Progressive myoclonic epilepsy type 1

Description

Progressive myoclonic epilepsy type 1 (also called Unverricht-Lundborg disease or ULD) is a rare inherited form of epilepsy. Early development is normal in affected individuals. Signs and symptoms of the disorder typically begin between 6 and 15 years of age.

People with progressive myoclonic epilepsy type 1 experience episodes of involuntary muscle jerking or twitching (myoclonus) that increase in frequency and severity over time. Episodes of myoclonus may be brought on by physical exertion, stress, light, or other stimuli. Within 5 to 10 years, the myoclonic episodes may become severe enough to interfere with walking and other everyday activities.

Affected individuals also usually have seizures that involve loss of consciousness, muscle rigidity, and convulsions (tonic-clonic or grand mal seizures). Like the myoclonic episodes, these may increase in frequency over several years. However, the seizures may be controlled with treatment. After several years of progression, the frequency of seizures may stabilize or decrease.

Eventually, people with progressive myoclonic epilepsy type 1 may develop problems with balance and coordination (ataxia) and speaking (dysarthria). They may also experience depression. Another feature of this condition is involuntary rhythmic shaking. This shaking is called intentional tremor because it worsens during intentional movements.

People with progressive myoclonic epilepsy type 1 may live into adulthood. Life expectancy depends on the severity of the condition and a person's response to treatment. The severity of the condition can vary, even among members of the same family.

Frequency

Progressive myoclonus epilepsy is a rare group of conditions. Progressive myoclonic epilepsy type 1 is believed to be the most common form of this type of epilepsy, but its worldwide prevalence is unknown. The condition is more common in the North African countries of Tunisia, Algeria, and Morocco. Progressive myoclonic epilepsy type 1 occurs most frequently in Finland, where approximately 2 in 100,000 people are affected.

Causes

Variants (also called mutations) in the *CSTB* gene cause progressive myoclonic epilepsy type 1. The *CSTB* gene provides instructions for making a protein called cystatin B. This protein reduces the activity of enzymes called cathepsins. Cathepsins help break down certain proteins in the lysosomes, which are compartments in the cell that digest and recycle different types of molecules. While the specific function of cystatin B is unclear, it may help protect the cells' proteins from cathepsins that leak out of the lysosomes.

In almost all affected individuals, progressive myoclonic epilepsy type 1 is caused by variants that affect the amount of cystatin B that is produced. One region of DNA that controls the activity of the *CSTB* gene has a particular repeating sequence of 12 DNA building blocks (nucleotides). This sequence is known as the dodecamer repeat. Normally, this sequence is repeated two or three times. However, in most people with progressive myoclonic epilepsy type 1, this sequence is repeated more than 30 times (called a repeat expansion). Most people with progressive myoclonic epilepsy type 1 have two copies of this variant.

A small number of people with progressive myoclonic epilepsy type 1 have one copy of the dodecamer repeat expansion and one copy of the *CSTB* gene with another type of variant. These other variants can include the substitution of a single nucleotide that impairs the gene's function.

In individuals with progressive myoclonic epilepsy type 1, levels of cystatin B are only 5 to 10 percent of normal. This change is believed to cause the signs and symptoms of progressive myoclonic epilepsy type 1, but it is unclear how a reduction in the amount of cystatin B leads to the features of this disorder.

Learn more about the gene associated with Progressive myoclonic epilepsy type 1

- CSTB

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

- Baltic myoclonic epilepsy
- Baltic myoclonus
- Baltic myoclonus epilepsy
- EPM1

- EPM1A
- Myoclonic epilepsy of Unverricht and Lundborg
- PME
- Progressive myoclonic epilepsy 1A
- Progressive myoclonus epilepsy type 1
- ULD
- Unverricht-Lundborg syndrome

Additional Information & Resources

Genetic Testing Information

- Genetic Testing Registry: Unverricht-Lundborg syndrome (https://www.ncbi.nlm.nih.gov/gtr/conditions/C0751785/)

Genetic and Rare Diseases Information Center

- Progressive myoclonic epilepsy type 1 (https://rarediseases.info.nih.gov/diseases/3876/index)

Patient Support and Advocacy Resources

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

Catalog of Genes and Diseases from OMIM

- MYOCLONIC EPILEPSY OF UNVERRICHT AND LUNDBORG (https://omim.org/entry/254800)

Scientific Articles on PubMed

- PubMed (https://pubmed.ncbi.nlm.nih.gov/?term=%28Unverricht-Lundborg+Syndrome%5BMAJR%5D%29+AND+%28Unverricht-Lundborg+disease%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D)

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Last updated March 27, 2024