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My46 Trait Profile

Cardiofaciocutaneous syndrome

Cardiofaciocutaneous syndrome is a genetic condition with characteristic facial features and birth defects. It is caused by mutations in the genes BRAF, MAP2K1, MAP2K2, and KRAS, each of which makes a protein involved in human development.

Characteristics of Cardiofaciocutaneous syndrome

Cardiofaciocutaneous syndrome (CFC) is a genetic condition characterized by cardio: heart defects; facio: particular facial features such as a high forehead, large head compared to the rest of the body, sparse curly hair, sparse or absent eyebrows and eyelashes, narrowing at the side of the forehead, widely spaced downward slanting eyes, drooping of the eyelids, a short nose, low set ears; and cutaneous: various skin problems. The heart defects commonly seen in CFC syndrome include pulmonic stenosis (i.e., narrowing of the narrowing of the artery that carries blood from the heart to the lungs), atrial or ventricular septal defect (i.e., a hole in the upper or lower chambers of the heart), and heart valve abnormalities. However, not all heart defects in this syndrome are present at birth; hypertrophic cardiomyopathy (i.e., a heart condition where the heart muscle becomes thicker, making it more difficult for it to pump blood to the rest of the body) may develop later in life and can be progressive.

The skin problems seen in this condition include xerosis (i.e., extremely dry skin), eczema, and keratosis pilaris (i.e., small bumps on the skin). Hypotonia (i.e., low muscle tone), severe feeding problems, and growth delay are also commonly seen in this condition. Varying degrees of intellectual disability is seen in all individuals with CFC syndrome.

Diagnosis/Testing

Most individuals with CFC syndrome have a change or mutation in one of four genes: BRAF, MAP2K1, MAP2K2, and KRAS. These genes are involved in a complex signaling pathway called the “RAS-MAPK pathway” which is important for the proper formation of many different types of tissue during human development. A mutation in any one of these genes disrupts this signaling pathway.

Management/Surveillance

Management and surveillance of individuals with CFC syndrome often includes regular physical exams, eye exams, hearing evaluations, neurological evaluations, as well as ultrasounds of the heart and abdomen. In addition, developmental evaluations and educational services are highly recommended. Due to severe feeding problems, feeding and nutritional therapies are often needed. Special creams and lotions may provide relief to itchy, dry skin. Some studies suggest that individuals with CFC syndrome are at increased risk of developing certain cancers such as leukemia.

Mode of inheritance

CFC syndrome is inherited in an autosomal dominant pattern. This means inheriting one mutation is enough for an individual to be affected and show signs of CFC syndrome. Instead of being inherited from an affected parent, the mutation most often occurs 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 CFC syndrome has a parent affected with

CFC syndrome. Since the overwhelming majority of individuals with CFC syndrome do not have an affected parent, the risk of future pregnancies being affected is very low.

Special considerations

None

Resources

CFC International
http://www.cfcsyndrome.org/
Genetics Home Reference: Cardiofaciocutaneous syndrome
http://ghr.nlm.nih.gov/condition/cardiofaciocutaneous-syndrome

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