Cherubism

Cherubism is a disorder characterized by abnormal bone tissue in the jaw. Beginning in early childhood, both the lower jaw (the mandible) and the upper jaw (the maxilla) become enlarged as bone is replaced with painless, cyst-like growths. These growths give the cheeks a swollen, rounded appearance and often interfere with normal tooth development. In some people the condition is so mild that it may not be noticeable, while other cases are severe enough to cause problems with vision, breathing, speech, and swallowing. Enlargement of the jaw usually continues throughout childhood and stabilizes during puberty. The abnormal growths are gradually replaced with normal bone in early adulthood. As a result, many affected adults have a normal facial appearance.

Most people with cherubism have few, if any, signs and symptoms affecting other parts of the body. Rarely, however, this condition occurs as part of another genetic disorder. For example, cherubism can occur with Ramon syndrome, which also involves short stature, intellectual disability, and overgrowth of the gums (gingival fibrosis). Additionally, cherubism has been reported in rare cases of Noonan syndrome (a developmental disorder characterized by unusual facial characteristics, short stature, and heart defects) and fragile X syndrome (a condition primarily affecting males that causes learning disabilities and cognitive impairment).

Frequency

The incidence of cherubism is unknown. At least 250 cases have been reported worldwide.

Causes

Mutations in the *SH3BP2* gene have been identified in about 80 percent of people with cherubism. In most of the remaining cases, the genetic cause of the condition is unknown.

The *SH3BP2* gene provides instructions for making a protein that plays a role in transmitting chemical signals within cells. the SH3BP2 protein is particularly important for the function of cells involved in the replacement of old bone tissue with new bone (bone remodeling) and certain immune system cells.

Mutations in the *SH3BP2* gene lead to production of an abnormal protein that does not get broken down when it is no longer needed. Too much SH3BP2 protein likely increases signaling in certain cells, causing an immune reaction (inflammation) in the jaw bones and also triggering the production of osteoclasts, which are cells that break down bone tissue during bone remodeling. An excess of these bone-destroying cells contributes to the destruction of bone in the upper and lower jaws. A combination

of bone loss and inflammation likely underlies the cyst-like growths characteristic of cherubism.

When cherubism occurs as a feature of a genetic syndrome, it is caused by the same genetic alteration that causes the syndrome.

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

- Familial benign giant-cell tumor of the jaw
- Familial fibrous dysplasia of jaw
- Familial multilocular cystic disease of the jaws

Diagnosis & Management

Genetic Testing Information

- What is genetic testing?
  /primer/testing/genetictesting
- Genetic Testing Registry: Fibrous dysplasia of jaw
  https://www.ncbi.nlm.nih.gov/gtr/conditions/C0008029/

Research Studies from ClinicalTrials.gov

- ClinicalTrials.gov
  https://clinicaltrials.gov/ct2/results?cond=%22cherubism%22

Other Diagnosis and Management Resources

- GeneReview: Cherubism
  https://www.ncbi.nlm.nih.gov/books/NBK1137

Additional Information & Resources

Health Information from MedlinePlus

- Health Topic: Craniofacial Abnormalities
  https://medlineplus.gov/craniofacialabnormalities.html
- Health Topic: Tooth Disorders
  https://medlineplus.gov/toothdisorders.html

Genetic and Rare Diseases Information Center

- Cherubism
  https://rarediseases.info.nih.gov/diseases/6036/cherubism

Educational Resources

- MalaCards: cherubism
  https://www.malacards.org/card/cherubism
- Orphanet: Cherubism
  https://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=184

Patient Support and Advocacy Resources

- AboutFace International
  https://www.aboutface.ca/
- AmeriFace
  http://www.ameriface.org/
- Children's Craniofacial Association
  https://ccakids.org/
- Resource list from the University of Kansas Medical Center
  http://www.kumc.edu/gec/support/craniofa.html

Clinical Information from GeneReviews

- Cherubism
  https://www.ncbi.nlm.nih.gov/books/NBK1137

Scientific Articles on PubMed

- PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28Cherubism%5BMAJR%5D%29+AND+%28cherubism%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+1800+days%22%5Bdp%5D

Catalog of Genes and Diseases from OMIM

- CHERUBISM
  http://omim.org/entry/118400

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