



What is Mucopolipidosis Type IV?

Mucopolipidosis Type IV (MLIV) is an inherited disease characterized by poor growth, severe developmental delay, and progressive vision loss.¹ The symptoms of MLIV are attributed to an inability of the body to move lipids and other substances properly within cells, causing accumulation of these substances in cells and organs. MLIV belongs to a group of diseases called lysosomal storage disorders.²

What are the symptoms of MLIV and what treatment is available?

Symptoms of MLIV begin within the first year of life and include¹⁻²:

- Intellectual disability
- Limited or absent word use
- Difficulty using hands and eating
- Weak muscle tone that progresses to abnormal muscle stiffness
- Ability to walk or crawl for some individuals; inability to walk unaided for most
- Progressive retinal degeneration (breakdown of the light-sensitive layer at the back of the eye) and corneal (clear cover of the eye) clouding leads to severe vision loss by early teens.
- Iron deficiency, in about half the individuals

There is no cure for MLIV. Most children with MLIV live into adulthood.¹ Management of MLIV symptoms may include speech and physical therapy, eye surgery, eye medications, antiseizure medications, and iron supplements.¹

An “atypical” form of MLIV with a milder clinical course has been seen in about 5% of children, usually of non-Ashkenazi Jewish descent.^{1,2}

How is MLIV inherited?

MLIV is an autosomal recessive disease caused by mutations in the *MCOLN1* gene.² An individual who inherits one copy of a *MCOLN1* gene mutation is a “carrier” and is not expected to have related health problems. An individual who inherits two mutations in this gene, one from each parent, is expected to be affected with MLIV.

If both members of a couple are carriers, the risk for an affected child is 25% in each pregnancy; therefore, it is especially important that the reproductive partner of a carrier be offered testing.

Who is at risk for MLIV?

MLIV can occur in individuals of all ethnicities; however, the majority of individuals with MLIV (about 70%) are of Ashkenazi (Eastern European) Jewish ancestry.² Among Ashkenazi Jews, the carrier frequency is 1 in 89,³ and the incidence is calculated to be approximately 1 in 31,700.

If there is no family history, the risk for an individual to be a carrier depends on an individual’s ethnic background as noted above.

What does a positive test result mean?

If a gene mutation is identified, an individual should speak to a physician or genetic health professional about the implications of the result and appropriate testing for the reproductive partner and at-risk family members.





What does a negative test result mean?

A negative result reduces, but does not eliminate, the possibility that an individual carries a gene mutation. The likelihood of being a carrier is also influenced by family history, medical symptoms, and other relevant test results.

Where can I get more information?

- Mucopolidosis IV foundation: <http://www.ml4.org/>
- National MPS society: <http://www.mppsociety.org/>

References

1. Schiffmann R *et al.* Mucopolidosis IV. Available at <http://www.ncbi.nlm.nih.gov/books/NBK1214/>. Accessed: Feb 29, 2012.
2. Genetics Home Reference: Mucopolidosis type IV. Available at <http://ghr.nlm.nih.gov/condition/mucopolidosis-type-iv>. Accessed March 13, 2012.
3. Scott S *et al.* Experience with carrier screening and prenatal diagnosis for 16 Ashkenazi Jewish genetic diseases. *Hum Mut.* 2010; 31: 1-11.

