

CHAPTER 12

CHRONIC VENOUS INSUFFICIENCY PRESENTATION

Original authors: Andrew W. Bradbury, Andrew D. Lambert, Robert B. McLafferty, and C. Vaughan Ruckley

Abstracted by Teresa L. Carman

Introduction

The diagnosis of **venous disease** is difficult to make on taking a simple history of the patient's problem and physical findings (what the doctor sees). For this reason, most patients will have to have more tests done. That being said, many important facts about the patient's problem are seen on physical examination. The doctor's examination of the patient directs what next tests are needed, how the tests should be done and what the findings mean. **Venous disease** may range from simple **varicose veins** which may be quite asymptomatic to severe **chronic venous insufficiency** with associated **ulcers** or wounds.

Incidence

Varicose veins are common; in fact, some people consider them normal since they are so common. The older the people being examined, the more common **varicose veins** are seen. Most people over the age of 60 have some form of **varicose veins**. In many patients, there is a familial tendency (genetic basis) with their mother or father having **varicose veins**. The problem is more common in women than in men. Being overweight, pregnant and/or having to stand for long periods of time may increase the risk of having **varicose veins**.

There are three kinds of **varicose vein**: **varicose veins** of the **saphenous** or just off the largest **superficial veins (trunk varices)**, **reticular veins**, and **telangectasias (spider veins)**. The typical **varicose veins** that most people think of are the **trunk varices**. These are directly part of the large **superficial veins** of the leg including the **great saphenous vein** (the largest vein going from groin to ankle in the fat just under the skin) or the **small saphenous vein** (the largest **superficial vein** going from the ankle to just behind the knee). These veins are almost ½ inch in size and may be larger. They can usually be easily felt especially when the person is standing. **Reticular veins** are small blue veins seen under the skin. They are usually < 4 millimeters in size (less than a tenth of an inch). They usually can not be felt through the normal skin. Up to 80% of adults may have **reticular veins**. **Telangectasias** or **spider veins** are very near to the surface of the skin. These **veins** are usually bright red or purple. They are < 1mm in size, so very small. More than 90% of adults have **reticular veins**.

Presentation

Most people with **varicose veins** do not have any symptoms or so little problems that they chose not to seek treatment. Patients who want to get rid of the **varicose veins** are usually unhappy with the look of their legs, they have problems they think are do to the **varicose veins**, or they are worried that they will develop a worse problem if they do not care for the **varicose veins**.

In general complaints noted with **varicose veins** may be seen in 50% of adults. **Symptoms** commonly seen with **varicose veins** include:

- Dull aching or pain
- Heaviness or the feeling of leg pressure
- Swelling
- Tiredness or fatigue
- Restless legs at night
- Nighttime cramping
- Itching or burning

However, these complaints are not only seen in patients with **varicose veins** and are not described as more or less common or worse the larger the **veins** seen on examination (these symptoms are noted related to severity) Also, the worse the **reflux** (backward flow of blood in the **vein**) does not mean that the patient will have worse complaints. (that is, no relationship between the severity of **reflux** on **ultrasound** study and the presence of symptoms). Therefore it can be difficult to know which patients will have relief from their symptoms after surgery or other treatments for the varicose veins. In addition only a small number of patients will go on to have those complaints seen with **chronic venous insufficiency** when they only have **varicose veins**.

Patients with **chronic venous insufficiency (CVI)** develop **skin changes** resulting from high pressures in the **veins** that then affect the fat and skin most often around the ankle. It is seen as chronic swelling, more severe **skin changes** of thickening or **fibrosis (lipodermatosclerosis)** or dark color changes called **hyperpigmentation**, or with the most severe condition, venous stasis **ulcers** (open wounds). Usually patients with **CVI** have more than just **varicose veins**. They may have other reasons for the **skin changes** such as high pressures in the **veins** from heart failure or damage of the vessels that remove protein from the leg called **lymphedema**. Severe pain associated with **CVI** is unusual and should make your doctor look for other causes such as poor blood supply to the leg (arterial disease) or infection.

