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*Research Article*

## HYSTEROSCOPIC METHOD FOR THE DIAGNOSIS OF CHRONIC ENDOMETRITIS IN WOMEN WITH REPRODUCTIVE LOSSES.

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**Abstract:**

***Aim.** The purpose of this study was to improve methods for the prevention, diagnosis and treatment of chronic endometritis (CE) in women of reproductive age with the help of isolation of CE macro types during hysteroscopic examinations.*

***Materials and methods.** The study involved 620 women with a complicated obstetric history. Hysteroscopic and pathomorphological research (aspirates and biopsy samples from the cervical canal and uterine cavity) were performed on women.*

***Results.** During the study it was found out that the variety of endometrial architectonics and features of inflammatory changes made it possible to identify 3 macro types of chronic endometritis in patients. In almost half of the women, the mixed CE macro type was found (47%), and hyperplastic and hypoplastic macrotypes were less common (31% and 22%, respectively). Isolation of CE macrotypes was performed during endoscopic examination and was based on a number of macroscopic features (condition and color of the mucosa, vascular pattern, polyps, etc.). The comparison of the data with the findings of sonographic studies showed the need for a comprehensive examination of this group of women.*

***Keywords:** chronic endometritis, macro types, hysteroscopy, sonography.*

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**INTRODUCTION:**

Chronic endometritis (CE), despite its active study, remains the important problem in modern gynecology. According to statistics, the prevalence of this disease reaches 65%. The invariably high frequency of CE refutes the involvement of the problem in the category of commonplace [1,2,3,4]. Among the causes of CE, the most significant at the present time are invasive procedures on the organs of the reproductive system (curettage, IVF, operations), early debut or promiscuous sexual life, abortions, intrauterine devices [5,6,7,8,9].

Improving diagnostic methods and using effective treatment regimens will help maintain women's reproductive health. The relationship of chronic inflammatory diseases of the pelvic organs and early reproductive losses makes the problem of CE relevant throughout the world, not only from the medical, but also from the social side [10,11,12,13]. Despite the long history of studying CE, the pathogenesis of this disease is still not fully understood, and the exact role of CE in interruption of pregnancy has not been found out. Consideration must be given to CE in many cases has a latent asymptomatic course, and an incorrect interpretation of results of various methods of disease verification, especially in cohorts with early reproductive losses, leads to underdiagnosis of the chronic inflammatory process and further termination of pregnancy [14,15,6].

The emergence of different views on the etiopathogenesis of CE emphasize the need to consider this disease not only from the point of view of the classic purulent-inflammatory process, which complicates, according to statistics, 20-25% of surgical abortions [17].

According to current data, CE plays a huge role in the causes of non-developing pregnancies, which is also associated with neglect in obstetric and gynecological practice the need for adequate rehabilitation therapy after early reproductive loss [18,19].

Thus, the untimely diagnosis and lack of treatment in the inflammatory process in the endometrium lead to its spread to deeper tissues, as well as the development of autoimmune inflammation, observed in 65-70% of women with a history of abortion [20,21].

The significance of hysteroscopy in verifying chronic inflammation of the endometrium has been shown in a number of studies, however, the use of this method as a screening diagnosis for early reproductive losses remains controversial. Complications of CE today are mainly associated with the following reasons: underdiagnosis,

incorrect choice of treatment tactics, due to the difficulty in isolating an infectious agent or their association, persistent pathogenic flora in the uterine cavity, autoimmune process, lack of data on hysteroscopic and pathomorphological macro types and timely actions to prevent it [22,23].

The need to improve existing algorithms for the diagnosis of CE is determined by the inconsistency of the results of ultrasonic, endoscopic and pathomorphological examination methods.

Despite the high informativeness of the hysteroscopic method in the diagnosis of chronic endometritis, a number of methodological defects can distort the real picture, negatively affecting the pathomorphological conclusion. Highlighting the dominant features in the visualization of CE will increase the sensitivity and specificity of this method and reduce the frequency of errors.

The introduction of diagnostic algorithms into the medical practice of obstetrician-gynecologists, which make it possible to isolate various macrotypes of CE, will increase the quality of diagnosis, broaden the understanding of the etiopathogenesis of the disease, and choose the right treatment and rehabilitation tactics for patients.

