Geleophysic Dysplasia

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Geleophysic dysplasia is an inherited condition that affects many parts of the body. It is characterized by abnormalities involving the bones, joints, heart, and skin.

Keywords: genetic conditions

1. Introduction

People with geleophysic dysplasia have short stature with very short hands and feet. Most also develop thickened skin and joint deformities called contractures, both of which significantly limit mobility. Affected individuals usually have a limited range of motion in their fingers, toes, wrists, and elbows. Additionally, contractures in the legs and hips cause many affected people to walk on their toes.

The name of this condition, which comes from the Greek words for happy ("gelios") and nature ("physis"), is derived from the good-natured facial appearance seen in most affected individuals. The distinctive facial features associated with this condition include a round face with full cheeks, a small nose with upturned nostrils, a broad nasal bridge, a thin upper lip, upturned corners of the mouth, and a flat area between the upper lip and the nose (philtrum).

Geleophysic dysplasia is also characterized by heart (cardiac) problems, particularly abnormalities of the cardiac valves. These valves normally control the flow of blood through the heart. In people with geleophysic dysplasia, the cardiac valves thicken, which impedes blood flow and increases blood pressure in the heart. Other heart problems have also been reported in people with geleophysic dysplasia; these include a narrowing of the artery from the heart to the lungs (pulmonary stenosis) and a hole between the two upper chambers of the heart (atrial septal defect).

Other features of geleophysic dysplasia can include an enlarged liver (hepatomegaly) and recurrent respiratory and ear infections. In severe cases, a narrowing of the windpipe (tracheal stenosis) can cause serious breathing problems. As a result of heart and respiratory abnormalities, geleophysic dysplasia is often life-threatening in childhood. However, some affected people have lived into adulthood.

2. Frequency

Geleophysic dysplasia is a rare disorder whose prevalence is unknown. More than 30 affected individuals have been reported.

3. Causes

Geleophysic dysplasia results from mutations in the *ADAMTSL2* gene. This gene provides instructions for making a protein whose function is unclear. The protein is found in the extracellular matrix, which is the intricate lattice of proteins and other molecules that forms in the spaces between cells. Studies suggest that the ADAMTSL2 protein may play a role in the microfibrillar network, which is an organized clustering of thread-like filaments (called microfibrils) in the extracellular matrix. This network provides strength and flexibility to tissues throughout the body.

Mutations in the *ADAMTSL2* protein likely change the protein's 3-dimensional structure. Through a process that is poorly understood, *ADAMTSL2* gene mutations alter the microfibrillar network in many different tissues. Impairment of this essential network disrupts the normal functions of cells, which likely contributes to the varied signs and symptoms of geleophysic dysplasia. Researchers are working to determine how mutations in the *ADAMTSL2* gene lead to short stature, heart disease, and the other features of this condition.

3.1. The genes associated with Geleophysic dysplasia

- ADAMTSL2
- FBN1

4. Inheritance

This condition is inherited in an autosomal recessive pattern, which means both copies of the gene in each cell have mutations. The parents of an individual with an autosomal recessive condition each carry one copy of the mutated gene, but they typically do not show signs and symptoms of the condition.

5. Other Names for This Condition

- geleophysic dwarfism

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