Diagnostic value of definition of antibodies to antigens of microorganisms in women with inflammatory diseases of the pelvic organs

Abstract: The aim was to study and define the diagnostic value of detection of antibody titers to the antigens of some etiologic agents of inflammatory diseases of the pelvic organs (IDPO) in women of childbearing age. It was found that the monoculture of microorganisms detected 4.2 times more often than the association, in 7.6% cases were found negative samples. Most antibodies were found to antigens other Mycoplasma spp, Chlamydia spp, Cytomegalovirus and Herpes simplex virus type 1 and 2.

Keywords: antigens, antibodies, ELISA, women, microorganism, infection, inflammatory diseases of the pelvic organs.

Inflammatory diseases of the pelvic organs (IDPO) characterized by different symptoms depending on the level of destruction and the force of the inflammatory response. The disease develops as a result of the penetration of the pathogen in sexual ways and in the presence of favorable conditions for its reproduction. Such conditions are created in the post-partum and post-abortion period, during menstruation, for different intrauterine manipulations [1, 5].

The decisive role in causing inflammation play: the state of the microorganism, the massiveness of infection, virulence of the etiological agent [2].

It was found that opportunistic pathogen bacterium (OPB) does not only cause of IDPO and cause of fetal and neonatal infections [1].

In this regard, microbiological tests have a high diagnostic value in the diagnostic of IDPO. Along with bacteriological diagnostics methods in recent years, other methods are widely used, in particular immunoassay — ELISA [3; 4].

The purpose of the work — The study and definition of the diagnostic value of detection of antibody titers to the antigens of some etiologic agents of IDPO in women of childbearing age.

Materials and methods. To achieve the goal were studied 304 women of reproductive age with IDPO. All patients were treated in the Khorezm branch of the Republican Scientific Center for Emergency Medical Care Ministry of Health of Uzbekistan. They were distributed by age as follows: 18–21 years — 12 patients (3.9 ± 1.1%), 22–29 years — 136 patients (44.7 ± 2.9%), 30–35 years — 56 patients (18.5 ± 2.2%), 36–49 years — 100 patients (32.9 ± 2.7%).

The main number of women were married (97.7 ± 0.9%), rural residents accounted for 69.4 ± 2.6%, and the urban 30.6 ± 2.6%.

Among all women surveyed took a major amount of housewives and non-working women (84.5 ± 2.1%).

Patients often revealed acute salpingitis, oophoritis (98.4 ± 0.7%). The diagnosis was verified by means of clinical, instrumental and laboratory studies on the proposals of the National Center for Disease Control and Prevention (NCDC, USA, 2006).

For setting up ELISA were used diagnostic test systems for the determination of serum antibodies to the antigens of Chlamydia spp, Toxoplasma gondii, Mycoplasma spp., Cytomegalovirus (CMV), Herpes simplex virus type 1 and 2 (HSV 1, 2) («XEMA» company’s test systems, RF), Ureaplasma urealyticum (test-system of the company “Vector-Best”, Russia). The principle of the method lies in the qualitative detection of antibodies to the above mentioned antigens by indirect ELISA test on polystyrene. The results were obtained by spectrophoto-metrically method at a wavelength of 492 nm.

During carry out this research were observed all the ethical principles for medical re-search involving human subjects, the Helsinki Declaration adopted by the WMA in 1964 (the latest addition in Seoul on the 59th General Assembly of the WMA in 2008).

Results and discussion. The obtaining results showed that antibodies are not detected by the above pathogens always. Most of the time the women surveyed revealed antibodies to Mycoplasma spp, they were detected in 120 cases (39.5 ± 2.8%). It is known that the genus Mycoplasma in practical medicine the main place is occupied kinds M. hominus, M. genitalium and M. pneumoniae. All these types are common antigenic determinants and ELISA method to determine them separately is not possible. If we consider that Mycoplasma spp. causes acute and chronic inflammatory diseases of the urinary tract, they may be etiologic agents of IDPO in women [7].
On the next place on detectability were antibodies to Chlamydia spp. — 27.0 ± 2.5% (n = 82). The main representative of this kind, which may be the causative agent of TORCH-infections is C. trachomatis, other (C. psittaci and C. pneumoniae) rarely cause disease in humans [8]. Detection of specific serum IgG-antibodies activity reflects the extent of reproduction Chlamydia spp. Determination of IgG-antibodies may be used for establishing and monitoring of disease recurrence of the infection.

