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Development and Application of Methods for Determining Morphological Changes in the Umbilical Cord during Pregnancy Complicated by Fetoplacental Insufficiency

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Abstract: The health of the unborn baby largely depends on how the placenta works, because it is this organ that provides it with the necessary nutrition and oxygen. During pregnancy, the mother and the fetus are so closely connected through the placenta that a complex complex called the "mother-placenta-fetus system" is formed. The placenta is what connects the mother to the child. This temporary organ is formed during pregnancy. With its villi, it is connected to the wall of the uterus on one side, and on the other side to the fetus through the umbilical cord.

Keywords: Fetoplacental insufficiency (FPI), Fetoplacental insufficiency (FPI), Fetoplacental insufficiency (FPI).

Fetoplacental insufficiency (FPI)

Gas exchange occurs through the placenta: oxygen enters the fetus from the mother's blood, and carbon dioxide is transported in the opposite direction. In addition, nutrients necessary for its growth and development enter the fetus through the placenta. Therefore, doctors warn that many harmful substances - alcohol, nicotine, drugs, many medicines, as well as viruses can easily enter the placenta and have a harmful effect on the fetus.

The placenta also protects the fetus immunologically. It transfers antibodies from the mother needed to fight infections and is an endocrine organ that synthesizes hormones necessary for pregnancy, fetal growth and development. If for some reason the blood supply of the placenta and then the blood supply of the fetus is disturbed, fetoplacental insufficiency (FPI) develops - certain functions of the placenta decrease, the necessary exchange between organisms can't hold. mother and fetus.

Inadequate placental function can lead to:

during intrauterine development - to developmental delay, fetal hypoxia;

during childbirth - to fetal hypoxia, aspiration of amniotic fluid by the fetus;

in newborns after birth - to the development of pneumonia and neurological diseases.

The occurrence of placental insufficiency syndrome is based on many different factors, which can be divided into 5 main groups:

1. Social, domestic and natural factors:

exposure to unfavorable external conditions (radiation, electromagnetic radiation, exhaust gases, etc.) can manifest itself even before pregnancy, because these factors affect human germ cells. And the usefulness of the placenta also depends on their usefulness;

poor nutrition, stress, heavy physical activity, poor occupational hygiene, hazardous working conditions, some household chemicals;

smoking, drinking alcohol, drug addiction, abuse of strong tea and coffee,

2. Features of pregnancy:

gestosis is a complication of pregnancy with impaired functions of vital organs;

the threat of pregnancy;

postpartum pregnancy;

multiple pregnancies;

placenta previa (place that blocks the exit of the placenta from the uterus);

genitourinary infections;

antiphospholipid syndrome (AFLS) - disorders in the blood clotting system as a result of the formation of specific antibodies.

3. Current or past various genital diseases:

tumors

menstrual disorder

a large number of births and abortions

infectious diseases of the genitourinary system

repeated abortion

intrauterine fetal death or birth of low birth weight babies.

4. Diseases of internal organs:

hypertension

diabetes

cardiovascular diseases

lung diseases

blood diseases.

5. Congenital or hereditary pathology:

This group includes genital malformations and features of the woman's constitution (physics), as well as the age of the pregnant woman (very young or late).

Often, several etiological factors are involved in the development of this pathology, one of which can be the leader.

There are primary and secondary fetoplacental insufficiency.

Primary FPN develops up to 16 weeks when the placenta is formed and is characterized by disruption of the structure and attachment of the placenta. Primary placental insufficiency often occurs in women with severe obstetric history (infertility, hormonal dysfunction of the ovaries, abortion, changes in the uterine mucosa and muscle mucosa). Harmful environmental factors and various diseases of a pregnant woman can also lead to its development.

Secondary FPN develops after 16 weeks of pregnancy, when the placenta has already formed and is a source of nutrition for the fetus. The causes of secondary changes in the placenta are complications of pregnancy: gestosis, threatened abortion, separation of the placenta, inflammatory changes in the placenta.

FPN can be acute or chronic. An example of acute placental insufficiency is placental abruption. In this case, the vessels through which oxygen and nutrients flow from the mother to the child through the placenta are damaged. The larger the separated area, the worse the prognosis, as fetal death can occur quickly as a result. The chronic form of placental insufficiency is more common than the acute form (about every third pregnant woman). It develops gradually, as a result of which the fetus has time to adapt to such a stressful situation. In this case, the prognosis is more favorable.

