Tetra-amelia syndrome

Tetra-amelia syndrome is a very rare disorder characterized by the absence of all four limbs. ("Tetra" is the Greek word for "four," and "amelia" refers to the failure of an arm or leg to develop before birth.) This syndrome can also cause severe malformations of other parts of the body, including the face and head, heart, nervous system, skeleton, and genitalia. The lungs are underdeveloped in many cases, which makes breathing difficult or impossible. Because children with tetra-amelia syndrome have such serious medical problems, most are stillborn or die shortly after birth.

Frequency

Tetra-amelia syndrome has been reported in only a few families worldwide.

Causes

Researchers have found a mutation in the WNT3 gene in people with tetra-amelia syndrome from one large family. This gene is part of a family of WNT genes that play critical roles in development before birth. The protein produced from the WNT3 gene is involved in the formation of the limbs and other body systems during embryonic development. Mutations in the WNT3 gene prevent cells from producing functional WNT3 protein, which disrupts normal limb formation and leads to the other serious birth defects associated with tetra-amelia syndrome.

In other affected families, the cause of tetra-amelia syndrome has not been determined. Researchers believe that unidentified mutations in WNT3 or other genes involved in limb development are probably responsible for the disorder in these cases.

Inheritance Pattern

In most of the families reported so far, tetra-amelia syndrome appears to have an autosomal recessive pattern of inheritance. Autosomal recessive inheritance means both copies of the gene in each cell have mutations. The parents of an individual with tetra-amelia syndrome each carry one copy of the mutated gene, but do not show signs and symptoms of the condition.

Other Names for This Condition

- Tetra-amelia
- Tetra-amelia, autosomal recessive
Diagnosis & Management

Genetic Testing Information

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

- Genetic Testing Registry: Tetraamelia, autosomal recessive 

Other Diagnosis and Management Resources

- GeneReview: Tetra-Amelia Syndrome 
  https://www.ncbi.nlm.nih.gov/books/NBK1276

Additional Information & Resources

Health Information from MedlinePlus

- Health Topic: Bone Diseases 
  https://medlineplus.gov/bonediseases.html

Genetic and Rare Diseases Information Center

- Tetra-amelia syndrome 

Educational Resources

- Lucile Packard Children's Hospital: Congenital Limb Defects 

- Orphanet: Tetraamelia-multiple malformations syndrome 
  https://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=3301

Patient Support and Advocacy Resources

- Resource list from the University of Kansas Medical Center: Limb Anomalies 
  http://www.kumc.edu/gec/support/limb.html

- The Compassionate Friends 
  https://www.compassionatefriends.org/

Clinical Information from GeneReviews

- Tetra-Amelia Syndrome 
  https://www.ncbi.nlm.nih.gov/books/NBK1276
Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/8030673

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/2260610

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/16283889

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/14872406
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1182269/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/20301453

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/3681906
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1050288/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/7534355
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1016707/
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/2012129

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/4076260

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/8256824

Reprinted from Genetics Home Reference: 

Reviewed: February 2008
Published: October 30, 2018

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