PROGNOSTIC ROLE OF C1q–CIC LEVELS IN URINE IN DEVELOPMENT OF LUPUS NEPHRITIS

K. Chyzh [1], T. Ryabtseva [1], N. Soroka [1]

[1]The 2-d department of Internal Medicine, BSMU, Minsk, Belarus

Background: The complement system is a major part of the innate immunity. The first component of the classical pathway of complement activation, C1q, plays a crucial role in the clearance of immune complexes and apoptotic bodies from the organism. Circulating immune complexes (C1q–CIC**)** have been found in a number of autoimmune and infectious diseases. They have been described well in patients with systemic lupus erythematosus (SLE), where they are thought to play a pathogenic role in lupus nephritis (LN). Several studies indicate that C1q–CIC could serve as a reliable serologic marker in the assessment of LN activity compared to other immunological tests [1, 2]. The role of C1q–CIC concentrations in urine in patients with LN remains uncertain [3].

Objectives: To investigate the relationship between levels of C1q–CIC in urine of patients with SLE and their pathogenic role in LN.

Methods: Concentration of C1q–CIC were estimated in serum and urine of 32 patients with SLE (17 patients with LN) using an ELISA.

Results: C1q–CIC were estimated in serum and urine of 32 patients with SLE. Results are performed in table 1.

Table 1. C1q–CIC levels in serum and urine of patients with SLE and healthy donors

Parameters	SLE		Control group (healthy donors)	
	Serum (N=32)	Urine (N=32)	Serum (N=8)	Urine (N=8)
C1q–CIC, μg·Eq/ml	4,54* (1,13; 8,46)	1,54* (0,80; 5,01)	0,84 (0,23; 1,29)	0,15 (0,11; 0,17)

*- differences are significant (p≤0,05), Mann-Whitney U-test

Concentrations of C1q–CIC both in serum and in urine of patients with SLE are significantly higher then in healthy donors.

The results of comparative analysis of C1q–CIC levels in serum and in urine of patients with or without LN are performed in table 2.

Table 2. Anti-C1q levels in serum and urine of patients with or without LN

Parameters	without LN (N=15)		with LN (N=17)	
	Serum	Urine	Serum	Urine
C1q–CIC, μg·Eq/ml	7,20 (2,50; 20,64)	0,97 (0,00; 1,34)	4,46 (1,13; 6,38)	2,50* (1,32; 6,96)

*- differences are significant (p≤0,05), Mann-Whitney U-test

In patients with LN were detected significantly higher concentrations of C1q–CIC in urine then in patients without renal pathology. It was found direct correlation between concentration of C1q–CIC in urine and risk of development of LN (R=0,32; p=0,08).

Using a method of logistical regression it was calculated model of interrelation of concentration C1q–CIC in urine with risk of development of LN in patients with SLE. Using the equation describing given model of interrelation it is possible to calculate risk of development LN in patients with SLE.

Conclusions: Detection of C1q–CIC in urine may be valuable noninvasive biological marker for evaluation of renal involvement and LN prognosis in patients with SLE.

References: 1. Meyer O, Nicaise-Roland P, Cadoudal N et al. Anti-C1q antibodies antedate patent active glomerulonephritis in patients with systemic lupus erythematosus. Arthritis Res Ther. 2009; 11(3): R87. 2. Flierman R, Daha MR. Pathogenic role of anti-C1q autoantibodies in the development of lupus nephritis – a hypothesis. Mol Immunol. 2007; 44: 133–138. 3. Takada Y, Shirahama S, Nagase M, Takada A. Enzyme immunoassay of C1q and its application to the detection of C1q antigens in urine. J Clin Lab Immunol. 1985 Mar; 16(3):169-72.