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KIDNEY INJURY IN JUVENILE RHEUMATOID ARTHRITIS IN CHILDREN

Borysova T.P.
d.m.s., prof.
ORCID: 0000-0001-8347-4348
Samsonenko S.V.
as. prof
ORCID: 0000-0001-6812-0939
Badogina L.P.
c.m.s., as. prof
ORCID: 0000-0002-2971-9815
State Institution "DNIPROPETROVSK MEDICAL ACADEMY of the Ministry of Health of Ukraine", Dnipro, Vernadskogo 9, 49044

Abstract. *The literature review provides up-to-date data on the frequency, developmental mechanisms, clinical manifestations, diagnosis and treatment of renal secondary (AA) amyloidosis and glomerulonephritis in children with juvenile rheumatoid arthritis (JRA).*

In the literature, there are descriptions of isolated clinical cases of kidney damage in children with JRA, which may be present both at the onset of the disease and during the disease, or occur against the background of basic treatment. Renal complications are rare, but they are an important form of extra-articular involvement that exacerbates the course and prognosis of the underlying disease.

Key words: *Juvenile rheumatoid arthritis, children, secondary amyloidosis, glomerulonephritis.*

Introduction.

The urgency of the problem of juvenile rheumatoid arthritis (JRA) in childhood is determined by the high frequency of its prevalence [1-3]. The progressive course of the disease in children and decreased performance in adulthood are an important adverse socioeconomic outcome of the disease [4]. Juvenile rheumatoid arthritis is characterized by the development of erosive-destructive arthritis in children under the age of 16, manifested by deformation and contractures of the joints, muscle atrophy, and in some patients with various extra-articular lesions [5]. In the literature, the most frequently described lesions of the cardiovascular system, eyes, lungs [6-8]. At the same time, kidney damage in children with JRA is a poorly understood problem. It should be noted that, according to the literature, renal changes can develop regardless of the duration of JRA and determine the prognosis for these patients [9].

The incidence of AA amyloidosis in children with JRA is from 0.8% to 2%, in adults with a JRA is 8.9% (duration JRA - 28.3 years). In recent years, with the help of immunobiological therapy, the frequency of renal AA amyloidosis in adults has decreased to 2%.

In children with JRA, various variants of glomerulonephritis have been described, such as: membranous nephropathy, mesangioproliferative glomerulonephritis (GN), focal segmental glomerulosclerosis, extracapillary glomerulonephritis, minimal change disease, ANCA-associated glomerulonephritis, IgA [10].

Main text.

To date, the main mechanism for the development of AA amyloidosis has been established, which consists in a constant or periodic increase in the concentration of serum amyloid A (SAA) [11]. It has been established that the synthesis of SAA is influenced by proinflammatory cytokines: interleukin-1 (IL-1), IL-6, tumor necrosis factor-alpha (TNF-α), IL-2, IL-11 and others. To realize the amyloidogenic potential of SAA, it is necessary to influence not only the inflammatory process in the body, but also its duration. The role of genetic factors in the development of renal AA amyloidosis in patients with JRA is discussed [12].

Renal AA amyloidosis most often develops in children with a systemic form, in adults - with a systemic and polyarticular form of JRA. The first symptom of renal AA amyloidosis is isolated proteinuria, which transforms into nephrotic syndrome. The peculiarity of the nephrotic syndrome is the absence of hypercholesterolemia in most cases, and combination in some patients with arterial hypertension, hematuria, and impaired renal function.

The main method confirming the diagnosis of renal AA amyloidosis is an morphological study of the kidneys biopsy specimens with Congo Red. An increase in blood SAA in children with JRA reflects the degree of the inflammatory process and is considered as a risk factor for the development of renal AA amyloidosis.

The use of immunobiological preparations (tocilizumab, anakinra) in children with JRA and renal AA amyloidosis has therapeutic efficacy [13].

The etiopathogenesis of the relationship between JRA and glomerular diseases is not fully understood. The main mechanisms can be divided into the effect of the underlying disease, complications from the use of basic antirheumatic drugs. One of the options that explains the occurrence of glomerulonephritis in JRA is the similarity of their immunopathogenetic mechanisms [10].

The clinical picture of the onset of GN in children with JRA in the described patients is different, some researchers, before carrying out an intravital morphological study of the kidneys, suggested the presence of AA amyloidosis in these patients [14,15], since nephrotic syndrome was more common [16].

Summary and conclusions.

1. The incidence of AA-amyloidosis of the kidneys in JRA in children is from 0.8% to 2%, in adults with a duration of JRA 28.3 years - 8.9%.

2. AA-amyloidosis of the kidneys most often develops in children with systemic form, in adults - with systemic and polyarticular forms of JRA. Glomerulonephritis develops in children with polyarticular forms of JRA.

3. The first symptom of AA-kidney amyloidosis and glomerulonephritis in children with JRA is isolated proteinuria, which transforms into nephrotic syndrome. A feature of nephrotic syndrome is the absence in most cases of hypercholesterolemia, a combination in some patients with arterial hypertension, hematuria, and impaired renal function.

4. Increased SAA level in the blood of children with JRA reflects the degree of the inflammatory process and is a risk factor for the development of AA-renal amyloidosis.

5. Histologically, the most common variant is extracapillary GN associated with

ANCA.

6. The use of immunobiological drugs for AA-amyloidosis of the kidneys in children with JRA has therapeutic efficacy.

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Scientific adviser: Doctor of Medcine Sciences, prof. Borysova T.P.

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