VASCULAR EHLERS-DANLOS SYNDROME

Ehlers-Danlos syndrome is a group of connective tissue disorders that are characterized by unstable, hypermobile joints, loose, “stretchy” skin, and tissue fragility. It is caused by a defect in the connective tissue. The fragile tissues, stretchy skin, and unstable joints found in Ehlers-Danlos syndrome are due to a gene mutation in collagen.

It is estimated that 1 in 200,000 people have vascular Ehlers-Danlos syndrome.

There are several different types of Ehlers-Danlos syndrome, each with its own set of features and complications. Vascular Ehlers-Danlos syndrome is the most serious form of the condition because it can involve potentially life-threatening complications.

What other names do people use for vascular Ehlers-Danlos syndrome?

Vascular Ehlers-Danlos syndrome is also referred to as Ehlers-Danlos Type IV and Sack-Barabas syndrome.

How prevalent is vascular Ehlers-Danlos syndrome?

The exact prevalence of vascular Ehlers-Danlos syndrome is not known. However, based on the number of affected people in the United States, it is estimated that 1 in 200,000 people have the condition.

What are the characteristics of vascular Ehlers-Danlos syndrome?

The features of vascular Ehlers-Danlos syndrome are:

- Vascular dissection or rupture
- Thin, translucent skin and easy bruising
- Characteristic facial appearance (thin lips and midline groove in the upper lip that runs from the top of the lip to the nose, small chin, thin nose, large eyes)
- Arterial, intestinal, and/or uterine fragility
- Gastrointestinal perforation
- Organ rupture, including rupture of the uterus during pregnancy

Vascular Ehlers-Danlos syndrome can cause blood vessels to tear (rupture) unpredictably, causing internal bleeding, stroke, and shock. An arterial rupture may be, but is not always, preceded by an aneurysm (enlargement of a blood vessel), arteriovenous fistulae (an abnormal connection between an artery and a vein), or dissection. It is also possible for an arterial rupture to occur spontaneously.

Babies who have vascular Ehlers-Danlos syndrome may have clubfoot and/or dislocation of the hips at birth. Additional problems during childhood can include inguinal hernia, pneumothorax (collapsed lung), and recurrent joint subluxation (restricted movement of the joint) or dislocation.

Women with vascular Ehlers-Danlos syndrome have an increased risk of uterine rupture during pregnancy or peripartum arterial rupture (during the last month of pregnancy or the first few months after delivery).

One-fourth of those with vascular Ehlers-Danlos syndrome who had laboratory testing to confirm their diagnosis experienced a significant medical problem before the age of 20, and more than 80 percent had a significant medical problem before they turned 40.

What is the cause of vascular Ehlers-Danlos syndrome?

The gene that causes vascular Ehlers-Danlos syndrome is the COL3A1 gene (collagen, type III, alpha 1).

Vascular Ehlers-Danlos syndrome is an autosomal dominant condition; that is, a child only has to inherit a defect in the COL3A1 gene from one parent to have the disorder. About half of people with vascular Ehlers-Danlos syndrome inherited the COL3A1 mutation from an affected parent. The other half of people with the condition have a spontaneous disease-causing mutation; that is, they are the first person in their family to have vascular Ehlers-Danlos syndrome. Each child of an affected parent has a 50 percent chance of inheriting the mutation and developing the disorder.

How is vascular Ehlers-Danlos syndrome diagnosed?

The diagnosis of vascular Ehlers-Danlos syndrome is based on an examination and identification of certain features and confirmation by laboratory testing. This testing may include DNA sequence analysis, deletion/duplication analysis, and biochemical (protein-based) testing.

Genetic testing detects 98 percent of the changes in the gene for vascular Ehlers-Danlos syndrome; the rest require more specialized tests. Genetic testing is strongly recommended to confirm the vascular Ehlers-Danlos syndrome diagnosis when a person has a combination of any two of the major features of the condition.

The major features are:

- Arterial rupture
- Intestinal rupture
- Uterine rupture during pregnancy
- Family history of vascular Ehlers-Danlos syndrome

The presence of two or more minor criteria should lead to consideration of the diagnosis of vascular Ehlers-Danlos syndrome, but is not sufficient to confirm the diagnosis. The minor features are:

- Thin, translucent skin (especially noticeable on the chest and abdomen)
- Characteristic facial appearance (thin lips and midline groove in the upper lip that runs from the top of the lip to the nose, small chin, thin nose, large eyes)
- An aged appearance to the extremities, particularly the hands (acrogeria)
- Arteriovenous carotid cavernous sinus fistula (a sudden engorgement and redness of the eye)
- Small joints that move beyond the normal range expected for a joint
- Tendon/muscle rupture
- Early onset varicose veins
- Pneumothorax (lung collapse)/pneumohemothorax (accumulation of blood and gas in the lung cavity)
- Easy bruising (spontaneous or with minimal trauma)
- Chronic joint subluxations/dislocations
- Clubfoot (Talipes equinovarus)
- Receding gums

If an individual is diagnosed with vascular Ehlers-Danlos syndrome, the genetic status of at-risk relatives should be clarified through clinical evaluation and molecular genetic testing.

How is vascular Ehlers-Danlos syndrome managed?

- Ongoing monitoring: Most people with vascular Ehlers-Danlos syndrome require regular monitoring. Doctors may recommend an annual physical examination, including a carotid and abdominal ultrasound. People with known artery problems may need an evaluation by computerized tomography angiography or magnetic resonance angiography every six to 12 months.
- Medications: Treatment may include pain medication for joints and muscles, including nonsteroidal anti-inflammatory drugs, such as ibuprofen (e.g., Advil®, Motrin®) or naproxen (e.g., Aleve®), and topical anesthetics. Medications to control high blood pressure may also be prescribed.
- Surgery: In rare cases, doctors may recommend surgery to repair blood vessels or damaged joints. Blood vessels and other hollow organs are fragile and subject to rupture in people with vascular Ehlers-Danlos syndrome; therefore, doctors recommend surgery only when there is a risk of life-threatening bleeding.
- Pregnancy management: Pregnant women with vascular Ehlers-Danlos syndrome should be followed in a high-risk obstetric program. Prenatal testing is available for pregnancies that are at an increased risk of passing the COL3A1 mutation to offspring because of a known disease-causing mutation in the family. Genetic counseling can provide useful information.

- Physical therapy: Some people with vascular Ehlers-Danlos syndrome benefit from strengthening their muscles. A physical or occupational therapist can provide exercises to strengthen muscles without causing injury.
- Circumstances to avoid: People with vascular Ehlers-Danlos syndrome should avoid contact sports, heavy lifting, weight training, elective surgery, and routine colonoscopy. Arteriography should be used with great caution and only to identify life-threatening sources of bleeding prior to surgery because of the risk of vascular injury.
- Emergency situations: Vascular Ehlers-Danlos syndrome is considered the most serious form of Ehlers-Danlos syndrome due to the possibility of arterial or organ rupture. If you experience sudden chest or abdominal pain, go to a hospital emergency department immediately. Tests, such as MRA, MRI, and CT, can identify arterial or bowel complications, such as a rupture, that require surgery.
- Other: A MedicAlert® bracelet should be worn.

What is the life expectancy for vascular Ehlers-Danlos syndrome?

The median life expectancy for people with vascular Ehlers-Danlos syndrome is 48 years.

Do you have questions? Would you like more information?

- Call our help center, 800-862-7326, ext. 126 to speak with a nurse who can answer your questions and send you additional information.
- Visit our website at marfan.org. You can print information that interests you and ask questions online.