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My46 Trait Profile

Distal arthrogryposis type 1 and type 2B

Other Names: DA2B is also known as Sheldon-Hall syndrome

Arthrogryposis is the presence of congenital (i.e., present at birth) contractures (i.e., the inability to fully move a joint) of two or more different body areas (e.g., hands, shoulders, ankles, hips). Distal arthrogryposis type 1 and Distal arthrogryposis type 2B are rare conditions characterized by congenital contractures of the hands and feet. It is caused by mutations in the genes TPM2, TNNI2, TNNT3, and MYH3, each of which encodes a protein found in muscles.

Characteristics of Distal arthrogryposis type 1 and type 2B

Arthrogryposis is the presence of congenital (i.e., present at birth) contractures (i.e., the inability to fully move the area around a joint) of two or more different body areas (e.g., hands, shoulders, ankles, hips). Distal Arthrogryposis type 1 (DA1) and Distal Arthrogryposis type 2B (DA2B) are conditions characterized by congenital contractures of the fingers and toes (i.e., camptodactyly) and foot or ankle (e.g., clubfeet). Contractures can also affect the wrists, elbows, shoulders, knees and hips. Dislocated hips and scoliosis (abnormal curving of the spine) can also be seen. Individuals also may have deep creases around the nose and mouth as well as limited mouth opening. While DA1 and DA2B share many clinical characteristics, the differences in facial appearance may distinguish these two conditions. Recent studies suggest that instead of considering DA1 and DA2B as separate conditions, it may be better to consider them as variations of the same syndrome. Intelligence is usually normal in individuals with DA1 or DA2B.

Diagnosis/Testing

Individuals with DA1 or DA2B can have a change or mutation in any one of four genes: TPM2, TNNI2, TNNT3, and MYH3. These genes encode proteins that are responsible for helping skeletal muscles to contract. Mutations in these genes are thought to interfere with the ability of muscle fibers to contract and relax. Not all individuals with DA1 or DA2B have mutations in one of these genes so other genes are likely involved.

Management/Surveillance

Management of DA1 and DA2B often includes splinting of the finders, casting of the feet, and physical and occupational therapies. Some individuals need surgical operations to treat the contractures of the hands and/or feet.

Mode of inheritance

DA1 and DA2B are inherited in an autosomal dominant pattern. This means inheriting one mutation is enough for an individual to be affected and show signs of the condition. The mutation can be inherited from an affected parent or it can occur brand new (de novo) in an affected child.

Risk to family members

The risk to family members depends on whether or not the individual with DA1 or DA2B has a parent affected with the same condition. If a parent also has the DA1 or DA2B, the risk of having a child with the condition is 50% with each pregnancy. If a parent does not have the condition, the risk of future pregnancies being affected is very low.

Special considerations

DA2B can sometimes be confused with Freeman-Sheldon syndrome, also known as DA2A, another distal arthrogryposis condition. Freeman-Sheldon syndrome is also caused by mutations in the MYH3 gene.

Resources

Arthrogryposis Multiplex Congenita Support, Inc.
http://www.amcsupport.org
Genetics Home Reference: Distal arthrogryposis type 1
http://ghr.nlm.nih.gov/condition/distal-arthrogryposis-type-1

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Created: 01/2013 **Created by:** Seema Jamal, MSc, LCGC, Karin Dent, MS, LCGC
Updated: mm/yyyy **Edited by:** Michael Bamshad, MD