**The purpose of this study** was to improve methods for the prevention, diagnosis and treatment of CE in women of reproductive age with the help of isolation of CE macro types during a hysteroscopic examination.

**MATERIALS AND METHODS:**

The study was carried out on the basis of the departments of obstetrics and gynecology of the Rostov State Medical University. The study involved 620 women who were divided into 2 groups. In group I, the retrospective analysis was carried out and it included 200 women with the complicated obstetric history (non-developing pregnancy, spontaneous miscarriage, abortion, failed IVF attempts). In group 2, the prospective analysis was performed and this group included 420 women with similar reproductive losses.

The criterion for the inclusion of patients of both groups in the study was the presence of reproductive losses for up to 6 months after intrauterine interventions.

Research Methods: Clinical and Statistical analysis, hysteroscopic, pathomorphological research (aspirates and biopsy samples from the cervical canal and uterine cavity). Statistical processing of the obtained results was performed using the statistical programs Statistica v.6.0. and Microsoft

Office Excel 2003. The data obtained were processed statistically using the Fisher LSD.

### RESULTS AND DISCUSSION:

The variety of endometrial architectonics and features of inflammatory changes made it possible to identify 3 macro types of chronic endometritis in patients.

In almost half of the women, the mixed CE macro type was found (47%), and hyperplastic and hypoplastic macrotypes were less common (31% and 22%, respectively). Isolation of CE macrotypes was performed during endoscopic examination and was based on a number of macroscopic features (condition and color of the mucosa, vascular pattern, polyps, etc.).

The following endometrial changes were attributed to the mixed macro type: uneven pale color of the mucosa (51.3%), thickness variability (78.1%), alternation of normal and pathological areas, accentuated vascular pattern. Focal or diffuse hyperemia of the mucosa was determined in almost two thirds (59.8%), equally with polypoid growths of the endometrium (63.2%), however, the combination micropolyps with stromal edema and hyperemia of the mucosa appeared a little more often (75.4%).

The basis for the identification of the hypoplastic variant were a uniform pale coloration of the mucosa, uneven endometrial hypertrophy (61%), depletion of the vascular pattern, frequent stromal edema (33%) compared with other CE macro types (2 times more often than with the mixed and 2 times more often, than in patients with the hypoplastic macrotypes). Focal or diffuse hyperemia was detected 1.3 times less often in comparison with the mixed macro type (45% and 59.8%, respectively). The combination of hyperemia with stromal edema was diagnosed in 55% of women with hyperplastic macro type CE. The most characteristic feature of this macro type was the triad of endometrial changes: hyperemia, edema of the stroma, and micropolyps, which were found in 81% of patients.

The hypoplastic macro type was characterized by total pallor of the endometrium (47.5%), thinning of the mucosa (58.4%), depletion of the vascular pattern or its complete disappearance (23%). Stromal edema was detected less frequently than with other macro types (13.7%), edema and focal or diffuse hyperemia were also rare (16.2%). The most common endometrial changes were intrauterine adhesions (67.2%), which were found in more than half of patients with this macro type.

Comparison of the results of the findings of sonographic and hysteroscopic studies with the allocation of macro types according to endoscopic studies showed that the endometrium does not correspond to normal echographic criteria in more than half of the cases.

The study of the results of both diagnostic methods made it possible to establish that with the mixed macro type, morphological verification of CE in the presence of placental tissue residues exceeded ultrasound imaging twice, with isolated CE the ratio was the opposite (40.1% and 45.5%, respectively).

The frequency of sonographic diagnosis of intrauterine adhesions was inferior to the histological incidence of focal stromal fibrosis (3.9% and 6.2%, respectively).

Morphological confirmation of the normal endometrium according to the sonographic study was two times less frequent, the endometrial polyp three times less in comparison with the hysteroscopic method for the diagnosis of CE.

In the case of hyperplastic macro type CE, the picture of the sonographic correspondence of the endometrium to the proliferation phase was observed in a quarter of patients, which is 6 times more often than in a morphological study.

