Mowat-Wilson syndrome

Mowat-Wilson syndrome is a genetic condition that affects many parts of the body. Major signs of this disorder frequently include distinctive facial features, intellectual disability, delayed development, an intestinal disorder called Hirschsprung disease, and other birth defects.

Children with Mowat-Wilson syndrome have a square-shaped face with deep-set, widely spaced eyes. They also have a broad nasal bridge with a rounded nasal tip; a prominent and pointed chin; large, flaring eyebrows; and uplifted earlobes with a dimple in the middle. These facial features become more distinctive with age, and adults with Mowat-Wilson syndrome have an elongated face with heavy eyebrows and a pronounced chin and jaw. Affected people tend to have a smiling, open-mouthed expression, and they typically have friendly and happy personalities.

Mowat-Wilson syndrome is often associated with an unusually small head (microcephaly), structural brain abnormalities, and intellectual disability ranging from moderate to severe. Speech is absent or severely impaired, and affected people may learn to speak only a few words. Many people with this condition can understand others' speech, however, and some use sign language to communicate. If speech develops, it is delayed until mid-childhood or later. Children with Mowat-Wilson syndrome also have delayed development of motor skills such as sitting, standing, and walking.

More than half of people with Mowat-Wilson syndrome are born with an intestinal disorder called Hirschsprung disease that causes severe constipation, intestinal blockage, and enlargement of the colon. Chronic constipation also occurs frequently in people with Mowat-Wilson syndrome who have not been diagnosed with Hirschsprung disease.

Other features of Mowat-Wilson syndrome include short stature, seizures, heart defects, and abnormalities of the urinary tract and genitalia. Less commonly, this condition also affects the eyes, teeth, hands, and skin coloring (pigmentation). Although many different medical issues have been associated with Mowat-Wilson syndrome, not every individual with this condition has all of these features.

Frequency

The prevalence of Mowat-Wilson syndrome is unknown. More than 200 people with this condition have been reported in the medical literature.
Genetic Changes

Mutations in the ZEB2 gene cause Mowat-Wilson syndrome. The ZEB2 gene provides instructions for making a protein that plays a critical role in the formation of many organs and tissues before birth. This protein is a transcription factor, which means that it attaches (binds) to specific regions of DNA and helps control the activity of particular genes. Researchers believe that the ZEB2 protein is involved in the development of tissues that give rise to the nervous system, digestive tract, facial features, heart, and other organs.

Mowat-Wilson syndrome almost always results from a loss of one working copy of the ZEB2 gene in each cell. In some cases, the entire gene is deleted. In other cases, mutations within the gene lead to the production of an abnormally short, nonfunctional version of the ZEB2 protein. A shortage of this protein disrupts the normal development of many organs and tissues, which causes the varied signs and symptoms of Mowat-Wilson syndrome.

Inheritance Pattern

This condition is inherited in an autosomal dominant pattern, which means one copy of the altered gene in each cell is sufficient to cause the disorder.

Other Names for This Condition

- Hirschsprung disease-mental retardation syndrome
- microcephaly, mental retardation, and distinct facial features, with or without Hirschsprung disease
- MWS

Diagnosis & Management

Genetic Testing

- Genetic Testing Registry: Mowat-Wilson syndrome

Other Diagnosis and Management Resources

- GeneReview: Mowat-Wilson Syndrome
  https://www.ncbi.nlm.nih.gov/books/NBK1412
- MedlinePlus Encyclopedia: Hirschsprung's Disease
  https://medlineplus.gov/ency/article/001140.htm
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: Hirschsprung's Disease
  https://medlineplus.gov/ency/article/001140.htm
- Health Topic: Colonic Diseases
  https://medlineplus.gov/colonicdiseases.html
- Health Topic: Congenital Heart Defects
  https://medlineplus.gov/congenitalheartdefects.html
- Health Topic: Developmental Disabilities
  https://medlineplus.gov/developmentaldisabilities.html

Genetic and Rare Diseases Information Center

- Mowat-Wilson syndrome

Additional NIH Resources

- Eunice Kennedy Shriver National Institute of Child Health and Human Development: Intellectual and Developmental Disabilities
  https://www.nichd.nih.gov/health/topics/idds/Pages/default.aspx
- National Institute of Diabetes and Digestive and Kidney Diseases: What I Need to Know About Hirschsprung's Disease
  https://www.niddk.nih.gov/health-information/digestive-diseases/hirschsprung-disease
Educational Resources

- Disease InfoSearch: Mowat-Wilson syndrome
  http://www.diseaseinfosearch.org/Mowat-Wilson+syndrome/4895
- MalaCards: mowat-wilson syndrome
  http://www.malacards.org/card/mowat_wilson_syndrome
- Orphanet: Mowat-Wilson syndrome
  http://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=2152

Patient Support and Advocacy Resources

- Contact a Family (UK)
  https://www.cafamily.org.uk/medical-information/conditions/m/mowat-wilson-syndrome/
- Mowat-Wilson Syndrome Foundation
  https://mowat-wilson.org/
- National Organization for Rare Disorders (NORD)
  https://rarediseases.org/rare-diseases/mowat-wilson-syndrome/

GeneReviews

- Mowat-Wilson Syndrome
  https://www.ncbi.nlm.nih.gov/books/NBK1412

ClinicalTrials.gov

- ClinicalTrials.gov
  https://clinicaltrials.gov/ct2/results?cond=%22Mowat-Wilson+syndrome%22+OR+%22Hirschsprung+Disease%22

Scientific Articles on PubMed

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

OMIM

- MOWAT-WILSON SYNDROME
  http://omim.org/entry/235730
Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17103451
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/22246645
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/19215041
- GeneReview: Mowat-Wilson Syndrome 
  https://www.ncbi.nlm.nih.gov/books/NBK14112
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/15121779 
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1735777/
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/12746390 
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1735450/
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/25123255
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/12784289
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/21343952 
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3172917/

Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/11891681


Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/16053902

Reprinted from Genetics Home Reference:

Reviewed: June 2015
Published: June 13, 2017

Lister Hill National Center for Biomedical Communications
U.S. National Library of Medicine
National Institutes of Health
Department of Health & Human Services