Study of the state of some cytokines in patients with urogenital ureaplasmosis and chlamydiosis

Abstract: The state of some cytokines was studied in patients with urogenital ureaplasmosis and chlamydiosis in this scientific work. The analysis of the obtained data demonstrates that at urogenital ureaplasmosis, chlamydiosis and their association the disease proceeds against violation of development of cytokin in an organism.

Keywords: ureaplasma, chlamydia, the immune system, cytokines.

The incidence of mixed infection (ureaplasma and chlamydia) increase the genitourinary system and causes serious complications in last years, both women and men [1; 4; 5; 11; 19]. Among human infectious diseases at a fraction of mixed infections account for up to 50 % of cases [13].

The peculiarity of the modern trend of urogenital infections is their frequent association with each other, with diseases caused by other microorganisms, multifocal lesions, few symptoms, severity of complications and the difficulty of therapy [1; 10].

The ubiquity of chlamydia, urea- and mycoplasma infection is due to the frequent persistence of agent reservoir with asymptomatic course of the disease [14]. However, despite the mostly torpid and subjectively asymptomatic course, urogenital chlamydiosis ureaplasmosis and can cause serious complications in patients on the part of the pelvic organs [2; 17].

In men, the incidence rate most of these diseases is higher than in women as in men clinically they proceed intensively, as a consequence, men are more likely to seek health care [8; 16].

In recent years, an increasing number of patients with sexually transmitted infections, with varying degrees of severity immunodeficiency of different genesis as asymptomatic, and with a variety of clinical manifested [9; 12].

This not only prevents the elimination of the pathogen and the complete rehabilitation of the body, but also creates conditions for the development of different immunopathological reactions. Against develop immunodeficiency current infectious process most of varying etiology can wear chronic, prolonged or frequently recurrent nature [6; 7; 18].

Among the most important factors of natural and adaptive immune system include interferon and other cytokines. STI different nature are accompanied by a series of production of proinflammatory and anti-inflammatory cytokines, which are monitored to judge the severity of these diseases, their course and outcome, as well as on the effectiveness of the therapy.

The largest informational value STI are cytokines such as IFN-α, IFN-γ, IL-1β, IL-2, IL-4, IL-6, IL-8, IL-10, IL-18 and TNF-a. For example, IFN-γ, IL-1β, TNF-a plays a decisive role in combating chlamydial infection, with the development of persistent chlamydial infection depends on the changes in the concentration of IFN-γ [15].

The foregoing indicates that urogenital chlamydia and ureaplasmosis develops on the background certain immunological changes that the correction allows for adequate and effective treatment.
In this regard, the study status of cytokines in patients with urogenital chlamydiosis ureaplasmosis and dermatology is an urgent problem.

The aim of the study was to examine the state of some of the pro- and anti-inflammatory cytokines in patients with urogenital ureaplasmosis, chlamydia and their associations.

**Material and methods**

The study was performed in 67 patients of both sexes aged 19 to 35 years. Among the patients examined at 27 was diagnosed with urogenital ureaplasmosis, in 21 — chlamydia and 19 — Association of urogenital chlamydia and ureaplasma. The control group consisted of data 17 healthy individuals.

Serum cytokines were measured by enzyme-linked immunosorbent assay (ELISA) [3]. To determine the cytokine used test systems developed in Institute of Pure Biochemicals (St. Petersburg).

The study results are statistically processed by standard methods of variation statistics using Student’s t-test for application «Excel-Office-2010” on Pentium IV computer.

**Results and discussion**

Today it is known that cytokines are a group of polypeptide mediators involved in the formation and regulation of the body’s responses. They are mediators of intercellular cell cooperative interactions in the immune response. It was found that the decisive role in the regulation of neuro-immune-endocrine interactions belongs to the cytokines.

Of great importance in the regulation of resistance to the occurrence of a pathological process belongs to the pro-inflammatory and anti-inflammatory cytokines — mediators that influence the function of neutrophils and macrophages. This special role have interleukin-1 (IL-1), interleukin-4 (IL-4) and tumor necrosis factor (TNF-α).

We have the content of the above cytokines in the serum of patients with urogenital ureaplasmosis, chlamydia has been studied and their association, depending on the etiology and the nature of the discharge from the urinary tract.

When you examine the levels of cytokines in patients with diseases of the urogenital organs, depending on the etiological factor found (Table 1) that in the serum of patients with urogenital ureaplasmosis before treatment was a significant decrease in the level of IL-4 (p < 0.001) and anti-inflammatory cytokine elevation of pro-inflammatory cytokines IL-1 and TNF-α (p < 0.001) in comparison with the control group.

