

Vascular Surgery

Carotid Artery Disease

What is carotid artery disease?

There are four main arteries that supply blood to the brain. Two of them lie in a canal that runs through the bones of the neck and are called the vertebral arteries. The most important arteries, the carotid arteries, run on either side of the front of the neck and carry most of the blood to the brain. Hardening of the arteries (atherosclerosis) may affect these blood vessels. This causes narrowing and furring up of the arteries. It usually happens with old age but there is a risk of getting problems at an earlier age in smokers, those with diabetes and those with a high blood cholesterol level.

The problem tends to occur where arteries branch and this is particularly true of the carotid arteries in the neck. The lining of the artery becomes rough and irregular and blood clot tends to settle on the surface. This blood clot is unstable and can break off where it will be carried by the blood flow into a small vessel in the brain or the eye. This temporarily deprives that area of blood supply resulting in a mini-stroke or more worryingly a stroke itself. Not all strokes are caused this way, as some are caused by diseased blood vessels inside the skull itself and can't be treated by surgery.

Patients with mini-strokes from carotid artery disease remain at risk of a further stroke. You will normally have been assessed by a stroke physician and if appropriate will have been referred for an urgent surgical opinion.

Symptoms

Transient ischaemic attacks (mini-strokes): these may cause sudden loss of power or sensation in an arm or leg and sometimes interference with speech. This usually resolves within 1 hour and certainly within 24 hours. It occurs on the opposite side from a narrowing in the carotid artery.

Amaurosis fugax (temporary blindness): this is similar to a mini-stroke except that there is sudden loss of vision in one eye, again usually resolving within 24 hours. It occurs on the same side as a narrowing in the carotid artery.

Minor stroke: similar to a mini-stroke but does not resolve within 24 hours. The problem often recovers slowly with time, although there may be some permanent disability.

Special tests

The most important test needed is an ultrasound scan of the neck (Duplex scan). This is a painless test with no risk, which shows us the extent of the disease and the degree of narrowing in the carotid arteries. This will help us decide the best treatment for you. If there is significant narrowing of the arteries, you will need a further test- a magnetic resonance angiogram (MRA). An MRA is an outpatient test where contrast (dye) is injected through a vein in the arm. You will then be scanned with an MRI scanner to obtain a 'road map' of the arteries in your neck. Sometimes, it may not be possible for you to have an MRA e.g. if you have a pacemaker. In this situation a detailed CT can be used to show the arteries. Rarely, if the anatomy is complicated an arteriogram is needed. This is an X-ray based test; under local anaesthetic, a needle is inserted into an artery in the groin. A fine tube (catheter) is fed through the needle into the main artery (aorta) in your chest, which gives off branches to the brain (carotid arteries). Contrast (dye) is then injected and gives an excellent picture of the carotid arteries themselves. You might also need a CT or MRI scan of your brain to look for any other possible causes of your symptoms.

Treatment

The results of your tests will be fully discussed with you. Clearly it is vital that you stop smoking immediately. You will be started on a tablet to lower your cholesterol (a statin), whatever your cholesterol level is; this can help prevent a stroke. Your blood pressure should be kept under good control. You should also be taking a tablet to try and make the blood less sticky and therefore less likely to clot on the surface of the narrowed blood vessel. Aspirin (normal dose 75 mg each day) is the standard recommended drug, unless you have problems with stomach ulcers, indigestion or allergies to aspirin. This is sometimes combined with another drug in a single tablet (Asasantin). Alternatives to aspirin include clopidogrel (Plavix) or sometimes warfarin.

If your scan shows that the narrowing in your carotid artery is less than 65-70% then you will be advised that surgery is not necessary. Large clinical tests in the UK, Europe and USA have clearly shown that the safest option here is to treat with medication only. This is because the risk of a stroke is lower than the risk of stroke from the operation itself. I will discuss this in more detail with you.

If your scan shows that the narrowing in your carotid artery is greater than 65-70%, then the option of surgery will be discussed with you. There are several factors to consider. Without an operation, the risk of a stroke will be about 10% over the next year and probably about 5% the following year. However, the operation itself carries a risk of stroke (around 3%) and rarely death. Several factors will increase or decrease this risk and I will discuss these with you. My aim is to recommend the safest option for you. The operation, if necessary, will be carried out at Bedford Hospital.

The operation

The aim of the operation is to remove the narrowed lining of the carotid artery leaving a smooth widely open vessel. This is usually carried out under local anaesthetic, which involves several injections in the neck to block the nerves. Not every person is suitable for local anaesthetic and this will be discussed in detail with you. The incision is made on the side of the neck. After the lining of the artery has been removed, the artery is then stitched, sometimes with a patch to widen it (usually bovine pericardium, which is manufactured from the tissue around a cow's heart). The skin is closed with staples, which are usually removed by the district nurse after five days. You are likely to have a small tube coming out below the scar (drain) and this will usually be removed at 24 hours.

The scar is not usually painful although there may be some bruising in the neck. It is not uncommon to have a hoarse voice after the procedure. This is due to some bruising around the nerves that supply the larynx. This usually recovers completely within a couple of weeks but can sometimes last significantly longer. There is a risk of bruising the nerve that supplies the tongue, which crosses the carotid artery at the level we need to operate on. This would cause a temporary weakness of one side of the tongue. It is also not unusual to have a patch of numbness over the tip of the ear or side of the face. You will be in hospital for two to three days after the operation and should stay on aspirin (or alternatives) and a statin indefinitely.

You will be followed-up in outpatients at either Bedford Hospital or Luton and Dunstable Hospital, depending on your address. This will usually be at 6 weeks after which you will then be discharged from the clinic.

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