

What is aspartylglucosaminuria?

Aspartylglucosaminuria (AGU) is an inherited disease characterized by progressive intellectual disability and skin, bone, and joint issues. It is caused by defects in the enzyme aspartylglucosaminidase, which is needed to properly break down certain sugars (oligosaccharides) that are attached to specific proteins (glycoproteins). Symptoms associated with aspartylglucosaminuria are attributed to the toxic build-up of glycoproteins in cells, particularly in cells of the central nervous system, leading to progressive destruction of nerve cells in the brain.¹

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

There are typically no signs of aspartylglucosaminuria at birth. Signs and symptoms usually become evident by two to three years of age and change with time. They may include:^{1,2}

- Progressive intellectual and developmental disabilities that worsen with age, including a progressive loss of speech
- Progressive changes in facial features (thickening of skin, more prominent appearance of features)
- Loose joints and skin
- Seizures or problems with movement
- Scoliosis (abnormal curving of the spine)
- Frequent respiratory infections

There is no cure for aspartylglucosaminuria. Treatment is supportive and involves management of symptoms, including medications for frequent infections and seizures, and surgeries to repair problems related to loose joints. Individuals with aspartylglucosaminuria have a shortened life span and typically live 30-40 years.³

How is aspartylglucosaminuria inherited?

Aspartylglucosaminuria is an autosomal recessive disease caused by mutations in the *AGA* gene. An individual who inherits one *AGA* gene mutation is a carrier and is not expected to have related health problems.¹ An individual who inherits two *AGA* gene mutations, one from each parent, is expected to be affected with aspartylglucosaminuria.

Who is at risk for aspartylglucosaminuria?

Aspartylglucosaminuria can occur in individuals of all races and ethnicities. It is more common in individuals of Finnish ancestry in which the incidence is estimated to be 1 in 26,000.² The calculated carrier frequency is 1 in 81.²

Having a family member who is a carrier or who is affected can increase an individual's risk to be a carrier. Consultation with a genetics health professional may be helpful in determining carrier risk and appropriate testing.

What does a positive test result mean?

If a gene mutation is identified, an individual should speak to a physician or genetics 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?

ISMARD: The International Advocate for Glycoprotein Storage Diseases
http://www.ismrd.org/the_diseases/aspartylglucosaminuria

CLIMB: Children Living with Inherited Metabolic diseases
<http://www.climb.org.uk/>

References

1. Aspartylglucosaminuria and AGA. Genetics Home Reference. Available <http://ghr.nlm.nih.gov/condition/aspartylglucosaminuria> and <http://ghr.nlm.nih.gov/gene/AGA>. Accessed March 26, 2012.
2. Aspartylglucosaminuria. OMIM. Available at: <http://omim.org/entry/208400>. Accessed March 26, 2012.
3. Arvio P, Arvio M. Progressive nature of aspartylglucosaminuria. Acta Paediatr. 2002; 91(3):255-257.