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Determination Of The Frequency Of Endocrine Infertility In Women Of Reproductive Age

Shakhnoza Anvarova

Assistant of the Department of Obstetrics and Gynecology, Reproductology, Tashkent State Medical University, Uzbekistan

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Abstract: Infertility of endocrine origin is one of the most common pathologies among women of reproductive age and leads to a decrease in the birth rate in society. The aim of the study was a retrospective analysis of the frequency and clinical features of endocrine infertility among women of reproductive age. A retrospective analysis of the incidence of endocrine infertility in 200 women of reproductive age was conducted. Retrospective analysis showed that the main endocrine pathologies, such as hyperprolactinemia, hypothyroidism, and ovulatory dysfunction of the ovaries, accounted for 77% of all cases of infertility. Infertility and a decrease in ovarian reserve (AMG 0.8 ± 0.3 ng/ml; p<0.001), especially in late reproductive age, manifested as a central pathogenetic factor.

Keywords: Infertility, pituitary dysfunction, hyperprolactinemia, hypothyroidism.

Introduction: Infertility is one of the most common reproductive problems among women worldwide [4]. According to the World Health Organization (WHO), the incidence of infertility currently stands at 10-13% [1, 8]. Among them, endocrine infertility is one of the most common forms, the origin of which is directly related to a decrease in ovarian reserve, hormonal imbalance, metabolic disorders, and immunological factors [10]. Functional disorders in the endocrine system disrupt the maturation process of egg cells, cause ovulation to fail, and this causes serious problems in restoring fertility in women [7, 11, 12].

In recent years, the issue of infertility of endocrine origin in women of reproductive age has been at the center of attention of the world scientific community [2]. Infertility caused by endocrine dysfunction can lead to serious reproductive complications, such as hormonal imbalance, weakening of ovulatory function, disruption of egg maturation, and decreased fertility [15]. Recent scientific studies have shown the importance of neuroendocrine regulation of ovulation, hormonal and echographic monitoring of folliculogenesis, as well as individual endocrine profiles in the pathogenesis of endocrine infertility [6, 13].

In the CIS countries, scientific research devoted to the problem of infertility of endocrine genesis is also widely conducted. In particular, a number of scientists have developed diagnostic and treatment standards based on reproductive biomarkers such as anti-Müllerian hormone (AMH), follicle-stimulating hormone (FSH), and the number of antral follicles (AFS), scientifically substantiating the importance of assessing ovarian reserve and early diagnosis of endocrine infertility in women [14]. European scientists, having established the connection between hormonal changes and reproductive function in infertility against the background of thyroid dysfunction, have shown the effectiveness of thyroid hormone correction [3]. Scientists from the Middle East, having studied the echographic and hormonal features of menstrual dysfunctions, such as amenorrhea and hypogonadism, showed their significance in clinical diagnostics and monitoring [17]. The effectiveness of pregnancy planning and tactical approaches during pregnancy in patients with hypothyroidism was also evaluated [9]. The pathogenesis, differential diagnosis, and treatment methods for infertility associated with hyperprolactinemia have been thoroughly analyzed [5, 16].

In Uzbekistan, in recent years, scientific research has been consistently conducted in specific areas on infertility of endocrine genesis. In particular, S.I. Kosimova (2020) deeply studied the dynamics of ovarian function and hormonal balance against the background of hyperprolactinemia, the significance of

the FSH/LH ratio in diagnosis and prognosis. Khalimova Z.Yu. (2023) studied the significance of AMH and FSH indicators in ovarian insufficiency and changes in reproductive function against the background of hypothyroidism. O.A. Khegay (2015) substantiated the influence of thyroid function on reproductive health and the combination of laboratory and instrumental approaches in diagnosis. These studies contribute to the creation of modern scientific foundations for the pathogenesis, diagnosis, and prognosis of endocrine infertility in Uzbekistan. At the same time, in the available literature, the main attention is paid to assessing the general state of reproductive function, and methods of complex differentiated diagnosis and individual treatment, as well as forecasting models aimed at the effective restoration of fertility in infertility of endocrine origin, have not yet been sufficiently developed.

Large-scale scientific research is being conducted worldwide to identify and effectively treat infertility of endocrine origin. Accurate diagnosis based on modern biomarkers, personalized hormone therapy, genetic analysis, and metabolomic methods, as well as the development of individual treatment plans for each patient, has become one of the most pressing areas in this area. At the same time, there are a number of problems that need to be solved in this area: increasing the sensitivity and accuracy of diagnostics, introducing innovative therapeutic methods, and further improving the personalized approach to patients. This indicates a high need for new scientific solutions and practical approaches in the field.