The signs of **CVI** may include: **corona phlebectatica**, **lipodermatosclerosis** or open **ulcers**. **Corona phlebectatica** is a fan-shaped flare of **reticular veins** and **telangiectasias** around the inside of the foot and ankle. **Lipodermatosclerosis** is thickening and **fibrosis** (scar formation) of the skin of the lower leg. This may begin suddenly and be mistaken for an infection or for a **blood clot**. After having **CVI** for a long time, the skin of the lower leg becomes shiny, hard and has a darker color than the surrounding skin. The skin is fixed or anchored to the underlying tissues making the skin tenser and less flexible. They skin may be very dry (**dermatitis**). White scar tissue (**atrophie blanche**) may also be present.

Diagnosis

The search for **venous disease** as an explanation of the patient's complaints should always begin with a good history and physical examination. When obtaining a history your doctor will likely ask you to tell him, in your own words, what problems you are having in your legs; how bothersome the symptoms are and how long they have been present. The doctor will want to know of any other medical problems which might show how important or how likely your symptoms are due to **venous disease**. This includes:

- A history of **blood clots** or other **vein** problems
- Family history of **blood clots** or **vein** problems
- Previous **vein** surgery
- Your job and the need for standing for a long time
- Any issues you have with weight control and constipation
- A history of cancer, stroke, recent surgery illness
- Orthopedic surgery or any injury to the leg.
- When your symptoms happen and if they are getting worse
- The use of compression stockings
- Pregnancies or pregnancy complications
- Any condition which affects the movement of the foot, ankle or leg

In addition, the physician should ask about pain with walking and perform a complete examination of the arterial (vessels which bring blood into your leg from your heart) pulses. Patients with an **ulcer** or wound may be asked about the location of the **ulcer**, the size, what it looks like, whether there are signs of infection, and what treatments have been used in the past.

Some common blood testing may be needed to check on how well your kidneys, liver or thyroid is working and if you have any unusual factors in your blood that can increase your risk of forming blood clots. To help check on the **vein** problem directly, several special clinical examinations may be performed. Most doctors examine patients both laying down and standing in a warm room with good lighting. Standing helps increase pressure in the **veins** and makes them more easily seen. The physician will take note of the location and size of **varicose veins**, **telangiectasias**, and **reticular veins**. Any **skin changes** and/or **ulcers** are noted. Listening with a stethoscope over a **vein** may reveal a noise heard with abnormal blood movement (bruit) which suggests turbulence or increased flow in the area. In an area of previous injury, this may suggest an abnormal connection between the artery and the **vein** also called an **arteriovenous fistula**. If there is a large grape-like cluster of vessels, this may suggest an **arteriovenous malformation** or **venous malformation** (birth related blood vessel abnormality).

Varicose veins are large, ropey and bluish in color. This appearance is due to backflow of blood or **reflux** which causes an increase in pressure within the **veins** such that they get bigger. Palpating or pressing on the **veins** while tapping above or below the **varicose vein** may help to know in which direction the blood is flowing. While not commonly checked now, the **Trendelenburg test** can be used in the office to help locate the site of

reflux. This may be useful if **ultrasound** is not available. The test is performed in 2 parts. In the first part the patient lies flat. The leg is elevated to empty of venous blood then a tourniquet or pressure is applied to stop blood flow in the superficial veins. Then the patient stands and the **superficial veins** are watched to see if they fill with blood. For the second part, the tourniquet is removed or the pressure released and the **veins** are watched to see if they fill with blood. This allows the physician to know which **veins** may be incompetent or not working properly. A **hand-held Doppler** or **ultrasound** machine may also be used to show the same thing. This may be helpful for obese patients, patients with recurrent **varicose veins** after surgery or when the site of **reflux** is difficult to determine.

Additional non-invasive testing may be performed in the **vascular laboratory**. Some **vascular laboratories** perform **plethysmography** testing (volume change measurements of the leg) to evaluate for **obstruction, reflux** or **calf muscle pump dysfunction**. Depending on the laboratory the type of **plethysmography** may differ. **Impedance plethysmography, strain-gauge plethysmography** and **air plethysmography** are available. Your doctor will be able to tell you which type of test may be the best for you.

