X-linked infantile nystagmus

X-linked infantile nystagmus is a condition characterized by abnormal eye movements. Nystagmus is a term that refers to involuntary side-to-side movements of the eyes. In people with this condition, nystagmus is present at birth or develops within the first six months of life. The abnormal eye movements may worsen when an affected person is feeling anxious or tries to stare directly at an object. The severity of nystagmus varies, even among affected individuals within the same family. Sometimes, affected individuals will turn or tilt their head to compensate for the irregular eye movements.

Frequency

The incidence of all forms of infantile nystagmus is estimated to be 1 in 5,000 newborns; however, the precise incidence of X-linked infantile nystagmus is unknown.

Causes

Mutations in the FRMD7 gene cause X-linked infantile nystagmus. The FRMD7 gene provides instructions for making a protein whose exact function is unknown. This protein is found mostly in areas of the brain that control eye movement and in the light-sensitive tissue at the back of the eye (retina). Research suggests that FRMD7 gene mutations cause nystagmus by disrupting the development of certain nerve cells in the brain and retina.

In some people with X-linked infantile nystagmus, no mutation in the FRMD7 gene has been found. The genetic cause of the disorder is unknown in these individuals. Researchers believe that mutations in at least one other gene, which has not been identified, can cause this disorder.

Inheritance Pattern

This condition is inherited in an X-linked pattern. A condition is considered X-linked if the mutated gene that causes the disorder is located on the X chromosome, one of the two sex chromosomes in each cell. In males (who have only one X chromosome), one altered copy of the gene in each cell is sufficient to cause the condition. In females (who have two copies of the X chromosome), one altered copy of the gene in each cell can cause the condition, although affected females may experience less severe symptoms than affected males. Approximately half of the females with only one altered copy of the FRMD7 gene in each cell have no symptoms of this condition.

Other Names for This Condition

• congenital motor nystagmus
• FRMD7-related infantile nystagmus
• idiopathic infantile nystagmus
• NYS1
• X-linked congenital nystagmus
• X-linked idiopathic infantile nystagmus

Diagnosis & Management

Genetic Testing Information

• What is genetic testing? /primer/testing/genetictesting

• Genetic Testing Registry: Infantile nystagmus, X-linked

Research Studies from ClinicalTrials.gov

• ClinicalTrials.gov
  https://clinicaltrials.gov/ct2/results?cond=%22X-linked+congenital+nystagmus+%22+OR+%22Nystagmus%2C+Congenital%22+OR+%22Congenital+nystagmus%22

Other Diagnosis and Management Resources

• GeneReview: FRMD7-Related Infantile Nystagmus
  https://www.ncbi.nlm.nih.gov/books/NBK3822

• MedlinePlus Encyclopedia: Nystagmus
  https://medlineplus.gov/ency/article/003037.htm

Additional Information & Resources

Health Information from MedlinePlus

• Encyclopedia: Nystagmus
  https://medlineplus.gov/ency/article/003037.htm

• Health Topic: Eye Movement Disorders
  https://medlineplus.gov/eyemovementdisorders.html

Genetic and Rare Diseases Information Center

• Nystagmus 1, congenital, X- linked
  https://rarediseases.info.nih.gov/diseases/2969/nystagmus-1-congenital-x--linked
Educational Resources

• American Optometric Association: Nystagmus

• MalaCards: x-linked infantile nystagmus
  https://www.malacards.org/card/x_linked_infantile_nystagmus

• Orphanet: NON RARE IN EUROPE: Idiopathic infantile nystagmus
  https://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=651

Patient Support and Advocacy Resources

• Royal National Institute of Blind People (UK): Nystagmus
  https://www.rnib.org.uk/eye-health/eye-conditions/nystagmus

• University of Kansas Medical Center Resource List: Visual impairment
  http://www.kumc.edu/gec/support/visual.html

Clinical Information from GeneReviews

• FRMD7-Related Infantile Nystagmus
  https://www.ncbi.nlm.nih.gov/books/NBK3822

Scientific Articles on PubMed

• PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28x-linked+congenital+nystagmus%5BTIAB%5D%29+OR+%28congenital+motor+nystagmus%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D

Catalog of Genes and Diseases from OMIM

• NYSTAGMUS 1, CONGENITAL, X-LINKED
  http://omim.org/entry/310700

Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/19072571

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18431453
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2324116/
Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/19458336

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18161616

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17846367

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18087240

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17013395
Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2592600/

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/20301748

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18372314

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18372314
Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17893669

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17768376

Reprinted from Genetics Home Reference:  

Reviewed: September 2009  
Published: March 31, 2020

Lister Hill National Center for Biomedical Communications  
U.S. National Library of Medicine  
National Institutes of Health  
Department of Health & Human Services