FEMALE INFERTILITY

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Abstract. If a woman has never become pregnant despite regular unprotected sexual intercourse, she has primary infertility. If she has had at least one pregnancy, regardless of how it ended (childbirth, abortion, miscarriage, ectopic pregnancy), subsequent infertility is considered secondary. In their records, doctors often use Roman numerals to indicate these types of infertility: infertility I - primary, infertility II - secondary. Absolute female infertility means that the possibility of becoming pregnant naturally is completely excluded. This situation may arise, in particular, as a result of removal or congenital absence of the uterus, fallopian tubes or ovaries. Let us now move on to a more detailed account of the most common causes or forms of infertility.

Keywords: *infertility, follicle, uterus, ART.*

Endocrine infertility

The frequency of this form of infertility ranges from 4 to 40%. Endocrine infertility is infertility characterized by a violation of the ovulation process. The absence of ovulation - anovulation (Greek a, an - prefix of negation) - is one of the most common causes of endocrine infertility. It manifests itself in uterine bleeding, disruption of the regularity of the menstrual cycle up to the complete absence of menstruation (the so-called amenorrhea).

In addition to the disruption of the processes of follicle maturation and ovulation, the cause of infertility can be the insufficiency of the corpus luteum function or, as this condition is also called, the insufficiency of the luteal phase of the cycle (LPC). The frequency of LPC among the causes of infertility is 12.5-25.2%. As a result of insufficient synthesis of progesterone by the corpus luteum, the function of the fallopian tubes changes, implantation is disrupted, which manifests itself in infertility or spontaneous miscarriages in the first three months of pregnancy, the so-called first trimester of pregnancy.

Luteinization of unovulated follicle syndrome (LUF) is a pathology in which the follicle grows, reaches a mature state, but ovulation does not occur, and the grown follicle turns into a false corpus luteum (luteinizes). The main clinical symptom of this syndrome is infertility.

The causes of the above-described ovarian dysfunctions can be:

- physical and mental stress, trauma, neuroinfection (infection affecting the nervous system), neuroses and other similar factors;
- dysfunction of other endocrine glands (pituitary gland, adrenal glands, thyroid gland);
- inflammatory diseases of the uterine appendages;
- severe general diseases.

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Tubal and peritoneal (tubal-peritoneal) infertility

Among the causes of female infertility, the share of tubal and peritoneal infertility reaches 70%. The work of the fallopian tubes is regulated quite complexly. The task of this regulation is to ensure the reception and transport of sperm and egg, nutrition and transport of the embryo. Too fast or too slow movement of the embryo along the fallopian tube can affect its further development in one way or another.

It is customary to distinguish 3 main forms of tubal infertility:

- dysfunction of the fallopian tubes;
- organic damage to the fallopian tubes;
- absence of fallopian tubes.

Functional disorders include disorders of the contractile ability of the fallopian tubes: increased and decreased tone of the muscles of the fallopian tubes, discoordination (lack of coordination) of contractions, as a result of which a directed flow of the contents of the tube is not formed and thus the transport function is upset.

Numerous reasons lead to dysfunction of the fallopian tubes, in particular, inflammatory diseases, impaired synthesis of sex hormones and even chronic psychological stress due to infertility.

Organic damage to the fallopian tubes is obstruction, or occlusion of the fallopian tubes. Most often, the cause of obstruction is adhesions, which can form both inside the fallopian tubes in various sections, and around the tubes, as well as between the fimbriae as a result of inflammation.

Inflammation of the fallopian tubes can occur as a result of sexually transmitted infections, such as chlamydia, gonorrhea, etc., as well as as a result of abortions, postpartum complications, appendicitis, peritonitis. Endometriosis, which we will discuss below, can also be the cause of adhesions.

Due to severe inflammation or ectopic pregnancy, the fallopian tubes can be removed, and then absolute tubal infertility occurs, due to the absence of fallopian tubes.

Peritoneal infertility is spoken of in cases where adhesions occur in the abdominal cavity around the fallopian tubes, between the fallopian tubes and ovaries, between the uterus, appendages, intestines or other abdominal organs.

In any of the variants of tubal or peritoneal infertility, there is a mechanical obstacle that prevents sperm and eggs from entering the fallopian tube. The problem is complicated by the fact that inflammation not only causes adhesions, but also affects the wall of the fallopian tube itself. The epithelium of the tube loses villi, the wall of the tube thickens, becomes dense, and loses elasticity. This happens because as a result of

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inflammation, muscle tissue is replaced by connective tissue, i.e. tissue sclerosis occurs: the tube loses its functional abilities.

