Journal of Medical Practice and Review 6:5 (2022)
Everant.in/index.php/jmpr

Journal of Medical Practice and Review
Available online at http://jmpr.info/index.php/jmpr/index

The importance of fetal sex determination

Raziyeh Behzadmehr

Department Obstetrics and Gynecology, Maternal and Fetal Health Research Center, Zabol University of Medical Sciences, Zabol, Iran

ARTICLE INFO

Corresponding Author:
Maryam Nakhaee Moghadam

Keywords:- fetal ,sex , determination

ABSTRACT

The determination of fetal gender is done for various reasons, including medical reasons such as the diagnosis of sexually transmitted diseases or social causes such as purchases for each gender and the change in the place of residence of the parents. As some of the embryonic diseases are sexually related, the early detection of fetal sex allows parents to make appropriate genetic counselling. If one of the parents or both of them has a definite disease, they can have an early warning about the disease in their fetus, and thus they will be able to decide early on for that fetus. Clinical value is the determination of fetal sex in deciding whether or not to perform prenatal invasive tests (amniocentesis and patchy sampling), because invasive tests are required only in pregnancies that are fetal males. The studies that have been done so far confirm that the best results are obtained in diagnosing fetal sex after 12 weeks of gestation, as a result, invasive tests for the diagnosis of sexually transmitted diseases should only be performed after 12 weeks, because before that the diagnosis of fetal sex is unreliable.

Introduction:

The determination of fetal gender is done for various reasons, including medical reasons such as the diagnosis of sexually transmitted diseases or social causes such as purchases for each gender and the change in the place of residence of the parents (1). As some of the embryonic diseases are sexually related, the early detection of fetal sex allows parents to make appropriate genetic counselling. If one of the parents or both of them has a definite disease, they can have an early warning about the disease in their fetus, and thus they will be able to decide early on for that fetus. Clinical value is the determination of fetal sex in deciding whether or not to perform prenatal invasive tests (amniocentesis and patchy sampling), because invasive tests are required only in pregnancies that are fetal males. The studies that have been done so far confirm that the best results are obtained in diagnosing fetal sex after 12 weeks of gestation, as a result, invasive tests for the diagnosis of sexually transmitted diseases should only be performed after 12 weeks, because before that the diagnosis of fetal sex is unreliable (2). In addition, dexamethasone therapy in female embryos can be prevented in pregnancies at risk for congenital adrenal transplantation. This leads to a significant reduction in unnecessary treatments and invasive diagnostic tests (3).

Different methods of determining the sex of the fetus:

1- BHCG and Child Sex:

Some doctors believe that the BHCG headline may be somewhat consistent with fetal sex in menstrual delay, which is still under investigation, and it is not possible to identify specific gender strains based on the antibody title. (4). The presence of low numbers of BHCG in the first few days of menstruation may be a graph of a boy's pregnancy and the presence of high numbers of BHCG in the first days after menstruation can be a graph of probable pregnancy in a girl. These dummies cannot be trusted in twin pregnancies and in cases where abortion is a fetus or different women's physiology based on different hormonal cycles.

2. Sampling of the pair:

This is the earliest test that definitely identifies the sex that can be done in the second to fifth weeks after the menstrual delay. In this experiment, a sample of fetal bovine cells is taken and genetic tests are performed on it. With this test, you can find genetic diseases that, if there is a problem, you can take legal action and decide on abortion. There are people who inherit diseases that can be transmitted to their children depending on the sex of their fetus. (Like hemophilia and colour blind) (5).The sampling of the pair is done in such a way that a delicate plastic tube through the cervix enters the uterus by direct ultrasound and is taken up to a very small fraction of the pair cells and is tested on it. If this sampling is carried out by skilled people, there is no risk for the continuation of pregnancy, but sometimes it is possible to find abortion and lack of repair of the water bag and perforation of the water bag (6).

3. Amniocentesis:

Amniocentesis is the removal of some amniotic fluid that surrounds the embryo. The doctor accesses the womb through a needle through the abdomen. In order to operate properly and not damage the fetus, it is always accompanied by ultrasound. In the ultrasound, the needle movement is seen and the fetus is not damaged.

A sample of amniotic fluid, 30 ml, is sent to the genetic lab for review. This test is performed around the 16th to 18th weeks of gestation. At this time, the uterus and the embryo are enlarged and there is enough amniotic fluid that can be absorbed by the fluid and there is no problem for the fetus.

In amniocentesis, the location of the placenta and the embryo is first determined by ultrasound, and then the abdominal area is disinfected and numb in the uterine region. Then the needle is inserted into the uterus from the abdominal wall and the needle path is controlled simultaneously by ultrasound. Despite all the precautions, amniocentesis is associated with a number of dangers, including damage to the placenta and embryo and the infection that is associated with amniocentesis (7).

