

Analyzing the Works about Causes and Factors of Infertility

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ABSTRACT

Infertility is the inability to become pregnant after one year of intercourse without contraception involving a male and female partner. The frequency of the female factor is 62–75%, and that of the male factor is 28–45%. Moreover, impaired reproductive function in both partners is observed in every third infertile couple. primary infertility - the absence of pregnancy in the anamnesis, and secondary infertility - established in the presence of pregnancy in the past. If possible, the onset of pregnancy is characterized by absolute and relative infertility. They say about absolute infertility when the possibility of pregnancy is completely excluded - there is no uterus, ovaries, or there are severe anomalies in the development of the genitals. By relative infertility is meant the preservation of fertility, but the inability to have children in the particular marriage in question (for example, male infertility).

KEYWORDS: *endocrine infertility, female and male factors, infertility, primary infertility, secondary infertility, tuboperitoneal factor*

The World Health Organization (WHO) performed a large multinational study to determine gender distribution and infertility etiologies. In 37% of infertile couples, female infertility was the cause; in 35% of couples, both male and female causes were identified; in 8%, there was male factor infertility.[1] In the same study, the most common identifiable factors of female infertility are as follows:

- Ovulatory disorders - 25%
- Endometriosis - 15%
- Pelvic adhesions - 12%
- Tubal blockage - 11%
- Other tubal/uterine abnormalities - 11%
- Hyperprolactinemia - 7%

One of the components of an infertile marriage is endocrine infertility, which includes all conditions associated with impaired ovulation. Endocrine infertility can be manifested by chronic anovulation syndrome, insufficiency of the second phase of the cycle, luteinization of the unovulated follicle. According to various sources in the structure of female infertility, the endocrine form is from 4 to 40% [2,3,4]. One of the main criteria for endocrine infertility is chronic anovulation, which manifests itself against the background of hormonal abnormalities. The cause of these changes is a violation of folliculogenesis. The levels of prolactin, androgens increase, and the levels of gonadotropins change in different directions, as a result of which the rhythm of the cyclic production of estrogens and progesterone is disrupted. In addition, in chronic anovulation, other factors are also involved in the mechanism of infertility. It has been proven that hormonal imbalance of sex steroids has a negative effect on the properties of cervical mucus, the state of the endometrium, as well as the tone of the fallopian tubes [5,6].

Endocrine infertility mainly depends on the following pathological conditions: hypothalamic-pituitary insufficiency (hypogonadotropic hypogonadism with lesions of the hypothalamus, pituitary gland or hyperprolactinemia); hypothalamic-pituitary dysfunction (normogonadotropic amenorrhea, oligomenorrhea, or NLF, accompanied or not by polycystic ovary syndrome (PCOS)); ovarian failure, unconditioned by a primary violation of the hypothalamic-pituitary regulation; congenital adrenal cortex dysfunction (ACD); hypothyroidism [3].

Infertility due to tuboperitoneal factor (TPF) occupies 40–74% of the structure of female infertility. Tubal-peritoneal infertility is caused by the absence of fallopian tubes, complete obstruction of the fallopian tubes, and the presence of an adhesive process in the small pelvis [3, 7, 8]. The causes of obstruction of the fallopian tubes can be their functional disorders, or organic lesions. Dysfunction of the fallopian tubes leads to [3]: persistent deviations in the sympathoadrenal system, provoked by chronic psychological stress due to infertility; local accumulation of biologically active in chronic inflammatory diseases of the internal genital organs or in the presence of endometrioid heterotopies. The main cause of organic lesions in tuboperitoneal infertility is pelvic inflammatory disease, both acute and chronic [9, 7, 8]. In addition, it has been proven that surgical interventions on the uterus, appendages, intestines, invasive diagnostic and therapeutic procedures (hydrotubation, hysteroscopy with diagnostic curettage, hysterosalpingoscopy), medical abortions, severe forms of external genital endometriosis also predispose to the occurrence of this type of infertility [9, 10].

Infertility caused by the uterine factor develops against the background of pathological conditions of the body of the uterus and the endometrium, such as: hyperplastic processes of the endometrium, adenomyosis, synechiae, fibroids, malformations of the uterus, foreign bodies of the uterus. In patients with hyperplastic processes of the endometrium, only changes in the endometrium are often found, while maintaining ovulation and patency of the fallopian tubes, which is associated with insufficient secretory transformation of the endometrium. In the presence of endometrial polyps, a mechanical factor is also connected, which prevents the onset of pregnancy. According to population data from the American Society for Reproductive Medicine [11], uterine fibroids occur in 5-10% of women with infertility, however, it acts as an independent cause of infertility only in 2-3% of cases. It is believed that in women with uterine myoma, the cause of infertility may be relative progesterone deficiency, which negatively affects the receptivity of the cells of the glandular epithelium in the luteal phase of the cycle [12, 13]. In case of submucous and interstitial uterine myoma with centripetal growth that deforms its cavity, mechanical obstacles to implantation are also created, which explains the more frequent combination

of infertility with precisely this location of the tumor [3, 12, 13]. Cervical factors of infertility include anatomical changes in the cervix (congenital anomalies or deformities after mechanical stress), changes in the mucous membrane of the cervical canal, changes in the cervical mucus of an infectious origin, as well as of an immunological nature.

Male infertility occupies a significant part in the structure of infertile marriage and accounts for 40-65% [3, 14, 15]. Moreover, recently there has been a tendency to an increase in the share of the male factor in the structure of infertility [16]. The high prevalence of male infertility is due to an increase in the incidence of inflammatory diseases of the reproductive organs, the influence of harmful environmental factors, stress, uncontrolled intake of drugs, abuse of nicotine and alcohol [17]. From an etiological point of view, in male infertility, there are: secretory infertility associated with insufficient testicular tissue; excretory infertility associated with impaired communication between different parts of the vas deferens; immune infertility and concomitant [18].

Other forms of infertility include the presence of endometriosis in the patient. Among women suffering from infertility, the incidence of endometriosis reaches 20-48% [3]. Against the background of the presence of endometrioid foci, the patency of the fallopian tubes becomes difficult, an adhesive process occurs in the small pelvis, the balance of female sex steroids is disturbed, immunological reactions are triggered, causing inhibition of the process of implantation of the blastocyst into the endometrium or damage to spermatozoa by activated macrophages. Infertility due to endometriosis is considered one of the most difficult to overcome [19].

Conclusion

Infertility is a condition affecting one fifth to one sixth of couples at reproductive age. Investigating the cause of infertility necessitates a study of both partners, since 40% of all infertile couples exhibit a combination of causes. Ovulatory factor needs an exhaustive interrogation, physical examination, ovulation detection tests and hormone profile for a complete evaluation.

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