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

<table>
<thead>
<tr>
<th>Dendritic cells</th>
<th>Amount</th>
<th>M±σ (%); Me±(LQ-UQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Healthy</td>
<td>Before treatment</td>
</tr>
<tr>
<td>CD14+ CD16-/CD85k(ILT3)-PE/CD123-PC5 (pDC)</td>
<td>%, cells</td>
<td>0,388±0,051* 0,39±(0,36-0,44)</td>
</tr>
<tr>
<td>cells/ml</td>
<td>8,48±1,17* 8,73±(7,61-9,44)</td>
<td>4,38±1,19** 4,1±(3,4-5,48)</td>
</tr>
<tr>
<td>CD14+ CD16-/CD85k(ILT3)-PE/CD33-PC5 (mDC)</td>
<td>%, cells</td>
<td>0,475±0,058* 0,46±(0,43-0,54)</td>
</tr>
<tr>
<td>cells/ml</td>
<td>10,4±1,59* 10,4±(9,4-11,4)</td>
<td>5,2±0,67** 5,3±(4,83-5,9)</td>
</tr>
</tbody>
</table>

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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**Ethics Committee:** Russian Academy of Medical Science Institutional Review Board.  
**Helsinki:** Yes  
**Informed Consent:** Yes