7-17 years, median age 13.8), 21 with HSPN (10 boys, 3-17 yrs, median 10.5) and 4 with ANCA nephritis (2 boys, 7-17 yrs, median 11.8). All patients had morphological verification of the disease. As a control group 37 healthy children were examined. 24 hours monitoring of blood pressure (BP), ECHO-CG, carotid intima media thickness (cIMT), left ventricles mass index (LVMI), relative thickness of left ventricles wall (RTLW), body mass index (BMI), serum lipids levels, serum glucose, serum uric acid, eGFR and markers of vascular endothelial dysfunction VEGF and TGF1 β were measured.

Results: Arterial hypertension was observed in 35/49 (72%) of children with glomerular diseases. In 21/24 of patients with LN (88%), in 100% of ANCA nephritis and 10/21 HSPN (48%), required of an average 3 hypotensive drugs. Dilatations of the LV in 24%, reduced ejection fraction in 2.1% of all patients were seen. LVMI, RTLW, BMI and cIMT were higher compared with healthy ($p < 0.05$). In patients with nephritis concentration of serum VEGF and TGF1 β correlated with AG. The mean serum cholesterol level was 5.8 mmol/l in LN, 6.94 in ANCA nephritis and 5.16 in patients with HSPN ($p < 0.05$), lipoproteins of low and very low density prevailed. The mean serum glucose level was not significantly higher than in healthy, in contrast to the level of uric acid ($p < 0.05$), especially in patients with ANCA nephritis ($p < 0.01$).

Conclusions: In patients with LN, HSPN and ANCA-associated nephritis abnormalities in serum lipids level were correlated with disease activity and duration, younger age of diagnosis, mean cIMT, eGFR, increased systolic and diastolic BP, BMI, LVMI, RTLW, concentration of VEGF and TGF1 β . Such patients are at high risk of early development of cardiovascular complications requiring early correction.

Biography

Mohsen Hoshayarikhani is currently a 5th year Medical student (of 6-year education) at Belarusian State Medical University. He had 5 international publications in fields of Pediatrics Nephrology and Cardiology, Neurology and Dermatology. He has interests in different fields like Medicine, Pediatrics Nephrology and Cardiology. He is also interested in Pediatrics Neurosurgery, Radiology, Research and Laboratory Studies.

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