Ohdo syndrome, Say-Barber-Biesecker-Young-Simpson variant

The Say-Barber-Biesecker-Young-Simpson (SBBYS) variant of Ohdo syndrome is a rare condition characterized by genital abnormalities in males, missing or underdeveloped kneecaps (patellae), intellectual disability, distinctive facial features, and abnormalities affecting other parts of the body.

Males with the SBBYS variant of Ohdo syndrome typically have undescended testes (cryptorchidism). Females with this condition have normal genitalia.

Missing or underdeveloped patellae is the most common skeletal abnormality associated with the SBBYS variant of Ohdo syndrome. Affected individuals also have joint stiffness involving the hips, knees, and ankles that can impair movement. Although joints in the lower body are stiff, joints in the arms and upper body may be unusually loose (lax). Many people with this condition have long thumbs and first (big) toes.

The SBBYS variant of Ohdo syndrome is also associated with delayed development and intellectual disability, which are often severe. Many affected infants have weak muscle tone (hypotonia) that leads to breathing and feeding difficulties.

The SBBYS variant of Ohdo syndrome is characterized by a mask-like, non-expressive face. Additionally, affected individuals may have distinctive facial features such as prominent cheeks, a broad nasal bridge or a nose with a rounded tip, a narrowing of the eye opening (blepharophimosis), droopy eyelids (ptosis), and abnormalities of the tear (lacrimal) glands. About one-third of affected individuals are born with an opening in the roof of the mouth called a cleft palate. The SBBYS variant of Ohdo syndrome can also be associated with heart defects and dental problems.

Frequency

The SBBYS variant of Ohdo syndrome is estimated to occur in fewer than 1 per million people. At least 19 cases have been reported in the medical literature.

Causes

The SBBYS variant of Ohdo syndrome is caused by mutations in the KAT6B gene. This gene provides instructions for making a type of enzyme called a histone acetyltransferase. These enzymes modify histones, which are structural proteins that attach (bind) to DNA and give chromosomes their shape. By adding a small molecule called an acetyl group to histones, histone acetyltransferases control the activity of certain genes. Little is known about the function of the histone acetyltransferase produced from the KAT6B gene. It appears to regulate genes that are important for early development, including development of the skeleton and nervous system.
The mutations that cause the SBBYS variant of Ohdo syndrome likely prevent the production of functional histone acetyltransferase from one copy of the \textit{KAT6B} gene in each cell. Studies suggest that the resulting shortage of this enzyme impairs the regulation of various genes during early development. However, it is unclear how these changes lead to the specific features of the condition.

\textbf{Inheritance Pattern}

This condition has an autosomal dominant inheritance pattern, which means one copy of the altered gene in each cell is sufficient to cause the disorder. Almost all reported cases have resulted from new mutations in the gene and have occurred in people with no history of the disorder in their family.

\textbf{Other Names for This Condition}

- blepharophimosis and mental retardation syndrome, Say-Barber/Biesecker/Young-Simpson type
- blepharophimosis-intellectual deficit syndrome, Say-Barber/Biesecker/Young-Simpson type
- BMRS SBBYS
- Ohdo syndrome, Say-Barber-Biesecker variant
- Ohdo syndrome, SBBYS variant
- Say-Barber-Biesecker-Young-Simpson syndrome
- Say-Barber-Biesecker-Young-Simpson variant of Ohdo syndrome
- SBBYS variant of Ohdo syndrome
- SBBYSS
- Young-Simpson syndrome

\textbf{Diagnosis & Management}

\textbf{Genetic Testing Information}

- What is genetic testing?
  /primer/testing/genetictesting
- Genetic Testing Registry: Blepharophimosis - intellectual disability syndrome, SBBYS type

\textbf{Other Diagnosis and Management Resources}

- GeneReview: KAT6B Disorders
  https://www.ncbi.nlm.nih.gov/books/NBK114806
Additional Information & Resources

Health Information from MedlinePlus
• Health Topic: Developmental Disabilities
  https://medlineplus.gov/developmentaldisabilities.html

Genetic and Rare Diseases Information Center
• Blepharophimosis intellectual disability syndromes

Educational Resources
• Centers for Disease Control and Prevention: Developmental Disabilities
  https://www.cdc.gov/ncbddd/developmentaldisabilities/
• MalaCards: ohdo syndrome, say-barber-biesecker-young-simpson variant
  https://www.malacards.org/card/ohdo_syndrome_say_barber_biesecker_young_simpson_variant
• March of Dimes: Genital and Urinary Tract Defects
• Orphanet: Blepharophimosis-intellectual disability syndrome, Ohdo type
  https://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=2728
• Unique: Rare Chromosome Disorder Support Group (UK)

Patient Support and Advocacy Resources
• American Association on Intellectual and Developmental Disabilities (AAIDD)
  https://www.aaidd.org/

Clinical Information from GeneReviews
• KAT6B Disorders
  https://www.ncbi.nlm.nih.gov/books/NBK114806

Scientific Articles on PubMed
• PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28Say%5BTIAB%5D%29+AND+%28Ohdo%5BTIAB%5D%29+AND+%28Biesecker%5BTIAB%5D%29+OR+%28Young-Simpson+syndrome%5BTIAB%5D%29+OR+%28SBBYS%5BTIAB%5D%29+OR+%28SBBYSS%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D
Catalog of Genes and Diseases from OMIM

• OHDO SYNDROME, SBBYS VARIANT
  http://omim.org/entry/603736

Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/23236640

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/22715153
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3696352/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/22077973
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  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18798845

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