

Endometrial Dysfunction in Women with Chronic Salpingoophoritis and Its Clinical Immunological

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Abstract Purpose of the study Identification of the main etiopathogenetic factors of endometrial dysfunctions in patients with chronic salpingo-oophoritis for the prevention of miscarriage. The study involved 82 patients with chronic salpingo-oophoritis, complicated by the development of endometrial dysfunctions, aged 18 to 35 years. The formation of groups underwent ultrasound confirmation of the "thin" endometrium. Group I will consist of 82 patients with chronic salpingo-oophoritis complicated by the development of endometrial dysfunctions. Group II - the control group, will consist of 30 patients, comparable in age, without. Based on the foregoing, it can be assumed that the etiological factor of the "thin" endometrium is its mechanical damage and inflammatory processes in the pelvic organs against the background of the carriage of pathogenic microflora of the reproductive tract. When studying the anamnesis, the patients of the first group indicated the presence of chronic endometritis in 67.39% of cases, in the second group - 66.4%. The main nosology that determines the clinical picture of the "thin" endometrium is chronic endometritis, associated with infertility (68.47%) and recurrent miscarriage (63.63%) with equal frequency.

Keywords Salpingoophoritis, Endometrial dysfunctions, Cervical microbiocenosis, Pregnancy loss, Immune system

1. Relevance

The steady increase in miscarriage against the background of endometrial dysfunctions in Uzbekistan over the past 10 years has actualized the need to develop and implement new pathogenetically sound approaches to the restoration of the endometrium in order to preserve the reproductive potential of the younger generation [5,6]. The etiopathogenesis of endometrial dysfunctions has not been fully elucidated to date [2,4,5,11]. According to domestic and foreign researchers, endometrial dysfunctions occur in 56.8-78% against the background of increasing infectious diseases of the reproductive organs with the occurrence of ovarian dysfunctions and changes expression of steroid hormone receptors [1,3,7,10]. The frequency of recurrent course of chronic salpingo-oophoritis, according to different authors, ranges from 59 to 68%, while in combination with other gynecological diseases it can reach 80%. [1,2,8]. Chronic salpingo-oophoritis occurs at any reproductive age, but more often at a young age, 20-30 years, disrupting the receptivity to the most significant reproductive hormones, to a greater extent, in the endometrium [3,4,9].

The most significant predictors of chronic salpingo-oophoritis are violations of vaginal and cervical microbiocenosis, with an increase in viral and bacterial aggressions. Studies

conducted in the European territories demonstrate violations of immune homeostasis at the local level in inflammatory diseases of the pelvic organs [10]. However, conflicting scientific data require a deeper study of the interaction of the endocrine and immune systems, the effect of immunocompetent cells on the functioning of steroid hormones in the event of endometrial dysfunctions, which can be considered as a therapeutic target for the personification of therapy. The current standard of care for patients with endometrial dysfunction is cyclic hormone therapy. However, the effectiveness of this method of treatment leads to the restoration of the endometrium only in 15-20% of cases [1,8,9]. The growth of reproductive problems dictates the need to change the unified medical approaches. Numerous studies devoted to this topic are mostly based on the use of separate methods used to treat specific nosological forms without taking into account the individual characteristics of patients. The existing management tactics are not effective in all patients. Therefore, there is a need to create a unified diagnostic and prognostic algorithm with the personification of therapy. Pathogenetically substantiated development of therapy requires a scientific determinant search for damage to the receptor apparatus in the endometrium, which subsequently leads to the development of endometrial dysfunction and miscarriage [11].

Thus, given the high incidence of chronic salpingo-oophoritis in women of young reproductive age, the risk of endometrial dysfunction and miscarriage against this

background, the lack of a consensus on the genesis of reproductive problems, the high frequency of relapses after therapy, there is interest in the problem of pathogenetically substantiated therapy of endometrial dysfunction which determines the relevance of our work. To increase the effectiveness of therapy in patients with endometrial dysfunctions, there is a need to develop a method that changes the pattern of expression of endometrial receptor proteins.

It is known that the protective role of anti-inflammatory cytokines is manifested when these mediators act locally, at the site of inflammation, but their systemic production does not mean high efficiency of immunity against infection. On the contrary, excessive production of anti-inflammatory cytokines leads to the development of organ dysfunction.

