REPRODUCTIVE OUTCOMES IN WOMEN WITH OVARIAN ENDOMETRIOSIS: CURRENT CHALLENGES, PREDICTORS, AND FUTURE PERSPECTIVES

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Abstract: Ovarian endometriosis occupies a special place in the structure of endometriosis-associated infertility, as it directly affects ovarian tissue, ovarian reserve, and the microenvironment of the maturing oocyte. Despite the significant volume of accumulated data on clinical-anamnestic, hormonal, morphofunctional, inflammatory, oxidative, and neuroinflammatory mechanisms of fertility impairment, modern approaches to assessing reproductive prognosis in women with ovarian endometriosis remain insufficiently integrated.

Key words: ovarian endometriosis; infertility; fertility; ovarian reserve; ovarian microenvironment; inflammation; oxidative stress; neurogenic inflammation; prediction; EFI.

Introduction

In clinical practice, this is reflected in the fact that individual significant parameters—ovarian reserve, laparoscopic findings, inflammatory and oxidative changes—are often evaluated separately, without being combined into a unified prognostic system. In this regard, the analysis of current data on pathogenesis, diagnosis, and fertility prediction in ovarian endometriosis is of particular interest as a basis for developing a more comprehensive and clinically applicable approach.

To analyze current concepts regarding the role of ovarian endometriosis in the development of infertility, summarize data on the leading mechanisms of fertility decline, and identify unresolved issues in predicting reproductive outcomes.

Materials and Methods

A problem-oriented analytical review of contemporary literature was conducted, focusing on ovarian endometriosis, reproductive dysfunction, ovarian reserve, laparoscopic and instrumental assessment of the disease, ovarian microenvironment, and inflammatory, oxidative, and neuroinflammatory mechanisms of endometriosis-associated infertility.

International clinical guidelines, materials from the World Health Organization, systematic reviews,

meta-analyses, and clinical studies with the greatest scientific and practical relevance for reproductive medicine and gynecology were analyzed. The analysis was carried out from the perspective of clinical significance, pathogenetic validity, and applicability in predicting reproductive outcomes in women with ovarian endometriosis.

Results

It has been established that ovarian endometriosis should be considered one of the most complex forms of endometriosis-associated infertility, in which fertility impairment results from the interaction of clinical-anamnestic, hormonal, morphofunctional, inflammatory, oxidative, and neuroinflammatory mechanisms.

Modern diagnostic methods, including ultrasound, MRI, laparoscopic assessment, and evaluation of ovarian reserve, make it possible to objectively assess individual aspects of the disease but do not provide a comprehensive integral characterization of reproductive prognosis.

Existing approaches, including the Endometriosis Fertility Index (EFI), are of significant clinical value; however, they primarily reflect anamnestic and laparoscopic criteria and insufficiently take into account ovarian reserve, ovarian microenvironment, and the severity of inflammatory and oxidative stress processes.

Conclusions

1. Ovarian endometriosis occupies a special place in the structure of endometriosis-associated infertility, as this form of the disease is directly associated with damage to ovarian tissue, a decrease in ovarian reserve, and impaired reproductive potential.
2. Fertility impairment in ovarian endometriosis is formed under the influence of several interrelated mechanisms, including clinical-anamnestic, hormonal, morphofunctional, inflammatory, oxidative, and neuroinflammatory changes.
3. Modern diagnostic and prognostic approaches allow assessment of individual aspects of the disease but do not always reflect the full depth of pathogenetic disorders determining the actual reproductive prognosis in a particular patient.
4. Particular importance in infertility formation in ovarian endometriosis is attributed to ovarian reserve status, morphofunctional damage, characteristics of the ovarian microenvironment, and the biological activity of inflammation; however, their clinical assessment remains insufficiently integrated.
5. Further in-depth study of ovarian endometriosis as a multifactorial cause of infertility is required, along with the development of a more comprehensive

prognostic approach integrating the most significant clinical and pathogenetic parameters for more accurate fertility assessment and treatment planning.

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