Otopalatodigital syndrome type 1

Description

Otopalatodigital syndrome type 1 is a disorder primarily involving abnormalities in skeletal development. It is a member of a group of related conditions called otopalatodigital spectrum disorders, which also includes otopalatodigital syndrome type 2, frontometaphyseal dysplasia, Melnick-Needles syndrome, and terminal osseous dysplasia. In general, these disorders involve hearing loss caused by malformations in the tiny bones in the ears (ossicles), problems in the development of the roof of the mouth (palate), and skeletal abnormalities involving the fingers or toes (digits).

Otopalatodigital syndrome type 1 is usually the mildest of the otopalatodigital spectrum disorders. People with this condition usually have characteristic facial features including wide-set and downward-slanting eyes; prominent brow ridges; and a broad, flat nose. Affected individuals have abnormalities of the fingers and toes, such as blunt, square-shaped (spatulate) fingertips; shortened thumbs and big toes; unusually long second toes; and a wide gap between the first and second toes (known as a sandal gap). Affected individuals also have hearing loss.

Infants with otopalatodigital syndrome type 1 may be born with an opening in the roof of the mouth (a cleft palate). Individuals with this condition often have fewer teeth than normal (hypodontia). They may have mild abnormal curvature (bowing) of their limbs, and limited range of motion in some joints. People with otopalatodigital syndrome type 1 may be somewhat shorter than other members of their family.

Females with otopalatodigital syndrome type 1 often have more variable signs and symptoms compared to affected males, with females typically having fewer signs and symptoms.

Frequency

Otopalatodigital syndrome type 1 is a rare disorder, affecting fewer than 1 in every 100,000 individuals. Its specific incidence is unknown.

Causes

Otopalatodigital syndrome type 1 is caused by mutations in the *FLNA* gene. The *FLNA* gene provides instructions for producing the protein filamin A, which helps build the network of protein filaments (cytoskeleton) that gives structure to cells and allows them

to change shape and move. Filamin A attaches (binds) to another protein called actin, and helps the actin to form the branching network of filaments that make up the cytoskeleton. Filamin A also links actin to many other proteins to perform various functions within the cell.

The *FLNA* gene mutations that cause otopalatodigital syndrome type 1 result in changes to the filamin A protein in the region that binds to actin. The mutations are described as "gain-of-function" because they appear to lead to a protein with an increased ability to bind to actin. Researchers believe that the mutations impair the stability of the cytoskeleton and disrupt cellular processes involved in skeletal development, but it is not known how changes in the protein relate to the specific signs and symptoms of otopalatodigital syndrome type 1.

Learn more about the gene associated with Otopalatodigital syndrome type 1

- FLNA

Inheritance

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, a mutation in the only 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 lead to less severe features of the condition or may cause no signs or symptoms at all. A characteristic of X-linked inheritance is that fathers cannot pass X-linked traits to their sons.

Other Names for This Condition

- Cranioorodigital syndrome
- Faciopalatoosseous syndrome
- FPO
- OPD syndrome, type 1
- Oto-palato-digital syndrome, type I
- Taybi syndrome

Additional Information & Resources

Genetic Testing Information

- Genetic Testing Registry: Oto-palato-digital syndrome, type I (https://www.ncbi.nlm.nih.gov/gtr/conditions/C0265251/)

Genetic and Rare Diseases Information Center

- Otopalatodigital syndrome type 1 (https://rarediseases.info.nih.gov/diseases/5121/index)

Patient Support and Advocacy Resources

- National Organization for Rare Disorders (NORD) (https://rarediseases.org/)

Clinical Trials

- ClinicalTrials.gov (https://clinicaltrials.gov/search?cond=%22Otopalatodigital syndrome type 1%22)

Catalog of Genes and Diseases from OMIM

- OTOPALATODIGITAL SYNDROME, TYPE I; OPD1 (https://omim.org/entry/311300)

Scientific Articles on PubMed

- PubMed (https://pubmed.ncbi.nlm.nih.gov/?term=%28%28otopalatodigital+syndrome%5BTIAB%5D%29+OR+%28oto-palato-digital+syndrome%5BTIAB%5D%29+OR+%28Otopalatodigital+spectrum+disorders%5BTIAB%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D)

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