If a block occurs at both ends of the tube, then the inflammatory effusion (fluid secreted by the tissues during inflammation) accumulates in the fallopian tube, it turns into a kind of inflammatory "bag" - sactosalpinx (from the Greek saktos - "full" + salpinx - "pipe"). If the contents of the sactosalpinx is inflammatory exudate (fluid), then this version of sactosalpinx is called hydrosalpinx.

Sactosalpinxes lead to irreversible loss of the functional abilities of the fallopian tubes. Even surgical restoration of fallopian tube patency does not lead to restoration of their reproductive functions. In addition, sactosalpinxes are collectors and sources of infection.

Most often, a combination of tubal and peritoneal factors occurs. In these cases, doctors diagnose "tubal-peritoneal infertility".

Cervical factor, uterine pathology

As mentioned earlier, spermatozoa enter the uterine cavity through the cervical canal (cervical canal), therefore changes in the condition of the cervix and the mucous plug of the cervical canal can be factors of infertility. The root causes of such disorders include: genital tract infections, endocrine pathology, deformation of the cervix. The latter can be congenital or acquired as a result of trauma during abortions or childbirth. Often, after trauma, cicatricial or adhesive obstruction of the cervical canal develops. In addition, the mucus of the cervical canal can have too high a viscosity, it can contain antisperm antibodies that block the mobility of spermatozoa.

The implantation of the embryo and the normal development of pregnancy depend on the condition of the uterine cavity and endometrium. Inflammatory diseases of the genital organs can lead to the development of chronic inflammation not only in the fallopian tubes, but also in the endometrium. Inflammation of the endometrium is called endometritis. As a result of endometritis, adhesions may form between the walls of the uterus. The uterine cavity is deformed, partially, and sometimes completely, closed (obliterated). Chronic inflammation leads to a decrease in the number of sensitive nerve endings - receptors (Latin recipio - "to accept"), which perceive changes in the concentration of estrogens and progesterone. For this reason, the endometrium stops responding to changes regulating its function, the "orders" of the ovary, and therefore the "commands" of the hypothalamic-pituitary system cannot be carried out, which leads to a violation of physiological changes in the endometrium. The result is a violation of the menstrual cycle and infertility. Among the congenital causes of

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infertility, it is necessary to point out the underdevelopment (infantilism) of the uterus and fallopian tubes and developmental defects, which are very diverse.

Endometriosis

Endometriosis is a disease that occurs in women of reproductive age, i.e. during the period of their ability to bear children. It manifests itself as the growth of tissue similar to the endometrium outside the inner surface of the uterus.

There are no exact data on the prevalence of endometriosis to date. However, it is known that endometriosis occurs with a frequency of up to 33% among infertile women and with a frequency of up to 21% among women who seek specialist advice with complaints of lower abdominal pain. Endometriosis is diagnosed in 7-10% of cases during examination for pelvic tumors. The diagnosis of "endometriosis" accounts for 23 to 50% of all gynecological diagnoses made during laparoscopy (examination of the abdominal cavity using fiber-optic equipment). This pathology ranks third among all gynecological diseases after inflammatory diseases and uterine myoma (fibroids).

The causes of endometriosis are not fully known. There are a number of theories about its origin, but none of them can be applied to all cases of this disease.

Predisposing factors to endometriosis include early onset of menstruation, prolonged and heavy menstrual bleeding, menstrual irregularities, inflammatory diseases of the genitals, abortions, postponing childbirth due to life circumstances and refusal to breastfeed a child. Bad habits (smoking, alcohol) also increase the risk of developing endometriosis.

Since the tissue of the endometriosis focus is similar in structure to the endometrium, it is to a certain extent subject to the same cyclical transformations that the normal endometrium undergoes during the menstrual cycle. The tissue in the foci of endometriosis bleeds and is rejected, grows - proliferates and undergoes other changes characteristic of the endometrium. These changes occur under the influence of the same ovarian hormones that affect the mucous membrane of the uterine cavity. Depending on the localization of the foci, endometriosis is genital and extragenital. Genital endometriosis is more common, and in these cases, the female genital organs are affected (the peritoneum of the small pelvis, uterine ligaments, ovaries, fallopian tubes, uterine walls and cervix). If the foci of endometriosis are located outside the genital area, then such endometriosis is called extragenital. Most often, endometriosis affects the bladder, ureters, intestines, less often - the lungs, bronchi, liver. The main symptoms of endometriosis are pain, menstrual irregularities, infertility. Endometriosis is characterized by a connection between pain and scanty bloody discharge and

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menstruation; moreover, pain is the main and most painful symptom of endometriosis. It occurs in 60-80% of patients. Usually, such pain occurs before or during menstruation. This symptom is called algomenorrhea (Greek algos - "pain", menstrual bleeding). The pain can be so strong and excruciating that the woman loses her ability to work during these days and must be on sick leave. Often, they are characterized by constant pain in the lower abdomen, in the lumbar and sacral regions, which intensifies during menstruation. Dyspareunia (Greek dys - "separation, division" + pareunos - "sleeping with someone in the same bed") - the impossibility of sexual relations due to pain during intercourse; a symptom characteristic of the localization of endometriosis foci behind the uterus, observed in 25-40% of patients.

