Families say ...

" With a very rare disease, a diagnosis like TBCK is a very unknown path. There is a spectrum of abilities and specific needs of different children, but there is profoundly powerful spirit that connects all of our families who are bonded together with a unique diagnosis. The community and knowing the stories of the other children affected by TBCK has been such a privilege. Our kids work hard every day to find ways to participate in the world around them. Their care can vary, but from our perspective we see that the seizure management and maintaining a healthy respiratory system have been the two areas where families battle the hardest. Since epilepsy has no cure and TBCK has no cure, all of us coming together to educate, advocate, and push for the best for our children is led by the incredible families and researchers. "

" To the new families, our best advice is to keep pushing. Find a good therapy team who thinks outside-the-box. Find a neurologist who is tireless. Find a way to decompress and find joy. Find a way to be gentle with yourself. Find your people and hold them close. Finally, your child with TBCK has found you and they will open your heart and minds in ways that will be beautiful. "

" First comment for newcomers: join the TBCK Parent Group on FB (really, a tremendous amount of information can be reached here along with psychological support and help). Once the heat, confusion and disbelief has decreased a bit, I would still encourage all to enter all known data into the MyGene2 and GenIDA databases to make it easier for researchers and geneticists to find links between the various genetic variants and the patients struggling with it..
And, naturally, to visit the TBCK foundation :-) *"*

Inform Network Support

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Understanding Chromosome & Gene Disorders

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!

Websites, Facebook groups and other links:

https://tbckfoundation.com/
https://www.research.chop.edu/tbck
https://humandiseasegenes.nl/tbck/

Unique mentions other organisations' message boards and websites to help families looking for information. This does not imply that we endorse their content or have any responsibility for it.

This information guide is not a substitute for personal medical advice. Families should consult a medically qualified clinician in all matters relating to genetic diagnosis, management and health. Information on genetic changes is a very fast-moving field and while the information in this guide is believed to be the best available at the time of publication, some facts may later change. Unique does its best to keep abreast of changing information and to review its published guides as needed.
This booklet was written by Dr Elizabeth Bhoj MD PhD, physician and assistant professor of paediatrics, Children's Hospital of Philadelphia and compiled by Unique (AP).
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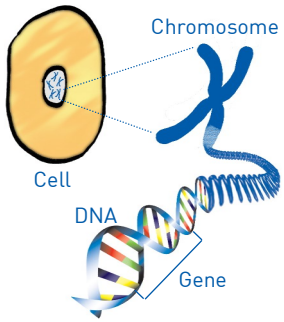
Understanding Chromosome & Gene Disorders

TBCK syndrome

rarechromo.org

What is TBCK syndrome?



TBCK syndrome was first described in 2016, and its name is derived from the name of the gene which, when altered, can cause this syndrome.

The *TBCK* gene name is an abbreviation of 'TBC1 Domain Containing Kinase'. The gene codes for a protein, which goes by the same name. The TBCK protein plays important roles in the cells from which our bodies are made; it is involved with cell function, growth, multiplication, and survival.

TBCK syndrome (also known as TBCK ID-syndrome and TBCK-related encephalopathy) is caused by specific changes (mutations) in the TBCK gene. These changes are identified by genetic tests such as whole exome sequencing or whole genome sequencing.

TBCK syndrome affects boys and girls.

Most people have:

- Developmental delay
  (children may continue to gain skills, or lose some they have already learned)
- Low muscle tone
  (that may get worse as children get older)
- Seizures
- Enlarging tongue

Some people have:

- Hormone disorders
- Psychiatric disorders
- Autism spectrum disorder
- Hand-mouthing or hand chewing
- Vision impairment
- Hearing loss
- Scoliosis

Medical Concerns

The most common medical issues with TBCK syndrome are those of the brain, which may get worse over time. Many people have seizures that can be difficult to control with seizure medications.

This is a very variable disorder. Some children have a very severe outcome, and complications with breathing and heart beat control can lead to a shortened life. Other children are only mildly affected with some developmental delay.

If symptoms become very severe, some parents chose to have a machine breathe for their children, while others chose to provide comfort care. These are both loving and valid choices for families. For many families it can be helpful to involve a palliative care team whilst considering what is best for your child.

Development

Development is very varied among children with TBCK syndrome. There is some connection between the type of genetic change in children and their development, so your geneticist may be able to give you guidance about what to expect. Many children will not learn to walk or talk. Some children do learn to walk and talk, but usually at a later stage than unaffected children.

Management

After diagnosis, it is important to see a neurologist, a geneticist, and a developmental paediatrician. Regardless of the age of your child. It is also important for your child to have an evaluation for physical, occupational, and speech therapy. It is also helpful to have an eye and hearing exam to make sure that your child is being maximally stimulated to promote development.

Some children continue to learn new skills, whilst others may lose skills they had previously achieved. It is important to continue to work with your specialists and therapists to continue to maximize the potential and comfort of your child.

What causes TBCK Syndrome?

TBCK syndrome is caused by a change in both copies of the TBCK gene which means neither function properly. This is called an 'autosomal recessive' disorder since the gene is located on an autosomal chromosome (chromosome 4, band q24) and both copies of the gene must be altered for the syndrome to occur.

Why did this happen?

When both copies of the TBCK gene are altered in a child, it usually means that one mutation was inherited from the mother, and one from the father.

There is nothing that happened before or during the pregnancy that caused this to happen. We all have small changes in our genes, and it is by chance that two parents have alterations in the same gene, or because the parents share a common ancestor.

Can it happen again?

If the same two parents have further children together, the chance of another child having the disorder is 25% or ¼, and there is a 75% or ¾ chance of having an unaffected child. The disorder is more common if the parents are related to each other (such as first cousins) since they are more likely to share the same alteration. There is testing that can be done and technology can be used to greatly decrease the risk of having another affected pregnancy.

Can this be cured?

There is currently no specific cure for TBCK syndrome, but there are different medications available to treat certain symptoms, such as seizure medicine. It is also important to start therapies early, such as physical, occupational, and speech therapy, to maximize potential. There are research studies underway looking at specific therapies, but none that are currently clinically available.