УДК 61:615.1(062)(476-25)
ББК 52я73
А 43
ISBN 978-985-21-1258-1

Murauyova H.A.

CLINICAL AND MORPHOLOGICAL CHARACTERISTICS OF RENAL BIOPSIES IN CHILDREN WITH EARLY ONSET OF NEPHROTIC SYNDROME

Scientific supervisors: MD, PhD Letkovskaya T.A., MD, PhD Savosh V.V.
Department of Pathological Anatomy
Belarusian State Medical University, Minsk

Relevance. Nephrotic syndrome (NS) is a clinical syndrome, characterized by massive proteinuria, low serum albumin levels, hyperlipidemia, edema. NS develops in patients with diverse kidney pathology. The early onset of NS is a possible marker of genetically determined FSGS. Variable gene mutations are identified in more than 60% of the cases in newborns, and in 10-40% cases in older children. Discovering the most common manifestations of morphological and immunohistochemical (IHC) changes and their correlations between the morphological diagnoses associated with an early NS in children, can help to aim genetic testing more directly to those with a high probability of genetic forms of FSGS.

Aim: the purpose of the research is to compare morphological and IHC changes in NS with each other, and to identify their relationship with associated morphological diagnoses and the frequency of their occurrence in pediatric patients with NS.

Materials and methods. 55 results of pediatric renal biopsies of the patients with clinically diagnosed NS were analyzed. Histological slides were stained with hematoxylin and eosin, Schiff's reagent, Masson and MSB reagents, an IHC study was performed with antibodies to immunoglobulins (Ig) of classes A, M, G, and C3, C1q complement fractions. Statistical analysis was performed using Microsoft Excel and Statistic 10.00.

Results and discussion. The first symptoms of NS occurred between the ages of 1 and 3 years (y.o.) in 30 children. Thirteen of the children examined had their debut between 4 and 10 y.o. One child became ill at 12 y.o. Mean age of the disease onset is 2,1 y.o. (Me 2). The early onset is more typical for patients with FSGS (2,0 y.o.; Me 2). NS debuted acutely in 46/55 children. In 9 of 55 cases, the first signs of the disease included changes in the urinalysis in the form of proteinuria, or proteinuria combined with haematuria, and were detected during a routine check-up.

Morphological variants of renal lesions were represented by FSGS (47,3%, 26 children), minimal change disease (MCD) (21,8%, 12 patients), IgM-nephropathy (5,5%, 3 children) and mesangial proliferation without specific morphology (21,8%, 12 patients).

The hormone-resistant NS occurred in the majority of patients (47,3%, 26 children), it’s characteristic of hereditary NS. The mean age of the patients with corticosteroid resistance is 5.1 y.o. (Me 3), the early onset of the disease was identified (mean age is 2,0 y.o.; Me 1). There is a correlation between MCD and an unlikely presence of the corticosteroid resistance (p=0,024). In other cases, no correlation between morphological diagnosis and the presence of steroid resistance has been established.

According to the IHC data analysis of the sample data, there is a strong correlation between the global glomerular sclerosis and the glomerular deposition of IgM (p=0,04) and C3 (p=0,028) in the glomeruli, as well as a presence of the segmental glomerular sclerosis and the C3 (p=0,048) expression in the glomeruli. The strong correlation is present between tubular sclerosis and the stromal depositions of IgA (p=0,025), IgG (p=0,001), IgM (p=0,048), as well as tubular deposition of C3(p=0,048) and C1q (p=0,007) deposition in the glomeruli. There is also a strong correlation between renal stromal sclerosis and the depositions of IgA (p=0,0001), IgG (p=0,004), IgM (p=0,004) in renal stroma.

Conclusions: in most cases early onset NS was accompanied by the development of FSGS with the steroid resistance. More severe glomerulosclerosis is correlated with strong IgM and C3 expression in the glomeruli, whereas tubulointerstitial changes were more associated with IgM and IgA expression in the stroma and tubular expression of C3.