Kaufman oculocerebrofacial syndrome

Description

Kaufman oculocerebrofacial syndrome is a disorder characterized by eye problems (oculo-), intellectual disability (-cerebro-), and a distinctive pattern of facial features (-facial).

Most individuals with Kaufman oculocerebrofacial syndrome have an unusually small head size (microcephaly), and some have structural abnormalities of the brain. Affected individuals have weak muscle tone (hypotonia), and are delayed in developing motor skills such as walking. Intellectual disability is severe or profound. Most affected individuals never acquire the ability to speak.

Eye abnormalities and their effect on vision vary among people with Kaufman oculocerebrofacial syndrome. Some people with this disorder have abnormally small or poorly developed eyes (microphthalmia); microcornea, in which the clear front covering of the eye (cornea) is small and abnormally curved; missing pieces of tissue in structures that form the eye (coloboma); or underdevelopment of the nerves that carry signals between the eyes and the brain (optic nerve hypoplasia). Eyes that do not look in the same direction (strabismus), nearsightedness (myopia) or farsightedness (hyperopia), or an inward turning of the lower eyelid (entropion) can also occur.

Individuals with Kaufman oculocerebrofacial syndrome typically have a characteristic pattern of facial features. These include highly arched eyebrows, an increased distance between the inner corners of the eyes (telecanthus), a narrowing of the eye opening (blepharophimosis), skin folds covering the inner corner of the eyes (epicanthal folds), droopy eyelids (ptosis), and outside corners of the eyes that point upward (upslanting palpebral fissures). Ear abnormalities include low-set ears with small lobes and growths of skin (skin tags) in front of the ear (preauricular tags). The nose has a narrow bridge, a wide base, and nostrils that open to the front rather than downward (anteverted nares). Affected individuals may also have flat cheeks; a space between the nose and upper lip (philtrum) that is unusually long and smooth; a narrow mouth; and an unusually small jaw (micrognathia).

Other signs and symptoms that can occur in people with this disorder include short stature; hearing loss; and abnormalities of the heart, respiratory tract, gastrointestinal tract, kidneys, genitals, or skeleton. Affected individuals can live into adulthood; however, their average life expectancy is unknown because of the small number of people who have been diagnosed with this disorder.

Frequency

The prevalence of Kaufman oculocerebrofacial syndrome is unknown. At least 14 affected individuals have been described in the medical literature.

Causes

Kaufman oculocerebrofacial syndrome is caused by mutations in the *UBE3B* gene. This gene provides instructions for making a protein that plays a role in the ubiquitin-proteasome system, which is the cell machinery that breaks down (degrades) unwanted proteins. The specific proteins that the UBE3B protein helps break down are unknown, but research suggests that UBE3B functions in the nervous system, digestive tract, respiratory system, and other organs and tissues, from before birth into adulthood

The *UBE3B* gene mutations that cause Kaufman oculocerebrofacial syndrome are thought to result in an abnormal UBE3B protein that cannot function properly or that is unstable and is rapidly broken down. Loss of this protein's function likely prevents cells from eliminating certain unnecessary proteins, resulting in problems with development and function of the brain, eyes, and other parts of the body.

Learn more about the gene associated with Kaufman oculocerebrofacial syndrome

- UBE3B

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.

Other Names for This Condition

- Blepharophimosis-ptosis-intellectual disability syndrome
- BPIDS
- KOS
- Oculocerebrofacial syndrome, Kaufman type

Additional Information & Resources

Genetic Testing Information

- Genetic Testing Registry: Oculocerebrofacial syndrome, Kaufman type (https://www.ncbi.nlm.nih.gov/gtr/conditions/C1855663/)

Genetic and Rare Diseases Information Center

- Oculocerebrofacial syndrome, Kaufman type (https://rarediseases.info.nih.gov/diseases/3084/index)

Patient Support and Advocacy Resources

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

Catalog of Genes and Diseases from OMIM

- KAUFMAN OCULOCEREBROFACIAL SYNDROME; KOS (https://omim.org/entry/244450)

Scientific Articles on PubMed

- PubMed (https://pubmed.ncbi.nlm.nih.gov/?term=%28Kaufman+oculocerebrofacial+syndrome%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D)

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