Stüve-Wiedemann syndrome

Description

Stüve-Wiedemann syndrome is a severe condition characterized by bone abnormalities and dysfunction of the autonomic nervous system, which controls involuntary body processes such as the regulation of breathing rate and body temperature. The condition is apparent from birth, and its key features include abnormal curvature (bowing) of the long bones in the legs, difficulty feeding and swallowing, and episodes of dangerously high body temperature (hyperthermia).

In addition to bowed legs, affected infants can have bowed arms, permanently bent fingers and toes (camptodactyly), and joint deformities (contractures) in the elbows and knees that restrict their movement. Other features include abnormalities of the pelvic bones (the ilia) and reduced bone mineral density (osteopenia).

In infants with Stüve-Wiedemann syndrome, dysfunction of the autonomic nervous system typically leads to difficulty feeding and swallowing, breathing problems, and episodes of hyperthermia. Affected infants may also sweat excessively, even when the body temperature is not elevated, or have a reduced ability to feel pain. Many babies with this condition do not survive past infancy because of the problems regulating breathing and body temperature; however, some people with Stüve-Wiedemann syndrome live into adolescence or later.

Problems with breathing and swallowing usually improve in affected children who survive infancy; however, they still have difficulty regulating body temperature. In addition, the leg bowing worsens, and children with Stüve-Wiedemann syndrome may develop prominent joints, an abnormal curvature of the spine (scoliosis), and spontaneous bone fractures. Some affected individuals have a smooth tongue that lacks the bumps that house taste buds (fungiform papillae). Affected children may also lose certain reflexes, particularly the reflex to blink when something touches the eye (corneal reflex) and the knee-jerk reflex (patellar reflex).

Another condition once known as Schwartz-Jampel syndrome type 2 is now considered to be part of Stüve-Wiedemann syndrome. Researchers have recommended that the designation Schwartz-Jampel syndrome type 2 no longer be used.

Frequency

Stüve-Wiedemann syndrome is a rare condition that has been found worldwide. Its

prevalence is unknown.

Causes

Stüve-Wiedemann syndrome is usually caused by mutations in the *LIFR* gene. This gene provides instructions for making a protein called leukemia inhibitory factor receptor (LIFR). Receptor proteins have specific sites into which certain other proteins, called ligands, fit like keys into locks. Together, ligands and their receptors trigger signals that affect cell development and function.

The LIFR protein acts as a receptor for a ligand known as leukemia inhibitory factor (LIF) . LIFR signaling can control several cellular processes, including growth and division (proliferation), maturation (differentiation), and survival. First found to be important in blocking (inhibiting) growth of blood cancer (leukemia) cells, this signaling is also involved in the formation of bone and the development of nerve cells. It appears to play an important role in normal development and functioning of the autonomic nervous system.

Most *LIFR* gene mutations that cause Stüve-Wiedemann syndrome prevent production of any LIFR protein. Other mutations lead to production of an altered protein that likely cannot function. Without functional LIFR, signaling is impaired. The lack of LIFR signaling disrupts normal bone formation, leading to osteopenia, bowed legs, and other skeletal problems common in Stüve-Wiedemann syndrome. In addition, development of nerve cells, particularly those involved in the autonomic nervous system, is abnormal, leading to the problems with breathing, feeding, and regulating body temperature characteristic of this condition.

A small number of people with Stüve-Wiedemann syndrome do not have an identified mutation in the *LIFR* gene. Researchers suggest that other genes that have not been identified may be involved in this condition.

Learn more about the gene associated with Stüve-Wiedemann syndrome

- LIFR

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

- Neonatal Schwartz-Jampel syndrome
- Schwartz-Jampel type 2 syndrome
- SJS2

- Stuve-Wiedemann dysplasia
- Stuve-Wiedemann syndrome
- Stuve-Wiedemann/Schwartz-Jampel type 2 syndrome
- STWS
- SWS

Additional Information & Resources

Genetic Testing Information

- Genetic Testing Registry: Stuve-Wiedemann syndrome (https://www.ncbi.nlm.nih.gov/gtr/conditions/C0796176/)

Genetic and Rare Diseases Information Center

- Stüve-Wiedemann syndrome (https://rarediseases.info.nih.gov/diseases/5045/index)

Patient Support and Advocacy Resources

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

Catalog of Genes and Diseases from OMIM

- STUVE-WIEDEMANN SYNDROME 1; STWS1 (https://omim.org/entry/601559)

Scientific Articles on PubMed

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

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