The purpose of scientific research to study the main clinical and immunological features of endometrial dysfunction for the prevention of abortion in patients with chronic salpingo-oophoritis.

2. Materials and Methods

The study involved 82 patients with chronic salpingo-oophoritis, complicated by the development of endometrial dysfunctions, aged 18 to 35 years. The formation of groups underwent ultrasound confirmation of the "thin" endometrium. Group I will consist of 82 patients with chronic salpingo-oophoritis complicated by the development of endometrial dysfunctions. Group II - the control group, will consist of 30 patients, comparable in age, without gynecological pathology, severe somatic diseases and severe metabolic disorders.

3. Research Results

When studying the gynecological history, it was revealed that instrumental interventions in the uterine cavity due to abortion were observed in 18 (39.13%) women from the group with infertility, which is almost two times more than in the group with miscarriage - in 10 (22.73 %) women. Most of the patients with infertility began their reproductive function with an abortion of their own free will, which could be a key link in the development of a chronic inflammatory process of the endometrium. Curettage of the uterine cavity due to spontaneous miscarriage in the first group was noted in 4 (8.69%) patients, in the second group in 17 (39.53%) patients, due to non-developing pregnancy in 19 (41.30%) women in the first group and 38 (86.36%) women in the second group, respectively. It is known that curettage of a gravely altered endometrium can be accompanied by damage to the basal layer of the endometrium and, apparently, underlies the formation of a "thin" endometrium, as well as repeated instrumental interventions in the uterine cavity inevitably lead to the development of chronic endometritis [2]. other scientists believe that in ART programs, chronic endometritis is not in the first place in the reasons for the lack of implantation and does not lead to the formation of endometrial

hypoplasia [1,2,3]. Studying the obstetric anamnesis of the examined women, we came to the conclusion that in the main groups, in comparison with the control group, urgent delivery was significantly less frequently observed in the anamnesis, in 9 (19.57%) patients with infertility and in 13 (29.50%) patients with miscarriage. Premature birth, on the contrary, prevailed in the main groups: in 4.35% of cases in the first group of patients with uterine infertility and in 11.36% in the second group in patients with miscarriage due to endometrial hypoplasia. This may indicate the unity of pathogenetic mechanisms leading to miscarriage and early reproductive losses. According to our study, it was recorded that after several reproductive losses in the anamnesis in the group with miscarriage, 50% of patients later developed secondary infertility. Among patients in the first group, secondary infertility occurs significantly more often and prevails over primary infertility in the same group and is 80.43% ($p < 0.05$). This suggests that secondary infertility in these patients is the outcome of early reproductive losses or medical abortion. At the same time, in 15.21% of patients, primary infertility turned into secondary. Assisted reproductive technologies were used by 26 (56.52%) patients from the group with infertility and 14 (31.82%) patients from the group with miscarriage. However, this method also turned out to be ineffective in terms of the onset and bearing of pregnancy. The pregnancy is over early loss in the first group in 9 (19.57%) patients, in the second group in 8 (18.18%) patients. 39% of patients, and in the group of miscarriage in 19.56% of patients. And most of these pregnancies ended in the first trimester. Two or more IVF attempts among the examined patients were used more often in the first group - 17 patients and almost two times less in the second group - 9 patients, which also indicates the low effectiveness of programs in the presence of "thin" endometrium and this is primarily due to the lack of implantation.

Analysis of anamnestic data revealed in women of the main groups high incidence of chronic inflammatory diseases of the genitals: chronic adnexitis - 28.2% and 34.02%, chronic endometritis - 67.39% and 66.4%, sexually transmitted infections - 30.43% and 25%, respectively, in groups 1 and 2. Thus, it can be assumed that the presence of urogenital infections can lead to inflammatory diseases of the pelvic organs and, as the final stage, to the formation of endometrial hypoplasia in these women. operations such as salpingo-ovariolysis, tubectomy, excision of intrauterine synechia, polypectomy. In the majority of patients, infertility was the indication for surgery. Ultrasound examination of patients before therapy revealed no significant differences in the size and structure of the uterus and appendages in the observation groups. However, it is natural that in both observation groups the thickness of the M-echo differed significantly from the control group. In patients with uterine form of infertility, heterogeneity of the endometrial structure (34.78%) and synechia in the uterine cavity (10.87%) were significantly more common. This indicates deeper disorders in the endometrium in this group of patients, the transition to the next stage with the formation of atrophic changes in the

endometrium and the replacement of the "injured" tissue with coarse connective tissue strands.