Diagnostic accuracy during hysteroscopy was greatest in patients with hyperplastic macro type. Using this diagnostic method, CE was verified in 85.4% of cases. The sensitivity and specificity of the sonographic method were inferior to hysteroscopic examination. So, in relation to CE in the presence of placental tissue residues, the indicators were two times less. Intrauterine adhesions were sonographically diagnosed somewhat less frequently than focal stromal fibrosis was histologically determined (4.1% and 5.5%, respectively). Also, the presence of polyps during sonographic examination is verified twice less often (18.4% and 8.9%, respectively). Half of cases of CE with placental tissue residues turned out to be undiagnosed. Every seventh woman was not diagnosed with CE (14.2%).

Analysis of the data obtained during sonographic and hysteroscopic studies showed that hypodiagnosis of CE took place almost a quarter of women (26.3%). The diagnosed sonographically unchanged endometrium had morphological confirmation eight times less often (22.8 and 2.9%). Intrauterine synechia masked CE, since focal stromal fibrosis was recorded 3 times less

often. Thus, the frequency of histological verification of CE exceeded the sonographic one.

Extrapolation of macro types to a prospectively studied cohort with early reproductive losses showed that endoscopic cholesterol variants with almost equal frequency: 35,1; 33,4 and 31.5%.

With the mixed macro type, an unchanged endometrium was found in 11% of women, with the hyperplastic macro type in 14.3%, with the hypoplastic macro type it was recorded twice less often - in 6.9% of patients.

With the hyperplastic macro type, more often than with other macro types (about 9%), intrauterine adhesions were detected (29.2%). CE in the presence of placental tissue revealed almost one in six women with the mixed macro type (18.2%), every ninth - with hyperplastic macro type (10.9%). Endometrial polyp (or focal hyperplasia endometrium) appeared in endoscopic reports only for mixed and hyperplastic macro types, however, only in every tenth case (on average, 11%).

In 72% of women with a history of abortion, CE was recorded. CE was also detected in case of failures after IVF (52,1%), non-developing pregnancy and spontaneous miscarriage (56,2%). CE against the background of placental tissue residues was found in 10% of women. In 25.9% of patients with abortions and failed IVF attempts, intrauterine adhesions were visualized, while in other cases of early reproductive losses, they were found in 7.5–9% of women. Endometrial polyp (focal endometrial hyperplasia) in women with early reproductive losses was detected in 6-8% of cases. The proliferation phase endometrium was more often diagnosed in a cohort with failed IVF attempts (14.2% of women), while in the remaining groups it was detected 1.5 times less often (8.9%).

Analyzing the informative value of the hysteroscopic diagnostic method for CE depending on the options for reproductive losses, we note that a number of methodological defects can distort the real picture, negatively affecting the pathomorphological conclusion. Similar doubts appear in studies of other authors [21]. The concept of reducing macroscopic signs to a visually dominant type allows us to improve the management strategy for such patients, helping to identify more episodes of the inflammatory process in the endometrium.

Detailedization of sonographic signs of CE, carried out in comparison with hysteroscopic macro types (mixed, hypo- and hyperplastic), showed that the endometrium did not correspond to the normal echographic criteria in more than half of cases.

The detailed study of sonographic diagnostic errors in the recognition of CE in cohorts with early reproductive losses determines episodes of the undiagnosed inflammatory process in the endometrium, focusing on the need for a comprehensive examination of this patient population. The use of the hysteroscopic method with the identification of macro types of chronic inflammatory process in the uterine cavity improves the recognition of sonographic “masks” of CE.

Analyzing the diagnostic value of hysteroscopic and morphological studies, a number of discrepancies were identified. Thus, the correction of the traditional interpretation of endoscopic data and approaches in the diagnosis of CE is necessary. The significance of an isolated hysteroscopic assessment turned out to be doubtful for all endoscopic macro types of CE, and with the hypoplastic macro type, the detection of pathological changes was the smallest: almost 1.5 times less with a hypoplastic macro type in comparison with the others (56,7% versus 71,9% and 72,6% respectively).

#### CONCLUSION:

Identification of hysteroscopic macro types and associated masks of the chronic inflammatory process in the uterine cavity will allow you to practice the pathogenetically based treatment strategy for this contingent of women.

List of symbols and Abbreviations:

CE - Chronic endometritis.

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