

IMPORTANCE OF DOPPLER ULTRASOUND IN PREGNANCY

Azimova Karomatposhsho Ahmadzoda

Assistant of the Department of Obesterics and
Gynecology of Ferghana Public Health Medical Institute

Annotation

Doppler ultrasound, also known as color ultrasound, is the leading ultrasound technique widely used today. Doppler ultrasound technology uses continuous waves to detect the direction and velocity of flow in the body. Therefore, fetal Doppler ultrasound in obstetrics has the effect of measuring the flow of blood vessels, examining the fetal heart and some functions that other fetal ultrasound techniques cannot perform. Specifically, Doppler ultrasound also helps measure the impedance index of the umbilical artery, middle cerebral artery in the fetus.

Key words: doppler ultrasound, placenta, umbilical artery, middle cerebral artery.

Doppler ultrasound uses high-frequency waves that are not found in nature, the diagnostic value is very high. From each received frequency signal, the machine will synthesize and display it on the screen in the form of different colors or spectral waves, sometimes even an audible signal. Similar to all other types of ultrasound, fetal Doppler ultrasound is considered safe, painless and does not endanger the health of the fetus if performed as prescribed by a doctor for 3 months. late pregnancy. However, there are still some cases where the doctor will order a Doppler ultrasound earlier and more often. If fetal Doppler ultrasound is required at an early stage, it should be performed with the lowest energy level (thermal index TI 1.0) and the shortest exposure time (no longer than 5-10 minutes and not lasting > 60 minutes). One of the main aims of routine antenatal care is to identify babies who are not thriving in the womb. It is possible that medical interventions might improve outcomes for these babies, if they can be identified. Doppler ultrasound uses sound waves to detect the movement of blood in vessels. It is used in pregnancy to study blood circulation in the baby, uterus and placenta. Using it in high-risk pregnancies, where there is concern about the baby's condition, shows benefits. In general, asking the mother to perform fetal Doppler ultrasound in obstetrics will help:

Measure blood flow in each part of the fetal body (umbilical cord, brain and fetal heart) to determine the ability to absorb get enough oxygen and nutrients the baby needs; Observe and evaluate the status of blood flow through the arteries -



veins to diagnose the normal condition, as well as the healthy development of the fetus; Screening for some pathologies (eg congenital heart) and birth defects of the fetus in order to provide the earliest remedial measures; Monitor and detect abnormal signs in the fetus, if any, to prevent low birth weight babies; Assess the appropriate time to take the baby out. Depending on the mother's condition and suspicions about pregnancy, the doctor will specify the specific area and part that needs Doppler ultrasound. However, in cases where both mother and child are healthy, this ultrasound technique should not be abused. Uterine artery Doppler ultrasound The uterine artery plays a very important role, responsible for conducting blood to the mother's uterus to provide oxygen and nutrients to the healthy developing fetus in the womb. Therefore, Doppler ultrasound of the uterine artery will help the doctor check that the placenta is having an adequate blood supply. Because if the placenta does not receive the necessary amount of blood, the fetus cannot receive enough oxygen and nutrients through the umbilical cord. Doppler ultrasound of the uterine artery can be performed with transabdominal or vaginal transvaginal transducers, and is only applicable in women with normal uterine anatomy (no congenital anomalies in the uterus). uterus)

Umbilical artery Doppler ultrasound The umbilical cord is the bridge to supply oxygen and nutrients to the fetus. To check the flow of blood from the placenta to the umbilicus, doctors may use the umbilical artery Doppler ultrasound technique. Commonly indicated cases of umbilical artery Doppler ultrasound include: Fetal growth retardation (small gestational age difference); The fetus is affected by incompatible Rh antibodies; Women who are pregnant with multiples (identical twins), have a BMI that is too high / low, or have diseases such as high blood pressure, diabetes.. Have a history of low birth weight babies, late miscarriages or babies death shortly after birth. Early-onset fetal growth retardation (before 34 weeks) will show signs of placental dysfunction such as increased umbilical artery resistance and decreased middle cerebral artery flow resistance. Conversely, late-onset fetal growth retardation (after 34 weeks) will present with signs of acidosis or increased risk of fetal death, as demonstrated by loss/reversal of umbilical artery diastolic waves and Doppler abnormalities. venous tube.

In summary, umbilical artery Doppler is a standard parameter to identify early-onset delayed fetal growth (before 34 weeks), but not a valuable parameter for detecting late-onset cases after 34 weeks. Most late-onset slow-growth fetuses with poor outcomes have normal umbilical artery Doppler.



Middle cerebral artery and ductus venosus In the case of abnormal findings after performing Doppler ultrasound of the umbilical artery (increased impedance, wave loss or diastolic wave reversal), the doctor may prescribe Continue to investigate blood flow by pulsed Doppler ultrasound of the veins or the middle cerebral artery. In particular, the ductus venosus is a source of nutritious oxygen-rich blood to the brain and heart of the fetus. When the fetus is severely hypoxic or acidosis occurs, redistribution of oxygen-rich blood from the umbilical vein to the ductus venosus occurs. Fetal doppler ultrasound helps to examine, diagnose and evaluate the health of the fetus. In particular, the function of checking necessary nutrients and oxygen is something that conventional fetal ultrasound cannot do. In general, pregnant women who are in the last 3 months of pregnancy can conduct fetal Doppler ultrasound during regular antenatal check-ups at the request of the doctor, to ensure that the baby is developing in the best way.

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