General information about positive NIPT results: XXX syndrome (triple X syndrome)

My patient's NIPT is positive for XXX syndrome (triple X syndrome). What does this mean?

Your patient's noninvasive prenatal testing (NIPT) result suggests the presence of an extra copy of the X chromosome. NIPT is a screening test; false positives can occur. The actual chance for the pregnancy to have XXX syndrome depends on many factors, including the patient's clinical and family history.

Next steps to consider: You should discuss the results and the potential clinical implications with your patient. Globally, professional medical societies recommend that all women with a positive screening result should have genetic counseling and a comprehensive ultrasound evaluation with an opportunity for diagnostic testing to confirm the results.[1,2] Confirmation prior to birth can also help with pregnancy and neonatal management.

See below for more information about XXX syndrome.

What is XXX syndrome?

XXX syndrome is a condition that is caused by a female having an extra X sex chromosome (three copies of the X chromosome instead of the usual two copies).

What are the features of XXX syndrome?

XXX syndrome is likely to result in live birth. XXX syndrome is usually not associated with intellectual disability or severe birth defects. Some common features of XXX syndrome include delayed speech and motor development. Prenatal ultrasounds are usually normal. Females with XXX syndrome can be taller than average height. Pubertal development and fertility is usually normal.

What is the prevalence of this condition?

Approximately 1 in 1000 females are born with XXX syndrome. This condition usually happens by chance and can be associated with advanced maternal age.

What testing could be considered?

Specialized genetic tests such as karyotyping, fluorescence *in situ* hybridization (FISH), quantitative polymerase chain reaction (qPCR), and microarray are available to confirm the presence of XXX syndrome.

These confirmatory tests are generally performed on cells from chorionic villus sampling (CVS) or amniocentesis during pregnancy, on cord blood or peripheral blood sample after the baby is born, or on products of conception (POC) in the case of a miscarriage. The type of invasive procedure and diagnostic testing should take into account the underlying chromosome anomaly.[3,4]

Ultrasound evaluations are usually normal with XXX syndrome, and a normal ultrasound cannot exclude this condition.

Resources for XXX syndrome

MedlinePlus Genetics
medlineplus.gov/genetics/condition/triple-x-syndrome

National Organization for Rare Disorders
rarediseases.org/rare-diseases/trisomy-x

References

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Additional resources

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