How common is *ZMYND11*-related syndromic ID?

ZMYND11-related syndromic intellectual disability is very rare. Currently (2020) less than 50 children with this diagnosis have been reported in the medical literature. It is expected that more children will be diagnosed with this condition as awareness increases and genetic testing becomes more routine.

Why did this happen?

When children are conceived, the genetic material is copied in the egg and sperm that make a new child. The biological copying method is not perfect, and random rare changes occur in the genetic code of children that are not seen in the DNA of their parents. This happens naturally and is not due to any lifestyle, dietary or environmental factors. No one is to blame and nobody is at fault. Such changes happen to everyone but it's only when a change affects an important gene that health and/or development are affected.

In most children diagnosed with *ZMYND11*-related syndromic intellectual disability so far, the change in the *ZMYND11* gene occurred by chance in that child (this is known as *de novo*) and was not found in either parent. However, pathogenic variants of *ZMYND11* are known to have been inherited from affected parents.

Can it happen again?

The risk of having another child affected by a rare gene disorder depends on the genetic code of the parents. If the change in the *ZMYND11* gene has been shown to be *de novo*, that means neither parent was found to carry it, the chance of having another child with this variant is low (less than 1%). If a parent is found to carry the genetic variant, the chance of passing it on is 50% for each pregnancy. A clinical geneticist can give you specific advice for your family.

Can it be cured?

ZMYND11-related syndromic intellectual disability cannot be cured at the present time however, knowing the diagnosis means that appropriate monitoring and treatment can be put in place.

Notes

Inform Network Support

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Websites, Facebook groups and other links:

https://www.facebook.com/groups/1666603683577748

Join *Unique* for family links, information and support.

Unique is a charity without government funding, existing entirely on donations and grants. If you can, please make a donation via our website at www.rarechromo.org/donate Please help us to help you!

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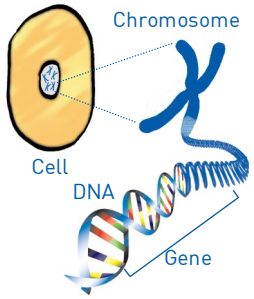
ZMYND11-related syndromic intellectual disability (ID)

rarechromo.org

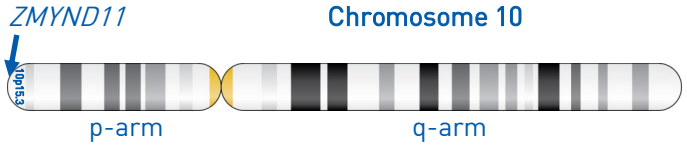
What is *ZMYND11*-related syndromic ID?

ZMYND11-related syndromic intellectual disability (ID) is a rare genetic condition that causes developmental delay affects a child's learning abilities and behaviour. As is common with genetic conditions, each person is affected differently. A few children with this genetic test result experience seizures, but otherwise, no serious medical concerns have been identified.

What causes *ZMYND11*-related syndromic ID?



ZMYND11-related syndromic intellectual disability is caused by specific changes (known as pathogenic variants) to, or a deletion of, a gene called *ZMYND11* (*ZMYND11* is an abbreviation of the name of the protein that the gene codes for, zinc finger mynd domain -containing protein 11). This gene is located on the short 'p' arm of chromosome 10 in a region called 10p15.3 (see below).



We have two copies of chromosome 10 in our cells, so we also have two copies of the *ZMYND11* gene.

ZMYND11-related syndromic ID occurs when only one copy of the *ZMYND11* gene is affected, this is known as autosomal dominant since the change occurred on an autosome (any of the chromosomes numbered 1-22) and features are apparent when only one copy of the gene is altered (this is known as dominant).

The *ZMYND11* gene sequence is used to make the ZMYND11 protein. This protein helps to control the activity of other genes. ZMYND11 has an important level of activity in the brain, especially during development, so changes to it's function may cause neurological difficulties such as those associated with learning and behaviour.

ZMYND11 variants

A number of different pathogenic (or likely pathogenic) variants have been identified in the *ZMYND11* gene. Most of these gene changes are thought to result in reduced levels, or reduced function of the ZMYND11 protein. Some variants however are thought to result in the production of a protein with an altered function [e.g. p.(Ser421Asn) and p.(Arg600Trp)], and children with these may be more severely affected, although most of the information in this leaflet will still have some relevance to them. Further information associating specific variants and features is likely to become available as more children are diagnosed.

Features

Most children with *ZMYND11*-related syndromic ID have:

- Developmental delay
- Mild to severe intellectual disability (ID)
- Speech and language delay
- Behavioural difficulties

Other possible features include:

- Weak muscle tone (hypotonia)
- Seizures and epilepsy
- Feeding difficulties in the first few months

Medical concerns

Hypotonia

Almost half of the children reported so far with *ZMYND11*-related syndromic ID have been found to have weak muscle tone (hypotonia).

Seizures

Over a third of children with *ZMYND11*-related syndromic ID are known to experience seizures or have had a seizure but there is currently very little information regarding seizure activity.

Feeding difficulties

Feeding difficulties, such as excessive vomiting or slow feeding, have been identified in about two thirds of children described with *ZMYND11*-related syndromic ID to date (2020). A few children have required supplementary feeding.

Development

Physical development

Developmental delay has been reported in all individuals reported with *ZMYND11*-related syndromic ID so far (2020). Delays of motor function, for example walking, has been reported in most children.

Intellectual development and learning

Children with *ZMYND11*-related syndromic ID are diagnosed with different levels of intellectual disability. So far, most have been reported as having mild to moderate ID, and a few have severe ID. Some children remain in mainstream school with extra help while others benefit from the addition support offered by a special school.

Speech and language

Language developmental delay has been reported in most children diagnosed with *ZMYND11*-related syndromic ID to date (2020). For many, first words are achieved between the age of two and four years.

Behaviour

Most children with *ZMYND11*-related syndromic ID have been diagnosed with behavioural difficulties. These include: attention deficit, hyperactivity, and impulsivity; aggressive behaviour; and autism spectrum disorder or autistic traits.

Behavioural difficulties can be particularly challenging for children and carers. Understanding of these behaviours is important for the social and emotional wellbeing of children.

Facial features. Some, but not all, children with *ZMYND11*-related syndromic ID appear to have a few shared facial features such as thick eyebrows, prominent eyelashes, and a bulbous nose. Although children may not look very different to their siblings or peers, establishing shared facial features, however mild, may help aid syndrome diagnosis.

Management recommendations

Children with *ZMYND11*-related syndromic ID may require input into their care from a multidisciplinary team, which may include a geneticist, paediatrician, neuropaediatrician/neurologist and an epilepsy specialist. Therapy should be provided according to a child's needs, for example speech and language therapy.