In women who have a (negative blood type) group, they are injected after amniocentesis. Chromosomal aberrations such as Down syndrome, skeletal disorders, infections, nervous system diseases, sex, etc. can be detected by analyzing amniotic fluid (8).

4. Real time PCR chromosome Y:

Conclusive methods for the diagnosis of fetal sex, such as amniocentesis, are also expensive and intrusive, and for mothers, although they are risky with a low chance (1% risk of abortion), screening tests are performed on the mother's blood.

This test, in addition to being inexpensive, requires only a normal sample of maternal blood, which can be done during pregnancy tests and does not pose any risk to the mother or the fetus. The test is based on a recent finding of a small amount The DNA of the fetus is in the maternal blood, which can be traced and reproduced by the Real Time PCR using the son-in-son Y chromosome and hence proved fetal sex (9).

Test run time and accuracy:

This test can be performed from the 8th week of gestation (10 gestation) with 90% accuracy and from the 10th week of gestation (12 gestation) with a precision of 99-95%.

Time to prepare the result and how to report it:This test requires 7 working days and the result is reported in 2 cases.

1- POSITIVE: This means the presence of the Y chromosome in the mother's blood sample, which certainly enters the embryo's DNA and, consequently, the fetus is a boy. If a pregnancy is multi-genotype, with the

positive test, one can only say that at least one of the embryos is male.

2- NEGATIVE: This means that there is no Y chromosome in the mother's blood and thus represents the female fetus or embryos. However, there is also a second interpretation for a negative result, which means that the amount of fetal DNA in the mother's blood It is so small that there was no possibility to investigate in the laboratory. In such a situation, with the repetition of the test in the next 2 weeks, the false negative problem can be ruled out (10-14).

3- Kieler H, Haglund B, Cnattingius S, Palmgren J, Axelsson O. Does prenatal sonography affect intellectual performance? Epidemiology. 2005;16(3):304-10.

4- Kongnyuy EJ, Van Den Broek N. The use of ultrasonography in obstetrics in developing countries. Tropical doctor. 2007;37(2):70-2.

5- Obeidi N, Russell N, Higgins JR, O'donoghue K. The natural history of anencephaly. Prenatal diagnosis. 2010;30(4):357-60.

6- Omo-Aghoja L, Aisien O, Akuse J, Bergstrom S, Okonofua F. Maternal mortality and emergency obstetric care in Benin City, South-South Nigeria. Journal of clinical medicine and research. 2010;2(4):055-60.

7- Harris RD, Marks WM. Compact Ultrasound for Improving Maternal and Perinatal Care in Low-Resource Settings. Journal of Ultrasound in Medicine. 2009;28(8):1067-76.

8- Tautz S, Jahn A, Molokomme I, Görgen R. Between fear and relief: how rural pregnant women experience foetal ultrasound in a Botswana district hospital. Social Science & Medicine. 2000;50(5):689-701.

9- Kalish RB, Thaler HT, Chasen ST, Gupta M, Berman SJ, Rosenwaks Z, et al. First-and second-trimester ultrasound assessment of gestational age. American journal of obstetrics and gynecology. 2004;191(3):975-8.

10- Ewigman BG, Crane JP, Frigoletto FD, LeFevre ML, Bain RP, McNellis D. Effect of prenatal ultrasound screening on perinatal outcome. New England Journal of Medicine. 1993;329(12):821-7.

11- Dorland WAN. Dorland's medical dictionary: Saunders; 1968.

12- Bashour H, Hafez R, Abdulsalam A. Syrian women's perceptions and experiences of ultrasound screening in pregnancy: implications for antenatal policy. Reproductive health matters. 2005;13(25):147-54.

13- Nemati M, Hajalioghli P, Jahed S, Behzadmehr R, Rafeey M, Fouladi DF. Normal values of spleen length and volume: an ultrasonographic study in children. Ultrasound in Medicine and Biology. 2016 Aug 1;42(8):1771-8.

14- Poureisa M, Behzadmehr R, Daghighi MH, Akhoondzadeh L, Fouladi DF. Orientation of the facet joints in degenerative rotatory lumbar scoliosis: an MR study on 52 patients. Acta neurochirurgica. 2016 Mar 1;158(3):473-9.

15- Behzadmehr R, Keikhaie KR, Pour NS. The Study of Pregnant Women's Attitude toward Using Ultrasound in Pregnancy and its Diagnostic Value based on the Demographic Features in Amir-al-Momenin Hospital of Zabol. Int J Adv Res Biol Sci. 2017;4(6):58-63.

16- Daghighi MH, Poureisa M, Safarpour M, Behzadmehr R, Fouladi DF, Meshkini A, Varshochi M, Kiani Nazarlou A. Diffusion-weighted magnetic resonance imaging in differentiating acute infectious spondylitis from degenerative Modic type 1 change; the role of b-value, apparent diffusion coefficient, claw sign and amorphous increased signal. The British journal of radiology. 2016 Aug 11;89(1066):20150152.