Doppler ultrasound is another non-invasive test used. This allows the physician to directly see the **vein** and hear blood flow in the **vein**. This test uses sound waves which can go in to the body, hit the **vein** and be bounced back to detecting part of the machine. The test usually begins with testing to look for **deep vein thrombosis (DVT)** or chronic injury resulting from a previous **blood clotting**. Then the **veins** are studied with the patient standing to look for **reflux** (downward flow of the blood) in all of the **deep** and **superficial veins**. Testing may take a long time since for each part of the vein a blood pressure cuff is put around the lower leg and filled with air (inflated) to stop **venous flow**; this is kept in place for approximately 3 seconds. Then while examining the **vein** with the **Doppler**, the cuff is rapidly let down (deflated). In a normal **vein** the **valves** will close quickly and there will be no **reflux**. **Valves** that take more than ½ second to close are not working properly. Most **valves** with incompetence take 3-4 seconds for the **reflux** to stop. In some labs, hand compression of the leg is used to make blood go toward the heart and out of the calf. When this flow stops the time for the **valve** to stop backward blood flow is noted. Greater than one second is abnormal. **Doppler ultrasound** can also help identify abnormal **perforating veins** between the **deep** and **superficial venous systems**. Flow should occur from the **superficial system** to the **deep veins**. If the flow in the **perforating veins** is reversed, (from deep to superficial) this is abnormal.

In some cases, you may need a **CAT scan (computed axial tomography)** or **MRI (magnetic resonance imaging)** to evaluate the **veins** and make sure there is nothing blocking the blood from getting out of the **vein (outflow obstruction)**. Both of these tests may need the use of contrast or x-ray dye to see the **veins** best so may not be useful in the patient with kidney disease. If x-ray dye is needed then a **vein** must be stuck to allow the dye to be given. Metal devices such as a pacemaker may not be permitted with **MRI** imaging and your physician can determine which test may be required for your clinical condition.

Sometimes invasive tests may be required to best diagnose **venous disease**. This is especially true prior to considering a surgery or procedure to correct a **vein** problem, imaging with a **venogram** may be necessary. A **venogram** uses contrast to directly see the veins with an x-ray machine. To do this test, a vein in the foot, behind the knee or in the groin must be stuck with a needle and a small plastic tube (catheter) placed inside. Where the catheter is placed is determined by which **veins** the doctor wishes to study. Using different techniques and positions, your doctor will be able to see the **veins** and determine the best approach to fixing them. In some cases, **intravascular ultrasound** may be performed along with a **venogram**. This technique uses **ultrasound** technology but the **Doppler** or Probe is on a long catheter placed inside of the **vein**. This allows your doctor to take pictures of the **vein** and any problems from inside the **vein** prior to planning a surgery or other procedure for the **veins**.

Conclusions

In general, any evaluation of **venous disease** whether asymptomatic or causing severe symptoms begins with a good history and a physical examination including laboratory studies. Not all patients will require extensive diagnostic testing. The use of non-invasive or invasive diagnostic testing will depend on the problem being studied and the treatment options that are available.

Commonly asked questions

Do I need to bring anything to my first appointment with the vein specialist?

In general, if you have laboratory studies, prior tests or films these may be helpful to your doctor to see so bring the actual study with you to the visit. It will be necessary to have a good history of both your symptoms and any prior treatment. Any records which you can send in advance of the appointment or bring along with you may be helpful.

Do I need to fast or not eat before my appointment?

Fasting is not required for most **venous imaging**. If your doctor plans on doing a **CAT scan** or an **ultrasound** of your main **veins** in the pelvis fasting may be needed. The doctor will tell you to do so before that visit. If you are having an invasive procedure such as a **venogram** then fasting will be required.

Will I need a surgery for my veins?

Most **venous disease** is not a major problem for the patient and does not require a surgery or procedure. Cosmetic procedures to improve the appearance of the legs may be performed in asymptomatic patients but these are not required procedures. Patients with bothersome symptoms or recurrent **ulcers** may benefit from a procedure or surgery.