METHODS

A total of 320 women of reproductive age were included in the study, of which a retrospective analysis of the incidence of endocrine infertility was conducted in 200 of them. During 2020-2023, a retrospective analysis was conducted on the basis of outpatient and inpatient medical records of 200 women who applied to maternity complexes №3, 7, 8 and Interdistrict Perinatal Center №9 of the city of Tashkent with reproductive function disorders. Women were divided into two groups: Group I - early reproductive age (18-35 years), Group II - late reproductive age (36-43 years).

RESULTS

The analysis results showed that cases of infertility were mainly associated with endocrine dysfunctions, which accounted for 77% of the total number of cases. In particular, pituitary dysfunction (hyperprolactinemia) was detected in 23%, thyroid dysfunction (hypothyroidism) - in 26%, and ovulatory dysfunction of the ovaries - in 28% of cases. In the remaining 23% of cases, infertility was observed, not associated with pronounced endocrine dysfunction. Of these, 14% had idiopathic infertility, and 9% had other etiologies, such as immunological, tubular-peritoneal, or psychogenic factors. These conditions, although they differ from all endocrine pathologies, were assessed as a separate category affecting reproductive function.

The results of the retrospective analysis show that endocrine pathologies in women have a strong influence on reproductive function and justify the need for differential diagnosis and pathogenetic treatment.

Of the women who participated in the study, 61.5% were working women and 28.5% were housewives. Analysis of the socio-economic situation revealed that the level of material security was satisfactory in 43.5% of women, average in 41.0%, and good in 15.5%. Obesity (IWT > 30 kg/m2) was observed in 26.0% of women, and excess weight (IWT 25-29.9 kg/m2) in 34.5%, which had a reliable correlation with the development of infertility of endocrine origin ($p<0.01$).

Also, in these women, many additional factors were observed at a high level: menstrual cycle disorders, anovulation, decreased AMH levels, follicular malformation, gynecological and somatic diseases (hypertension, diabetes, obesity, oophoritis). In particular, in the late reproductive age group, endocrine infertility and a decrease in ovarian reserve (AMH 0.8 ± 0.3 ng/ml; $p<0.001$) were noted as the most important pathogenetic factor.

Standard methods of etiotropic and hormonal therapy recommended to women - dopamine agonists in hyperprolactinemia, thyroid replacement therapy in hypothyroidism, clomiphene, metformin, and gonadotropin regimens in PCOS were used. Nevertheless, the overall effectiveness of reproductive function restoration remained low, in particular: pregnancy in women with pituitary dysfunction - 19.5%, hypothyroidism - 17.3%, PCOS - 18.7%, idiopathic conditions - 14.8%.

These data indicate that current treatment standards still do not lead to clinical pregnancy in most patients and are insufficiently effective in fully restoring reproductive function.

Also, the analysis revealed a number of risk factors influencing the development of endocrine infertility: age (OR=3.5; $p<0.001$), inflammatory processes (OR=2.8; $p<0.01$), long-term contraception (OR=2.2; $p<0.05$), diabetes mellitus (OR=2.6; $p<0.01$), and hypertension (OR=2.1; $p<0.05$). Stress, socio-economic problems, and lack of psychological support also increased the risk of developing endocrine infertility by 2.4 times ($p<0.05$).

The scale of cases identified under these conditions, the low effectiveness of treatment, and the high incidence of endocrine infertility indicate the need for a more in-depth study, diagnosis, and improvement of the individual approach to this problem.

Therefore, this study was conducted precisely for the purpose of differentiating forms of infertility of endocrine genesis, their early detection, assessment of risk factors, and the development of personalized treatment strategies. This made it possible to scientifically substantiate effective and modern approaches to restoring reproductive health in these women.

CONCLUSIONS

Among women, the incidence of endocrine infertility was high and amounted to 77%. The main causes of endocrine infertility were ovulatory dysfunction (28%), thyroid dysfunction (26%), and pituitary dysfunction (23%). It was also noted that in these forms of infertility of endocrine genesis, standard treatment methods are not sufficiently effective, that is, infertility persists: the proportion of pregnancies was 19.5%, 17.3%, and 18.7%, respectively, for the types of infertility.

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