Platyspondylic lethal skeletal dysplasia, Torrance type

Platyspondylic lethal skeletal dysplasia, Torrance type is a severe disorder of bone growth. People with this condition have very short arms and legs, underdeveloped pelvic bones, and unusually short fingers and toes (brachydactyly). This disorder is also characterized by flattened spinal bones (platyspondyly) and an exaggerated curvature of the lower back (lordosis). Infants with this condition are born with a small chest with short ribs that can restrict the growth and expansion of the lungs.

As a result of these serious health problems, some affected fetuses do not survive to term. Infants born with platyspondylic lethal skeletal dysplasia, Torrance type usually die at birth or shortly thereafter from respiratory failure. A few affected people with milder signs and symptoms have lived into adulthood.

Frequency

This condition is very rare; only a few affected individuals have been reported worldwide.

Causes

Platyspondylic lethal skeletal dysplasia, Torrance type is one of a spectrum of skeletal disorders caused by mutations in the \( \text{COL2A1} \) gene. This gene provides instructions for making a protein that forms type II collagen. This type of collagen is found mostly in the clear gel that fills the eyeball (the vitreous) and in cartilage. Cartilage is a tough, flexible tissue that makes up much of the skeleton during early development. Most cartilage is later converted to bone, except for the cartilage that continues to cover and protect the ends of bones and is present in the nose and external ears. Type II collagen is essential for the normal development of bones and other connective tissues that form the body's supportive framework.

All of the \( \text{COL2A1} \) mutations that have been found to cause platyspondylic lethal skeletal dysplasia, Torrance type occur in a region of the protein called the C-propeptide domain. These mutations interfere with the assembly of type II collagen molecules, reducing the amount of this type of collagen in the body. Instead of forming collagen molecules, the abnormal \( \text{COL2A1} \) protein builds up in cartilage cells (chondrocytes). These changes disrupt the normal development of bones and other connective tissues, leading to the skeletal abnormalities characteristic of platyspondylic lethal skeletal dysplasia, Torrance type.

Inheritance Pattern

This condition is inherited in an autosomal dominant pattern, which means one copy of the altered gene in each cell is sufficient to cause the disorder.
Other Names for This Condition

- platyspondylic chondrodysplasia, Torrance-Luton type
- platyspondylic skeletal dysplasia, Torrance type
- PLSD-T
- PLSD-TL

Diagnosis & Management

Genetic Testing Information

- What is genetic testing? [primer/testing/genetictesting]
- Genetic Testing Registry: Platyspondylic lethal skeletal dysplasia Torrance type

Other Diagnosis and Management Resources

- GeneReview: Type II Collagen Disorders Overview
  https://www.ncbi.nlm.nih.gov/books/NBK540447
- MedlinePlus Encyclopedia: Lordosis
  https://medlineplus.gov/ency/article/003278.htm

Additional Information & Resources

Health Information from MedlinePlus

- Encyclopedia: Lordosis
  https://medlineplus.gov/ency/article/003278.htm
- Health Topic: Bone Diseases
  https://medlineplus.gov/bonediseases.html
- Health Topic: Connective Tissue Disorders
  https://medlineplus.gov/connectivetissuedisorders.html
- Health Topic: Dwarfism
  https://medlineplus.gov/dwarfism.html

Genetic and Rare Diseases Information Center

- Platyspondylic lethal skeletal dysplasia Torrance type
  https://rarediseases.info.nih.gov/diseases/4382/platyspondylic-lethal-skeletal-dysplasia-torrance-type

Additional NIH Resources

- National Institute of Arthritis and Musculoskeletal and Skin Diseases: Heritable Disorders of Connective Tissue
  https://www.niams.nih.gov/health-topics/heritable-disorders-connective-tissue
Educational Resources

- MalaCards: platyspondylic lethal skeletal dysplasia, torrance type
  https://www.malacards.org/card/platyspondylic_lethal_skeletal_dysplasia_torrance_type_2
- Nemours Children's Health System: Skeletal Dysplasia
  https://www.nemours.org/services/skeletal-dysplasia.html?tab=about
- Orphanet: OBSOLETE: Platyspondylic lethal chondrodysplasia
  https://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=1417

Patient Support and Advocacy Resources

- Human Growth Foundation
  https://www.hgfound.org/
- International Skeletal Dysplasia Registry, UCLA
  https://www.uclahealth.org/ortho/isdr
- Little People of America
  https://www.lpaonline.org/
- Little People UK
  https://littlepeopleuk.org/
- Resource list from the University of Kansas Medical Center
  http://www.kumc.edu/gec/support/dwarfism.html

Clinical Information from GeneReviews

- Type II Collagen Disorders Overview
  https://www.ncbi.nlm.nih.gov/books/NBK540447

Scientific Articles on PubMed

- PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28platyspondylic+skeletal+dysplasia%5BTIAB%5D%29+OR+%28platyspondylic+lethal+skeletal+dysplasia%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

- PLATYSPONDYLIC LETHAL SKELETAL DYSPLASIA, TORRANCE TYPE
  http://omim.org/entry/151210

Medical Genetics Database from MedGen

- Platyspondylic lethal skeletal dysplasia Torrance type
Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/12961049

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/14729840
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1757240/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/15643621

Reprinted from Genetics Home Reference: 

Reviewed: July 2008
Published: March 17, 2020

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