<table>
<thead>
<tr>
<th>Cytokines</th>
<th>Control group n = 17</th>
<th>Patients ureaplasmosis n = 27</th>
<th>Patients with chlamydia n = 21</th>
<th>Patients with the association ureaplasmosis and chlamydia n = 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL-1, pg/ml</td>
<td>1.73 ± 0.08</td>
<td>5.24 ± 0.25*</td>
<td>5.14 ± 0.25*</td>
<td>7.40 ± 0.32*</td>
</tr>
<tr>
<td>IL-4 pg/ml</td>
<td>2.03 ± 0.15</td>
<td>1.18 ± 0.08*</td>
<td>1.09 ± 0.09*</td>
<td>0.76 ± 0.08*</td>
</tr>
<tr>
<td>TNF-α, pg/ml</td>
<td>14.40 ± 0.75</td>
<td>20.93 ± 0.73*</td>
<td>21.02 ± 0.96*</td>
<td>25.06 ± 1.04*</td>
</tr>
</tbody>
</table>

Note: p — The reliability of the data in relation to the control; * — p < 0.001.

The study of cytokine levels in patients with urogenital chlamydiosis found (Table 1) that patients in this group also observed a significant increase in the concentration of IL-1 (p < 0.001) and TNF-α (p < 0.001) in relation to that of healthy individuals, and IL-4 content was statistically significantly reduced (p < 0.001).

In patients with an association of ureaplasma and chlamydia identified the most pronounced changes in these indicators, that is, there is an even more pronounced reduction in the concentration of IL-4 (p < 0.001) and elevated levels of IL-1 (p < 0.001) and TNF-α (p < 0.001) than in patients monoinfected (Table 1).

The foregoing shows that in the study of the pathology of the occurrence of a pathological process belongs to the cytokines.

Next, we investigated the performance of cytokines in patients with urogenital ureaplasmosis, chlamydia and their association, depending on the nature of the discharge from the urinary tract.

The results showed (table 2) that patients in all groups surveyed for admission in the serum concentration of the cytokine IL-4 (p < 0.001) decreased, and the content of IL-1 (p < 0.001) and TNF-α (p < 0.001) was significantly increased compared with those of the control group. However, the identified changes were dependent on the nature of discharge, ie, the smallest violation of cytokine status found in patients with scanty, and the greatest change in patients with copious of the urinary tract.

Thus, the analysis of the data shows that in the urogenital ureaplasmosis, chlamydia and their associations the disease occurs on the background of violations of the production of cytokines in the body that express increased levels of pro-inflammatory cytokines IL-1 and TNF-alpha and a reduction in the content of the anti-inflammatory cytokine IL-4 dependent on the etiological factors and the nature of discharge from the urinary tract.

<table>
<thead>
<tr>
<th>Character selection</th>
<th>Amount examinees</th>
<th>IL-1, pg/ml</th>
<th>IL-4 pg/ml</th>
<th>TNF-α, pg/ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>17</td>
<td>1.73 ± 0.08</td>
<td>2.03 ± 0.15</td>
<td>14.40 ± 0.75</td>
</tr>
<tr>
<td>Scarce</td>
<td>32</td>
<td>4.64 ± 0.19*</td>
<td>1.30 ± 0.08*</td>
<td>18.89 ± 0.61*</td>
</tr>
<tr>
<td>Moderate</td>
<td>24</td>
<td>6.40 ± 0.17*</td>
<td>0.88 ± 0.04*</td>
<td>23.82 ± 0.55*</td>
</tr>
<tr>
<td>Abundant</td>
<td>11</td>
<td>8.01 ± 0.35*</td>
<td>0.58 ± 0.08*</td>
<td>27.90 ± 0.70*</td>
</tr>
</tbody>
</table>

Note: p — The reliability of the data in relation to the control; * — p < 0.001.

**References:**

State and ways of improvement of combustiologic aid in the system of emergency medicine of Uzbekistan

Abstract: The authors studied the structure and rate of hospitalized patients with thermal injury in the period since 2002 till 2012 in the system of emergency medicine in the Republic of Uzbekistan, and showed the state and ways of improvement of combustiologic aid. The established combustiologic service allowed providing an adequate specialized assistance to victims with thermal damages.

Keywords: burn trauma, burn disease, specialized aid at burns.

Background
Burns continue to be one of the most common types of traumatic damages [1; 4; 7; 9]. Increased consumption of various energy resources in industry and everyday life determines growth rate of burn injuries. Despite these successes, among severe burned patients mortality remains high even in specialized clinics. This is contributed by an increase of both burn injuries and the proportion of large and deep burns, associated and combined damages, and the lack of unified concept of the treatment of severe burned patients [2; 5]. At the same time, disability of patients after thermal injuries remained to be poor [8; 11].

In this regard, in the system of emergency medical aid of the Republic of Uzbekistan high emphasis is placed on combustiologic service. The patients with thermal injury are treated during the stages of the evacuation by structural subdivisions of Emergency Medical Services (EMS), which governed by the Republican Research center of emergency medicine (RRCEM). 13 regional branches of RRCEM are organized in the Republic of Karakalpakstan, in

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