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Study of Possible Causes of Miscarriage and Their Solution

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Abstract: Today, there are 5 main reasons for early pregnancy termination. These are genetic, anatomical, infectious, endocrine and immunological (auto- and alloimmune) factors. In addition, there is idiopathic termination of pregnancy, which develops when the immediate cause of miscarriage cannot be established [11]. In case of SPV up to 8 weeks, anembryony is detected in 1/3 of observations and frozen (non-developing) pregnancy in 2/3 of cases [8]. In the overwhelming majority of cases, the cause of non-developing pregnancy is chromosomal abnormalities or the action of teratogens. Chromosomal abnormalities Chromosomal abnormalities are the cause of about 50% of all miscarriages. Most of them are represented by aneuploidies. It has been proven that the shorter the pregnancy period at which SPV occurs, the higher the probability that the cause of the miscarriage is chromosomal pathology. The frequency of karyotype abnormalities in the fetus in case of anembryony reaches 90%, in case of termination of pregnancy at 8-11 weeks - 50%, and in case of SPV at 16 to 19 weeks does not exceed 30% [8]. The most common types of chromosomal abnormalities detected during the karyotype examination of aborted fetuses are autosomal trisomies (52%), monosomy of the X chromosome (19%) and polyploidies (22%).

Keywords: *early miscarriage, causes of miscarriage, clinical symptoms of miscarriage.*

Introduction

Most chromosomal abnormalities in the embryo occur de novo. Genetic abnormalities are not examined in routine cytogenetic analysis, and therefore their frequency and prevalence have not been established. Congenital anomalies are also factors leading to early termination of pregnancy. Congenital anomalies or malformations can be caused by genetic or chromosomal disorders, or formed under the influence of external factors and teratogens.

Anatomical causes of early miscarriage include congenital or acquired uterine anomalies (intrauterine septum, bicornuate uterus, submucous leiomyoma, intrauterine adhesions) [9]. In studies of infectious agents, the role of the newly emerging acute inflammatory process in the development of early miscarriage, caused mainly by viruses (Listeria monocytogenes, Toxoplasma gondii, parvovirus B19, rubella virus, herpes simplex virus, cytomegalovirus, lymphocytic choriomeningitis virus) and leading to the formation of primary placental insufficiency, fetal malformations and termination of pregnancy has been proven [21].

Endocrinopathies (thyroid dysfunction, diabetes mellitus, polycystic ovary syndrome) can also contribute to the development of early miscarriage due to the formation of an incomplete luteal phase and insufficient decidual transformation of the endometrium [3]. Immunological causes of early miscarriage are mainly associated with the development of thrombophilic complications and

hypercoagulability due to congenital or acquired thrombophilia and immune system disorders (e.g., systemic lupus erythematosus, antiphospholipid syndrome), which lead to immunological rejection of the embryo or fetus or the formation of placental insufficiency. Idiopathic termination of pregnancy is early miscarriage of a structurally normal embryo/fetus in apparently healthy women. As noted above, genetic abnormalities are not detected in standard tests and are apparently one of the causes of unexplained pregnancy losses.

Clinical manifestations and diagnostics of early miscarriage The main clinical manifestations of termination of pregnancy are pain syndrome of varying severity, bloody discharge from the genital tract, the nature of which depends on the gestational age and the reasons for termination of pregnancy, and hypertonicity of the myometrium. Traditionally, several stages of spontaneous termination of pregnancy in the early stages are distinguished. Threatened abortion is characterized by minor or moderate nagging pain in the lower abdomen and in the sacral region, scanty bloody discharge. In this case, the size of the uterus corresponds to the gestational age, the tone of the uterus is increased, the cervix is unchanged, the external os is closed. Bleeding is often painless, but may accompany From 90 to 96% of pregnancies with minor bloody discharge at 7–11 weeks with normal cardiac activity in the uterus persist and are not accompanied by an unfavorable prognosis for the subsequent course of pregnancy [20]. A systematic review revealed a small association (odds ratio ≤ 2) between the presence of bleeding in the first trimester of pregnancy and the development of adverse outcomes later (miscarriage, preterm labor, premature rupture of membranes, fetal growth restriction, hemorrhage during labor) [24]. The prognosis worsens when bleeding is severe or develops in the second trimester of pregnancy [26].

Diagnosis

The main clinical sign of spontaneous abortion is the presence of vaginal bleeding. Bleeding in the first trimester can be light, heavy, intermittent or constant, painless or painful. It is necessary to consider four main causes of bleeding in the early stages of pregnancy [2]:

1. physiological bleeding (accompanies the implantation process);
2. ectopic pregnancy;
3. threat of early miscarriage or PWS that has begun;
4. pathology of the cervix, vagina or uterus.

To establish the correct diagnosis, it is necessary to examine the patient, perform an ultrasound examination and, if indicated, assess the level of chorionic gonadotropin in the blood.

The final diagnosis of a non-developing pregnancy or early miscarriage can be made on the basis of the following criteria:

1. absence of cardiac activity in an embryo with a crown-rump length (CRL) of more than 5 mm [2];
2. absence of a yolk sac with an average diameter of the ovum of 13 mm;
3. No embryo visualization at 6 weeks of pregnancy with an average gestational sac diameter of more than 25 mm (transabdominal measurement) or more than 18 mm (transvaginal measurement).

If the ultrasound criteria described above are detected, a repeat examination should be performed in 4–7 days. The following ultrasound findings are suspicious in terms of the prospects for developing pregnancy complications [20]:

1. Abnormal yolk sac – premature reduction (up to 10 weeks) or persistence (more than 11 weeks).
2. Low fetal heart rate: with a heart rate of 60 to 80 beats per minute in a period of 6 to 8 weeks – the probability of early miscarriage is 100%. A heart rate of less than 100 beats per minute in a period of up to 8 weeks is associated with a high risk of PWS. A repeat ultrasound should be performed in 5–7 days.
3. Small size of the ovum relative to the size of the embryo (the difference between the average diameter of the ovum and the CRL is less than 5 mm) or the increase in the size of the ovum is less than 1 mm per day. The risk of developing early miscarriage in this situation reaches 78%. 4. Retrochorial

hematoma - if its size exceeds 25% of the area of the ovum, the risk of early miscarriage increases by 2 times, the risk of premature placental abruption increases by 5.7 times, and the risk of premature birth by 1.65 times. It should be taken into account that the presence of a retrochorial hematoma is not an indicator of thrombophilia.

If a retrochorial hematoma is detected, expectant tactics with ultrasound monitoring after 1-2 weeks are indicated. The presence of a retrochorial hematoma is not an indication for testing for hereditary thrombophilia.

Medical tactics

When diagnosing a threatening or incipient early miscarriage, provided that the embryo with a heartbeat is visualized, hormonal therapy in combination with antispasmodic and hemostatic therapy is indicated. In the case of a non-developing pregnancy or incomplete spontaneous abortion, surgical or medical curettage is indicated. The thickness of the endometrium should not exceed 15 mm. according to ultrasound data [15]. During the next 2 weeks (depending on the gestational age), bloody discharge from the genital tract may persist.

After instrumental curettage, bloody discharge usually persists for 5-7 days. On the day of curettage, an ectopic IUD can be inserted, and combined oral contraceptives (COCs) can be started. If a woman has Rh (-) blood and if pregnancy is terminated between 8 and 12 weeks, administration of anti-Rhesus immunoglobulin at a dose of 50–100 mcg is indicated.

Planning of the next pregnancy is possible in 2–3 months, however, an earlier onset of pregnancy does not additionally increase the risk of recurrent early miscarriage [6].

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