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**ANCA-ASSOCIATED GLOMERULONEPHRITIS IN CHILDREN WITH JUVENILE RHEUMATOID ARTHRITIS****Borysova T.P.***d.m.s., prof.*

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**Abstract.** *The literature review presents data on the mechanisms of development, clinical manifestations, diagnosis, treatment and outcomes of ANCA-associated glomerulonephritis in children with juvenile rheumatoid arthritis (JRA).*

*ANCA-associated glomerulonephritis is most often described in the literature. The main methods of treatment are the use of glucocorticoids in combination with cytostatics. A positive effect from the use of an immunobiological preparation (anakinra) was noted. It should be noted that there are different outcomes from the treatment of ANCA-associated glomerulonephritis: recovery renal replacement therapy (hemodialysis, kidney transplant), lethal.*

**Key words:** *Juvenile rheumatoid arthritis, children, ANCA-associated glomerulonephritis.*

**Introduction.**

Juvenile rheumatoid arthritis (JRA) is a chronic disease of children under 16 years of age with a leading articular syndrome and possible involvement of other organs in the process [1]. With JRA in children, renal lesions are described, which aggravate the course and prognosis of the underlying disease [2]. The structure of renal pathology in children with JRA is represented by secondary amyloidosis, glomerulonephritis, tubulo-interstitial nephritis [3]. The available literature describes 20 clinical cases of various variants of glomerulonephritis (GN): membranous nephropathy, mesangioproliferative glomerulonephritis, focal segmental glomerulosclerosis, extracapillary glomerulonephritis, minimal changes disease, ANCA-associated glomerulonephritis, IgA – nephropathy [4].

**Main text.**

Screening to study the presence of ANCA in children with JRA is reflected in three studies [5,6,7]. ANCA concentration was studied using enzyme immunoassay in all cases. The study included children with different forms of JRA (oligoarticular, polyarticular, systemic). The number of examined children was: Speckmaier M. et al (66), Mulder L. et al, (93), Bakkaloglu A. et al (31). Age range 1-16 years on average 7.6 years. It is noteworthy that antinuclear antibodies (ANA) were positive in 16%, and ANCA in 45% of patients [5,7]. Antineutrophilic cytoplasmic antibodies were detected according to Mulder L. et al in 35% of patients with JRA, ANCA was present in 44% of patients with oligoarticular, in 36% with polyarticular and 16% with systemic [6].



ANCA-associated glomerulonephritis is the most common in the literature. Analysis of clinical data of 7 patients suffering from JRA and developing ANCA-associated glomerulonephritis are presented in Table 1.

**Table 1**

**Clinical cases ANCA - GN in children with JRA according to the literature**

Author	Child's age (in years) / gender	Forms of JRA	Timing of GN (in years)	Clinical manifestations of GN					ANCA	Exodus
				edema	BP	↑ blood creatinine	proteinuria	hematuria		
Dhib M., et al, 1996 [8]	12/g	P	5	-	-	+	-	-	+	Terminal renal failure. Renal replacement therapy (hemodialysis).
	10/g	P	-	-	-	-	+	+	+	Recovery
Washizawa K., et al, 1998 [9]	12/g	S	3	-	-	-	+	+	+	No data
Hwang Y.S., et al, 2005 [10]	15/b	P	3	-	-	+	+	+	+	Recovery
Belot A. et al., 2012 [11]	0,9/g	S	1	-	-	+	+	-	+	Mortal
	4/g	S	6	-	-	+	+	-	+	Terminal renal failure. Renal replacement therapy (kidney transplant).
	1,5/b	S	4	-	-	+	+	+	+	Remission

Note: g - girl; b - boy; S - system form JRA; P - polyarticular form of JRA; "+" - the presence of a sign; "-" - no sign.

As can be seen from the table, more than half of the subjects were of school age, however, 2 patients were at an early age. Almost all of the patients were girls. The forms of JRA are equally often described - polyarticular and systemic, the duration of the process is from 5 months to 6 years. Clinical manifestations in 6 out of 7 patients with ANCA-associated HN were characterized by isolated urinary syndrome in the form of proteinuria. In four cases, the latter was combined with hematuria. A feature of ANCA GN in children with JRA is the absence of edema, hypertension and the presence of an increased level of blood creatinine. An isolated increase in blood creatinine levels in the absence of renal and emergency manifestations was described in one child. The above features of GN are the basis for examining patients for the titer of antibodies to the cytoplasm of neutrophils (ANCA). Confirmed diagnosis, patients underwent intensive therapy with prednisolone in the form of pulse therapy in combination with immunosuppressants (cyclophosphamide, azathioprine, methotrexate, mycophenolate mofetil). Clinical cases were described more than 15 years ago, and the therapy made it possible to achieve end-stage renal failure in two patients with a replacement transition to renal therapy - dialysis and kidney transplant. Belot et al, in 2012 presented three clinical cases of children with JRA, of which 2 were young children. ANCA GN remission was achieved in one child using



an interleukin-1 receptor antagonist (Anakinra).

The investigators noted that ANCA-associated glomerulonephritis was most likely caused by an uncontrolled baseline level of inflammation, indicating a common pathogenesis of glomerulonephritis and systemic JRA.

### **Summary and conclusions.**

In conclusion, for the timely diagnosis of ANCA-associated glomerulonephritis in children with JRA, it is necessary to monitor the urinalysis and the level of creatinine in the blood; if pathological changes are detected, the level of antineutrophilic cytoplasmic antibodies should be studied.

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**Аннотация.** В обзоре литературы представлены данные о механизмах развития, клинических проявлениях, диагностике, лечении и исходах ANCA-ассоциированного гломерулонефрита у детей с ювенильным ревматоидным артритом (ЮРА).

В литературе чаще всего описывается ANCA-ассоциированный гломерулонефрит. Основным методом лечения ANCA-ассоциированного гломерулонефрита является использование глюкокортикоидов в сочетании с цитостатиками. Отмечен положительный эффект от применения иммунобиологического препарата (анакинра). Следует отметить, что существуют разные исходы лечения ANCA-ассоциированного гломерулонефрита: выздоровление, заместительная почечная терапия (гемодиализ, трансплантация почки), летальные.

**Ключевые слова:** ювенильный ревматоидный артрит, дети, гломерулонефрит.

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