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My46 Trait Profile

Hereditary Hemorrhagic Telangiectasia

Other Names: Osler-Weber-Rendu syndrome

Hereditary Hemorrhagic Telangiectasia (HHT) is a genetic condition characterized by abnormal blood vessels. It is caused by mutations in the genes ENG, ACVRL1, and SMAD4.

Characteristics of Hereditary Hemorrhagic Telangiectasia

Hereditary Hemorrhagic Telangiectasia (HHT) is a genetic condition characterized by abnormal blood vessels called telangiectases or arteriovenous malformations (AVMs). These blood vessels are abnormal in that an artery is connected directly to a vein, rather than with capillaries connecting the two. The result is a blood vessel that is abnormally dilated which can cause a problem due to either increased blood flow through the vessel and/or increased likelihood to rupture and bleed. Telangiectases (small versions of these blood vessels) occur primarily in the skin of the hands, face and lips, and the lining of the mouth and intestines. AVMs (larger versions of these blood vessels) occur primarily in the lungs, liver and brain. The main concern regarding telangiectases of the skin, mouth, intestines or brain is bleeding or hemorrhaging. The main concern regarding lung AVMs is not bleeding, but is for harm to the brain from either stroke or brain abscess. Lung AVMs can cause these problems in the brain because in the capillaries of blood vessels in the lungs, clots or clumps of bacteria in the blood are supposed to be filtered out before they get a chance to circulate to the brain. Liver AVMs also rarely bleed, but occasionally cause heart problems because the heart is being required to pump extra blood through these AVMs in the body's circulation.

The most common symptom of HHT is recurring nosebleeds from telangiectases in the nose; the severity of the nosebleeds ranges from very minor to a significant medical problem. The age at which different manifestations and symptoms of HHT present is quite variable. For example, the nosebleeds and skin telangiectases are often not apparent until late childhood or even adulthood. Brains AVMs, however, usually develop during the fetal period and present a risk from birth.

Diagnosis/Testing

Most individuals with HHT have a change or mutation in one of two genes- endoglin (ENG) or ACVRL1. A much smaller percentage of individuals with HHT have a mutation in a gene called SMAD4. Individuals with a mutation in the SMAD4 gene are also at risk for a hereditary form of polyps and cancer of the gastrointestinal tract called juvenile polyposis. There are other genes for HHT that have not yet been discovered.

Genetic testing for the known HHT genes in someone with symptoms of HHT can potentially confirm the diagnosis, clarify medical recommendations based on the specific genetic subtype of HHT, and allow for diagnostic testing for at risk infants and children in the family. Since a brain MRI to look for AVMs is recommend as early as the first few months of life in a baby with HHT, diagnostic genetic testing for HHT should be considered at birth for any baby born to a parent with HHT.

Management/Surveillance

Routine surveillance includes monitoring for anemia (low red blood cells), and screening for lung and brain AVMs. Brain and lung AVMs can present catastrophically and without warning signs, and can usually be safely treated if

detected prior to causing a serious problem such as a stroke. For these reasons, screening for lung and brain AVMs is recommended in all individuals with HHT, regardless of specific symptoms. Treatments for most other features of HHT, such as nosebleeds, intestinal telangiectases, anemia, and the effects of liver AVMs are based on the presentation of specific symptoms.

Individuals with HHT who have lung AVMs, or haven't been screened for lung AVMs within the last 5 years, should take antibiotics with non-sterile medical procedures, including dental work and dental cleaning. This is called "antibiotic prophylaxis" and helps prevent bacteria that escape filtering in the lungs from causing a serve internal infection such as a brain abscess. Individuals with lung AVMs, or who haven't been screened for lung AVMs, should also avoid scuba diving and tell medical personnel setting up intravenous (IV) lines to take extra care not to get bubbles in line. It is important to work closely with your healthcare providers if you have HHT.

Mode of inheritance

HHT is inherited in an autosomal dominant pattern. This means inheriting one mutation is enough for an individual to be affected and show signs of HHT. The mutation is usually inherited from an affected parent. Only rarely in HHT does the gene mutation occur brand new (de novo) in an affected child. An individual with HHT has a 50% chance to pass on the mutation to each child.

Risk to family members

The risk to family members depends on whether or not the individual with HHT has a parent affected with HHT. If a parent also has HHT, the risk of having a child with HHT is 50% with each pregnancy. If a parent does not have HHT, the risk of other siblings being affected is very low.

Special considerations

None

Resources

Hereditary Hemorrhagic Telangiectasia International, Inc.
http://www.hht.org/
Genetics Home Reference: Hereditary hemorrhagic telangiectasia
http://ghr.nlm.nih.gov/condition/hereditary-hemorrhagic-telangiectasia

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