



HFE-associated Hereditary Hemochromatosis

Other Names: Type 1 hemochromatosis, Adult-onset hemochromatosis

HFE-associated Hereditary Hemochromatosis is a genetic condition characterized by the body absorbing and storing too much iron. It is caused by mutations in the HFE gene which makes the HFE protein.

Characteristics of HFE-associated Hereditary Hemochromatosis

HFE-associated Hereditary Hemochromatosis (HHC) is an adult-onset genetic condition that causes the body to absorb and store excess iron. Since the excess iron gets stored in the body's joints and various organs including the liver, pancreas, heart, and skin, clinical symptoms of HHC may include joint pain, weakness, fatigue, abdominal pain, and a "bronzed" or tanned appearance to the skin. Symptoms of advanced stage disease may include diabetes, an enlarged liver, liver cancer, and heart disease. The clinical symptoms of HHC usually appear in the 4th to 6th decade of life in males, and after menopause in females. However, most individuals with HHC do not develop the clinical symptoms of the condition, but rather specific iron blood tests indicate iron overload (i.e., they have a biochemical diagnosis of HHC, but do not have the clinical symptoms of the condition).

HHC is one of the most common genetic conditions in the U.S; it is estimated that approximately 1 in every 200 people in the U.S. have HHC, and approximately 1 in 9 individuals with European origin are carriers of HHC. HHC is less common in Asians and African Americans.

Diagnosis/Testing

Individuals with HHC have changes or mutations in a gene called HFE. This gene encodes the HFE protein that plays an important role in absorbing and storing iron. Mutations in the HFE gene disrupt this process, thus allowing excess iron to be stored in the body. The most common mutation associated with HHC is the p.C282Y mutation; approximately 85-90% of individuals with HHC have two copies of this mutation. Certain blood tests that measure the iron concentrations in the blood, and the amount of iron that can be carried in the blood are useful indicators of iron overload.

Management/Surveillance

Management of individuals with clinical HHC and those with biochemical HHC involves periodic phlebotomy (i.e., regular blood draws) to remove the excess iron. Once the iron levels are adequately reduced, routine blood tests are performed to monitor the amount of iron in the body.

Individuals with HHC should avoid iron and vitamin C supplements, as well as raw seafood. For individuals with advanced stage disease, alcohol should also be avoided, as it has been shown to worsen symptoms.

Mode of inheritance

HHC is inherited in an autosomal recessive pattern. This means that an individual has to inherit two HFE mutations (i.e., one from each parent) to be affected with HHC. If both parents are carriers of a HFE mutation, they have a 1 in 4 (25%) chance with each pregnancy of having a child with HHC.

Risk to family members

Parents of a child with HHC are carriers of HHC. However, because the carrier frequency of HHC is so high, it is possible that a parent of a child with HHC may in fact also have HHC.

Special considerations

None

Resources

Hemochromatosis

<http://www.hemochromatosis.org>

Centers for Disease Control and Prevention: Hemochromatosis (Iron Storage Disease)

<http://www.cdc.gov/ncbddd/hemochromatosis/index.html>

Genetics Home Reference: Hemochromatosis

<http://ghr.nlm.nih.gov/condition/hemochromatosis>

Iron Disorders Institute

<http://www.irondisorders.org>

References

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[European Association for the Study of the Liver. \(2010\).](#) "EASL clinical practice guidelines for HFE hemochromatosis." *Journal of Hepatology* 53(1): 3-22.

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Created: 01/2013

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Updated: mm/yyyy