If changes in uteroplacental and feto-placental blood flow are insignificant, then there may be no delay in fetal development or it may not be very obvious. According to some data, about 70% of pregnant women are diagnosed with fetal growth retardation syndrome, which is a compensated form of placental insufficiency.

If complications leading to placental insufficiency cannot be treated or are not treated at all, the ability of the placenta to compensate for the disturbances that occur in it begins to decrease and subcompensated placental insufficiency develops. The stage of exhaustion of the defense mechanisms begins, which leads to a delay in the development of the fetus in various degrees of severity. The development of pathological changes leads to decompensation of placental insufficiency, which is manifested by severe intrauterine growth of the fetus due to a sharp slowdown in growth until death. Mothers with placental insufficiency during pregnancy can give birth to completely viable and healthy children (it depends on the severity of the pathology and treatment). And yet, they are at risk for fetal development and diseases during the newborn period.

Possible complications include:

improper nutrition (delay in fetal development);

fetal hypoxia during childbirth, later manifested by cerebrovascular accidents in newborns;

developmental anomalies (disorders) - hip dysplasia, torticollis, heart defects, etc.;

respiratory diseases, pneumonia;

frequent colds;

intestinal diseases;

neurological diseases.

The severity of the condition of the newborn, as well as the development of hypoxia, the fetus can cause premature birth, or sometimes due to the increase in hypoxia and, accordingly, the level of severity, it is necessary to artificially terminate the pregnancy prematurely may be due to fit. from the fetal position.

Diagnostics

Ultrasound, Doppler and cardiotocography play an important role in the diagnosis of placental insufficiency. The ultrasound method allows monitoring the condition of the placenta (location, thickness, size, level of maturity, the presence of pathological changes in it), as well as the development of the fetus (measurement of its size, assessment of growth rates). to gestational age, identify malformations).

Doppler is a research method that allows assessing the blood flow in various vessels of the mother and fetus using a special ultrasound sensor. Doppler examination includes the assessment of blood flow in the veins of the mother, fetus and placenta, which not only improves the diagnosis and more accurately determines the level of disorders, but also allows choosing the right and, most importantly, rational therapy in time.

Cardiotocography (CTG) is a study of fetal heart activity using a special device. Cardiotocography makes it possible to indirectly assess the state of the fetus and assess the severity of the detected disorders.

Diagnosis of fetoplacental insufficiency is aimed at identifying signs of hypoxia and fetal development delay. Examination of pregnant women with this pathology should be thorough and comprehensive, because the treatment of placental insufficiency depends on the causes that caused it. It is important to diagnose pregnancy complications as early as possible for their prevention and effective treatment. Therefore, it is very important to visit the antenatal clinic doctor regularly.

Very attentive to pregnant mothers and babies. Therefore, we recommend patients to undergo regular check-ups in our clinic in order to prevent pathologies or, if they exist, to maintain the health of the woman and the unborn child.

In order to assess the growth and condition of the fetus, at each appointment, the doctor measures the height of the uterine fundus and the pregnant woman's abdominal circumference, as well as listens to the heartbeat of the fetus. By the way, the uterus enlarges, and its condition can be assessed by the nature of the fetal heartbeat. Over time, determination of the level of hormones and pregnancy-specific proteins in the blood, as well as a biochemical study of the blood of a pregnant woman, can help quickly identify abnormalities in pregnancy and fetal development.

We have everything you need to conduct analyzes and research that will allow you to get the most accurate information about the condition of the fetus and the mother. This means that we and our patients are aware of even the smallest changes. And it helps them to respond in time.

Treatment

Treatment and prevention of fetoplacental insufficiency is aimed at improving uteroplacental and fetoplacental blood circulation. The main way to reduce the frequency of placental insufficiency and prevent the development of its severe forms is to diagnose and prevent this complication as early as possible, which consists in timely identification and implementation of risk groups for the development of placental insufficiency in pregnant women. preventive measures.

A very important point in the prevention of placental insufficiency is the desire of the woman herself to give birth to a healthy child. And if you do not have time to mentally and physically prepare for pregnancy, then you need to understand the importance of everything that happened as soon as possible.

When you decide to continue the pregnancy, think: what kind of child do you want? Smart and healthy? Then you need a good doctor to help you stay healthy throughout your pregnancy. Both yours and your unborn child. Such doctors work in our medical center.

We also recommend forgetting bad habits (at least during childbirth and feeding), balancing your diet, and adjusting your sleeping and waking up routines. Walk more in the fresh air: the oxygen you breathe also needs your child.

And in general, the main thing to remember: everything you do, what you eat, what you breathe, all this affects the condition of your unborn baby.

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