A distinctive feature of our research was that most frequently detected antibodies to such antigens — CMV and HSV 1, 2 respectively in 20.4 ± 2.3% (n=62) and 12.5 ± 1.9% (n=38) cases. If we consider that CMV is found in 60–90% of the adult population, the CMV problem in women, especially pregnant women, it is very serious [9].

Although IgG-antibodies do not protect against reactivation of latent virus, but can serve as an indirect indicator of CMV activity in the body of women. HSV 1, 2 are also seen very of-ten, hit about 90% of the population [6]. Women particularly common HSV 2 (genital herpes) and identification of IgG-antibodies indicates a remission or recurrence of Herpes simplex disease.

Relatively few have been identified antibodies to Toxoplasma gondii (5.9 ± 1.4%, n=18) and Ureaplasma urealyticum (3.3 ± 1.0%, n=10). It is known that the IgG-antibodies to Toxoplasma gondii have a protective function, and provide a stable immunity against reinfection [10], so the definition of IgG-antibodies to Toxoplasma gondii is used for the purpose of state immunity anti-toxoplasmic of women. The same diagnostic objective pursued determining IgG antibodies to Ureaplasma urealyticum [8].

There were revealed total 330 cases of detection of positive samples from 304 women, but it is necessary to take into account that 7.6 ± 1.5% (n = 23) of the women surveyed were found negative samples. Consequently, the 330 positive samples were found in the surveyed 281 women with IDPO. The percentage of detection of antibodies in healthy women who have not had IDPO was low and significantly different from women with IDPO (P <0.001).

Given the fact that the identification of positive samples was observed in the form of monocultures and microbial associations, we were interested to study the relationship between detection of each another.

The results show that most often encountered in associations and CMV-antigens from different Chlamydia spp. microorganisms (for n = 20) and Mycoplasma spp. (n=14).

In most cases the association was observed with the following organisms: CMV and HCV 1, 2 to 3.3 ± 1.0% (n=10); and Mycoplasma spp. — CMV in 2.6 ± 0.9% (n=8); Chlamydia spp. and Mycoplasma spp. in 2.6 ± 0.9% (n = 8); CMV, Chlamydia spp. and HSV 1.2 to 2.0 ± 0.8% (n = 6) patients. Other associations met from 0.7 ± 0.8% (n = 2) to 1.3 ± 0.6% (n=4) cases.

The detected associations were observed between 2 and 5 microorganisms. They were as follows: 2 in association microorganism was 13.8 ± 2.0% (n=42), 3 in the microorganism 5.3 ± 1.3% (n=16) 4 microorganisms 1.3 ± 0.6% (n=4) and to 5 microorganisms 0.7 ± 0.5% (n=2) samples.

It is interesting to note that the monoculture of microorganisms identified (n=266) oc-curred 4.2 times more frequently than the association of these microorganisms (n = 64). The presence of a certain number of negative samples (7.6 ± 1.5%, n=23) antigen above microor-ganisms in these studies points to the discovery of other etiologic agents (Gram-negative bac-teria, Gram-positive cocci, anaerobes), pelvic inflammatory disease in women of child-bearing age who are found bacteriological methods.

The findings indicate that in addition to bacteriological methods of qualitative determination of antibodies in the serum of women against antigens of various microorganisms using the ELISA method has a certain diagnostic value and along with other methods can be used for the diagnosis of IDPO.

Conclusions:

1. In the serum examined women with IDPO most commonly detected IgG-antibodies to antigens of Mycoplasma spp., Chlamydia spp., CMV, and HSV 1 and 2, the least frequently detected IgG-antibodies to antigens of Toxoplasma gondii, Ureaplasma urealyticum.
2. Total 330 positive samples were found, which samples with 64 monocultures and 266 microorganisms association. Monoculture occurred in 4.2 times more frequently than the asso-ciation of microorganisms, 7.6 ± 1.5% cases were found negative samples.
3. Women who were surveyed most often in association met CMV and Chlamydia spp. 20 times, Mycoplasma spp. 14 times with other microorganisms and each other.

References: