Succinic semialdehyde dehydrogenase deficiency

Description

Succinic semialdehyde dehydrogenase deficiency is a disorder that can cause a variety of neurological problems. People with this condition typically have developmental delays, especially in speech development; intellectual disabilities; and decreased muscle tone (hypotonia) soon after birth. Communication problems may improve over time in people with this disorder.

About half of people with succinic semialdehyde dehydrogenase deficiency experience seizures, difficulty coordinating movements (ataxia), decreased reflexes (hyporeflexia), and behavioral problems. The most common behavioral problems associated with this condition are sleep disturbances, hyperactivity, difficulty maintaining attention, and anxiety. Other behavioral and psychiatric features, including aggression and obsessive-compulsive disorder (OCD), tend to develop in adolescence and early adulthood.

Frequency

Approximately 350 people with succinic semialdehyde dehydrogenase deficiency have been reported worldwide.

Causes

Variants (also called mutations) in the *ALDH5A1* gene cause succinic semialdehyde dehydrogenase deficiency. The *ALDH5A1* gene provides instructions for producing the succinic semialdehyde dehydrogenase enzyme. This enzyme is involved in the breakdown of a chemical that transmits signals in the brain (neurotransmitter) called gamma-amino butyric acid (GABA). The primary role of GABA is to prevent the brain from being overloaded with too many signals.

ALDH5A1 gene variants lead to a shortage (deficiency) of succinic semialdehyde dehydrogenase. This deficiency results in an increase in the amount of GABA and a related molecule called gamma-hydroxybutyrate (GHB) in the body, which affects the brain. It is unclear how an increase in GABA and GHB causes developmental delays, seizures, and other signs and symptoms of succinic semialdehyde dehydrogenase deficiency.

Learn more about the gene associated with Succinic semialdehyde dehydrogenase

deficiency

- ALDH5A1

Inheritance

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

Other Names for This Condition

- 4-hydroxybutyric aciduria
- Gamma-hydroxybutyric acidemia
- Gamma-hydroxybutyric aciduria
- SSADH deficiency

Additional Information & Resources

Genetic Testing Information

- Genetic Testing Registry: Succinate-semialdehyde dehydrogenase deficiency (https://www.ncbi.nlm.nih.gov/gtr/conditions/C0268631/)

Genetic and Rare Diseases Information Center

- Succinic semialdehyde dehydrogenase deficiency (https://rarediseases.info.nih.gov/diseases/7695/index)

Patient Support and Advocacy Resources

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

Clinical Trials

- ClinicalTrials.gov (https://clinicaltrials.gov/search?cond=%22Succinic semialdehyde dehydrogenase deficiency%22)

Catalog of Genes and Diseases from OMIM

- SUCCINIC SEMIALDEHYDE DEHYDROGENASE DEFICIENCY; SSADHD (https://

omim.org/entry/271980)

Scientific Articles on PubMed

- PubMed (https://pubmed.ncbi.nlm.nih.gov/?term=%28%28succinic+semialdehyde+dehydrogenase+deficiency%5BTIAB%5D%29+OR+%284-hydroxybutyric+aciduria%5BTIAB%5D%29+OR+%28gamma-hydroxybutyric+aciduria%5BTIAB%5D%29%29+OR+%28SSADH+deficiency%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+1800+days%22%5Bdp%5D)

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