

## THE LEVEL OF BLOOD PLASMOCYTOID AND MYELOID DENDRITIC CELLS IN WOMEN WITH RECURRENT INFECTION OF THE LOWER URINARY TRACT

### Hypothesis / aims of study

Bacteria *E. coli* are the main causative agent of uncomplicated urinary tract infection (UTI). *E. coli* account more than 85% of cases of acute cystitis and pyelonephritis; more than 60% of recurrent cystitis and at least 35% of recurrent pyelonephritis. The immune response, associated with the activity of dendritic cells (DC) in women with cystitis remains poorly understood.

Objective: To study the effect of lysate of *E. coli* (Uro-Vaxom) on the level of blood DC in women with recurrent infection of the lower urinary tract (RILUT).

### Study design, materials and methods

The study included 40 women with RILUT in age from 18 to 68 years who received monotherapy with Uro-Vaxom (lyophilized bacterial lysate of 18 *E. coli* strains). We determined the level of plasmacytoid (pDC - CD14+CD16-/CD85k(ILT3)-PE/CD123-PC5) and myeloid DC (mDC - CD14+CD16-/CD85k(ILT3)-PE/CD33-PC5) (Beckman Coulter, France) by using flow cytometry.

### Results

Patients with RILUT demonstrated reduced levels of pDC (from 0.388% / 8,48 cells/ml 4,38 up to 0.203% / 4,38 cells/ml) and mDC (from 0.475% / 10,4 cells/ml up to 0.243% / 5,2 cells/ml) compared with healthy individuals ( $p < 0.05$ ) (Table 1). Application of Uro-Vaxom favored the increase in the number of blood DC up to normal values (up to 0.364%, 7.71 cells/ml – pDC; to 0.478%, 10.1 cells/ml - mDC).

Table 1. Changing the dynamics of plasmacytoid and myeloid dendritic cells content in the peripheral blood of patients with recurrent infection of the lower urinary tract

Dendritic cells	Amount	M±σ (%); Me±(LQ-UQ)			
		Healthy	Before treatment	1 month after treatment	3 months after treatment
CD14+ CD16- / CD85k(ILT3)-PE/ CD123-PC5 (pDC)	%, cells	0,388±0,051* <u>0,39±(0,36-0,44)</u>	0,203±0,052** <u>0,19±(0,17-0,23)</u>	0,364±0,0828 <u>0,36±(0,32-0,38)</u>	0,376±0,405* <u>0,37±(0,34-0,41)</u>
	cells/ml	8,48±1,17* <u>8,73±(7,61-9,44)</u>	4,38±1,19** <u>4,1±(3,4-5,48)</u>	7,71±1,71* <u>7,38±(6,58-8,32)</u>	8,26±0,93* <u>7,9±(7,8-9,1)</u>
CD14+ CD16- / CD85k(ILT3)-PE/ CD33-PC5 (mDC)	%, cells	0,475±0,058* <u>0,46±(0,43-0,54)</u>	0,243±0,029** <u>0,25±(0,22-0,26)</u>	0,478±0,065* <u>0,48±(0,44-0,53)</u>	0,405±0,047* <u>0,4±(0,38-0,44)</u>
	cells/ml	10,4±1,59* <u>10,4±(9,4-11,4)</u>	5,2±0,67** <u>5,3±(4,83-5,9)</u>	10,1±1,33* <u>10,26±(9,86-10,81)</u>	8,9±1,2* <u>8,97±(8-9,58)</u>

M±σ - arithmetic mean ± standard deviation; Me - median values, LQ-UQ - the lower and upper quartiles. \* -  $P < 0,05$  – differences compared with the group before treatment (Mann-Whitney U test);

\*\* -  $P > 0,05$ - differences compared with the control (healthy)

### Interpretation of results

Reducing of DC number may indicate a failure of the first line of defense - the innate level of the immune system in patients suffering from recurrent diseases of infectious origin. Using Uro-Vaxom promoted increase in the number of analyzed blood dendritic cell populations to normal values.

### Concluding message

In patients with RILUT there was revealed a failure of the first line of the immune defense. Immunotherapy by lysate of *E. coli* activates innate effectors - the first link in the way of infection - dendritic cells of myeloid and lymphoid origin.

Disclosures

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