Cytokine profile in women with chronic salpingoophoritis complicated by endometrial dysfunction receiving ananas therapy. In women with endometrial dysfunction complicated by salpingo-oophoritis included in our study and treated with traditional medicine, the average level of IFN- γ cytokine was 67.18 ± 4.22 pg/ml (median 66.1; range 38.1 to 108.9), ($P > 0.05$). Interleukin-8 (IL-8) - 66.4 ± 2.48 pg/ml (median 64.65; range 52.7 to 89.3), ($P > 0.01$), interleukin-1 β (IL-1 β) - 31.6 ± 2.04 pg/ml (median 26.45; range 12.5 to 28.1), ($P > 0.05$). Interleukin-6 (IL-6) was 79.5 ± 3.37 pg/ml, (median 86.05; range 62.2 to 99.7), ($P > 0.05$) (Table 1).

Table 1. Status of pro-inflammatory cytokines among women recruited to group 2, (n=30)

Indicators	M \pm m	Max-min	Median	P-value
IFN- γ , пг/мл	67,18 \pm 4,22	108,9-38,1	66,1	P>0,05
IL-8, пг/мл	66,4 \pm 2,48	89,3-52,7	64,65	P>0,01
IL-1 β , пг/мл	31,6 \pm 2,04	28,1-12,5	26,45	P>0,05
IL-6, пг/мл	79,5 \pm 3,37	99,7-62,2	86,05	P>0,05

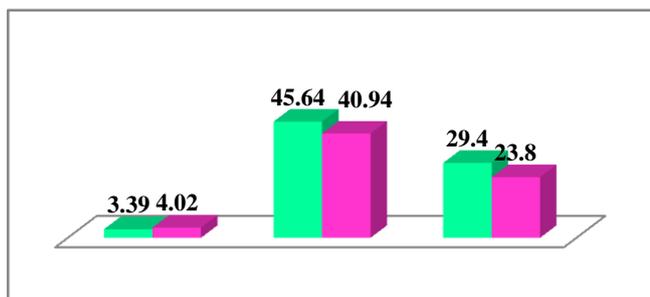


Figure 1. Status of anti-inflammatory cytokines in women included in the study (IL-4, pg/ml – in green, IL-10, pg/ml – in red; 1st column – control group – n=30, 2nd column – group 1-n=38, 3rd column – group 2-n=44)

Figure 1. above shows a comparative description of anti-inflammatory cytokines with indicators in the control group and group 1. It can be seen from the figure that anti-inflammatory cytokines are significantly higher in patients in group 1 who received our proposed treatment compared to patients in the control group and group 2 who received conventional treatment.

Thus, we can assume that changes in cytokine status in patients with chronic salpingo-oophoritis complications have prognostic significance in the assessment of chronic salpingo-oophoritis and select treatment tactics based on their parameters.

4. Conclusions

Based on the foregoing, it can be assumed that the etiological factor of the "thin" endometrium is its mechanical damage and inflammatory processes in the pelvic organs against the background of the carriage of pathogenic microflora of the reproductive tract. When studying the anamnesis, the patients of the first group indicated the presence of chronic endometritis in 67.39% of cases, in the second group - 66.4%.

The main nosology that determines the clinical picture of the "thin" endometrium is chronic endometritis, associated with infertility (68.47%) and recurrent miscarriage (63.63%) with equal frequency. The dominant position in the structure of early reproductive losses in patients with "thin" endometrium belongs to non-developing pregnancy (63.83%). In half (48.88%) of women with recurrent miscarriage against the background of endometrial hypoplasia, secondary infertility is formed in the outcome, which in 67.39% of women is preceded by medical abortions and non-developing pregnancies. Our study showed that, despite the absence of clinical manifestations of chronic inflammation and normal values of general laboratory parameters, in women of reproductive age with salpingo-oophoritis, local destructive inflammation activity was observed, and an imbalance of pro- and anti-inflammatory cytokines was detected.

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