Pain during urination and defecation occurs when the walls of the bladder and rectum are affected by endometriosis.

The severity of the pain syndrome is not associated with the degree of prevalence (stage) of endometriosis. Pain may be absent in severe stages of endometriosis and, conversely, be extremely intense in the presence of single, small foci of endometriosis.

When the walls of the uterus, cervix and vagina are affected by endometriosis, menstrual irregularities manifest themselves in the form of spotting bloody discharge before and/or after menstruation. The appearance of blood in the urine or feces, associated in time with menstruation, may indicate endometriosis of the bladder and intestines. Hemoptysis, attacks of bronchial asthma can be symptoms of endometriosis of the bronchi or lungs. Due to the disruption of the hormonal function of the ovaries, the menstrual cycle with endometriosis can be shortened or become irregular with long delays.

If the foci of endometriosis are localized on the fallopian tubes, ovaries, on the peritoneum of the small pelvis, bloody discharge from these foci gets into the abdominal cavity, causes an inflammatory reaction of the tissues, which leads to the formation of adhesions and obstruction of the fallopian tubes. Endometriosis is often (in 17-27% of cases) accompanied by a violation of the maturation of follicles, anovulation and insufficiency of the corpus luteum.

Even with the so-called minor forms of endometriosis, when laparoscopy finds only isolated small foci of endometriosis in the abdominal cavity, changes are found in the endometrium that can cause a violation of embryo implantation.

With endometriosis, immunity is impaired, the concentration of substances that suppress sperm motility and block fertilization of the egg increases.

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Thus, infertility due to endometriosis is caused by two reasons: adhesions and an environment unfavorable for fertilization. Summarizing the above, we can conclude that infertility caused by endometriosis can often be overcome only with the help of IVF.

Immunological infertility

Immunological infertility includes cases when the body of a woman or man produces specific proteins (antibodies) against sperm. These antibodies suppress the motility of sperm and inhibit their ability to fertilize an egg. Antisperm antibodies can be in a woman's blood, in cervical mucus, in the secretion of the uterus and fallopian tubes. These are the cases most often meant when talking about infertility caused by incompatibility of spouses.

In cases where a man's body itself produces antisperm antibodies, they are called autoimmune (Greek auto - "by itself"). Autoimmune antibodies attach directly to spermatozoa. Because of this, they begin to stick together and lose their ability to move.

Recently, publications have appeared on antibodies to chorionic gonadotropin (a hormone produced by the fertilized egg and which stimulates the secretion of progesterone by the corpus luteum) as a cause of infertility and failures in its treatment. However, in order to give a final assessment of the reported facts, additional research is needed.

The appearance of antibodies is considered by specialists as a particular manifestation of general disorders in the immune system. Immunological disorders can be combined with any other form of infertility, be the cause of miscarriage of pregnancy resulting from treatment, therefore, studies of the state of the immune system are included in the comprehensive examination of infertile couples.

CONCLUSION. The vast majority of women suffering from infertility have various disorders in the psycho-emotional sphere: a feeling of inferiority, loneliness, attacks of hysterical fits. The complex of these symptoms is the so-called "pregnancy expectation syndrome". As strange as it may sound, such conditions are often not so much the consequences of infertility as its cause. However, one can speak more cautiously: they contribute to the development of infertility. It is known that pregnancy often occurs at the very moment when a woman decides to stop treatment and thereby subconsciously stops being nervous, effectively burying the hope of becoming a mother. In specialized literature, you can find publications devoted to pregnancies and childbirth in previously infertile women after adopting a child. Such stories become a reason to turn to God's providence. Your own child is given for righteousness and good

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deeds. "Trust in God, but do not be lazy yourself" - this folk wisdom has a direct relation to the problem under discussion. We recommend that all patients of ART programs undergo a consultation with a psychologist. Enormous world and our own experience testify that the help of this specialist shortens and facilitates the path to the desired pregnancy.

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