Baraitser-Winter syndrome

Baraitser-Winter syndrome is a condition that affects the development of many parts of the body, particularly the face and the brain.

An unusual facial appearance is the most common characteristic of Baraitser-Winter syndrome. Distinctive facial features can include widely spaced eyes (hypertelorism), large eyelid openings, droopy eyelids (ptosis), high-arched eyebrows, a broad nasal bridge and tip of the nose, a long space between the nose and upper lip (philtrum), full cheeks, and a pointed chin.

Structural brain abnormalities are also present in most people with Baraitser-Winter syndrome. These abnormalities are related to impaired neuronal migration, a process by which nerve cells (neurons) move to their proper positions in the developing brain. The most frequent brain abnormality associated with Baraitser-Winter syndrome is pachygyria, which is an area of the brain that has an abnormally smooth surface with fewer folds and grooves. Less commonly, affected individuals have lissencephaly, which is similar to pachygyria but involves the entire brain surface. These structural changes can cause mild to severe intellectual disability, developmental delay, and seizures.

Other features of Baraitser-Winter syndrome can include short stature, ear abnormalities and hearing loss, heart defects, presence of an extra (duplicated) thumb, and abnormalities of the kidneys and urinary system. Some affected individuals have limited movement of large joints, such as the elbows and knees, which may be present at birth or develop over time. Rarely, people with Baraitser-Winter syndrome have involuntary muscle tensing (dystonia).

Frequency

Baraitser-Winter syndrome is a rare condition. Fewer than 50 cases have been reported in the medical literature.

Genetic Changes

Baraitser-Winter syndrome can result from mutations in either the ACTB or ACTG1 gene. These genes provide instructions for making proteins called beta (β)-actin and gamma (γ)-actin, respectively. These proteins are active (expressed) in cells throughout the body. They are organized into a network of fibers called the actin cytoskeleton, which makes up the cell's structural framework. The actin cytoskeleton has several critical functions, including determining cell shape and allowing cells to move.
Mutations in the ACTB or ACTG1 gene alter the function of β-actin or γ-actin. The malfunctioning actin causes changes in the actin cytoskeleton that modify the structure and organization of cells and affect their ability to move. Because these two actin proteins are present in cells throughout the body and are involved in many cell activities, problems with their function likely impact many aspects of development, including neuronal migration. These changes underlie the variety of signs and symptoms associated with Baraitser-Winter syndrome.

Inheritance Pattern
This condition is described as autosomal dominant, which means one copy of the altered gene in each cell is sufficient to cause the disorder. The condition almost always results from new (de novo) mutations in the ACTB or ACTG1 gene and occurs in people with no history of the disorder in their family.

Other Names for This Condition
- BRWS
- cerebro-frontofacial syndrome, type 3
- Fryns-Aftimos syndrome
- iris coloboma with ptosis, hypertelorism, and mental retardation

Diagnosis & Management

Genetic Testing
- Genetic Testing Registry: Baraitser-Winter syndrome 1
- Genetic Testing Registry: Baraitser-Winter Syndrome 2

Other Diagnosis and Management Resources
- GeneReview: Baraitser-Winter Cerebrofrontofacial Syndrome
  https://www.ncbi.nlm.nih.gov/books/NBK327153

General Information from MedlinePlus
- Diagnostic Tests
  https://medlineplus.gov/diagnostictests.html
- Drug Therapy
  https://medlineplus.gov/drugtherapy.html
- Genetic Counseling
  https://medlineplus.gov/geneticcounseling.html
• Palliative Care
  https://medlineplus.gov/palliativecare.html
• Surgery and Rehabilitation
  https://medlineplus.gov/surgeryandrehabilitation.html

Additional Information & Resources
  MedlinePlus
  • Encyclopedia: Coloboma of the Iris
    https://medlineplus.gov/ency/article/003318.htm
  • Encyclopedia: Eyelid Drooping
    https://medlineplus.gov/ency/article/001018.htm
  • Health Topic: Brain Malformations
    https://medlineplus.gov/brainmalformations.html

Genetic and Rare Diseases Information Center
  • Baraitser-Winter syndrome
  • Pachygyria
    https://rarediseases.info.nih.gov/diseases/7300/pachygyria

Additional NIH Resources
  • National Institute of Neurological Disorders and Stroke: Lissencephaly
    https://www.ninds.nih.gov/Disorders/All-Disorders/Lissencephaly-Information-Page

Educational Resources
  • Disease InfoSearch: BARAITSER-WINTER SYNDROME 2
    http://www.diseaseinfosearch.org/BARAITSER-WINTER+SYNDROME+2/7799
  • Disease InfoSearch: Iris coloboma with ptosis hypertelorism and mental retardation
    http://www.diseaseinfosearch.org/Iris+coloboma+with+ptosis+hypertelorism+and+mental+retardation/3870
  • MalaCards: baraitser-winter syndrome
    http://www.malacards.org/card/baraitser_winter_syndrome
  • Orphanet: Baraitser-Winter cerebrofrontofacial syndrome
    https://www.orpha.net/consor/cgi-bin/OE_Exp.php?Lng=EN&Expert=2995

Patient Support and Advocacy Resources
  • Children's Craniofacial Association
    https://ccakids.org/
  • Resource List from the University of Kansas Medical Center: Lissencephaly
    http://www.kumc.edu/gec/support/lissence.html
GeneReviews

- Baraitser-Winter Cerebrofrontofacial Syndrome
  https://www.ncbi.nlm.nih.gov/books/NBK327153

Scientific Articles on PubMed

- PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28baraitser-winter+syndrome%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D

OMIM

- BARAITSER-WINTER SYNDROME 1
  http://omim.org/entry/243310
- BARAITSER-WINTER SYNDROME 2
  http://omim.org/entry/614583

Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/3351890
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1015421/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/1865474
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1016856/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/7545868

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/22366783
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  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/8320709
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1016384/