Zellweger Syndrome Spectrum (PEX1-related)

What is Zellweger Syndrome Spectrum (PEX1-related)?

PEX1-related Zellweger syndrome spectrum (ZSS), a peroxisome biogenesis disorder (PBD), is an inherited group of disorders that includes Zellweger syndrome (ZS), neonatal adrenoleukodystrophy (NALD), and infantile Refsum disease (IRD). The symptoms of PEX1-related ZSS are cause by a defect in peroxisome formation. Peroxisomes are structures that are essential for normal brain and nervous system development as well as normal eye, liver, kidney, and bone functions.

ZS is the most severe form of PEX1-related ZSS. Infants with ZS develop signs and symptoms in the newborn period including weak muscle tone, feeding problems, hearing loss, vision loss, and seizures. Children with ZS also develop life-threatening problems in other organs and tissues, such as the liver, heart, and kidneys. They may have skeletal abnormalities and distinctive facial features. Children with ZS typically do not survive beyond the first year of life.

Individuals with NALD or IRD usually have milder disease symptoms with slower progression than those with ZS. Typically signs and symptoms of the disease are not found until late infancy or early childhood. Children with NALD and IRD often have weak muscle tone, vision problems, hearing loss, liver dysfunction, developmental delay, and some degree of intellectual disability. Most people with NALD survive into childhood, and those with IRD may reach adulthood. In rare cases, individuals at the mildest end of the ZSS have developmental delay in childhood and hearing loss or vision problems beginning in adulthood.

How Common is Zellweger Syndrome Spectrum (PEX1-related)?

Approximately 1 in 50,000 births are affected with ZSS worldwide annually.

What Causes Zellweger Syndrome Spectrum (PEX1-related)?

PEX1-related ZSS is a hereditary group of disorders caused by a change, or mutation, in both copies of the *PEX1* gene which causes these genes to work improperly or not work at all. Children with PEX1-related ZSS have two non-working copies of this gene. PEX1-related ZSS is inherited in an autosomal recessive manner. This means that, in most cases, both parents must be carriers of a mutation in one copy of *PEX1* to have a child with PEX1-related ZSS. If the mother and father are both found to be PEX1-related ZSS carriers, there is a 1 in 4, or 25%, chance in each pregnancy for both partners to pass on their PEX1-related ZSS gene mutations to the child, who will then have PEX1-related ZSS. Males and females have an equal chance of being affected with PEX1-related ZSS.

Is Zellweger Syndrome Spectrum (PEX1-related) Treatable?

There is no cure for PEX1-related ZSS or standard treatment. Treatment is largely symptomatic and supportive based on individual needs.

What Does it Mean to be a Carrier of Zellweger Syndrome Spectrum (PEX1-related)?

Carriers are usually healthy and do not have symptoms of PEX1-related ZSS themselves. However, carriers of PEX1-related ZSS do have an increased chance of having a child affected with PEX1-related ZSS.

Resources

- Global Foundation for Peroxisomal Disorders: www.thegfpd.org
- National Institute of Neurological Disorders and Stroke (NINDS), Zellweger Syndrome Information Page: www.ninds.nih.gov/disorders/zellweger/zellweger.htm
- United Leukodystrophy Foundation: http://ulf.org/the-zellweger-spectrum

Citations

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