Carotid Artery Occlusive Disease

What is carotid artery occlusive disease?
The carotid arteries are two blood vessels, one on each side of the neck, that carry blood from the heart to the brain. These arteries can become partially or completely blocked thereby decreasing blood flow to the brain. It is caused by a condition called atherosclerosis, also known as hardening of the arteries. Atherosclerosis is caused by a build up of cholesterol and calcium on the inside of the arteries. These deposits are called plaques, which may eventually become so thick that they completely block the flow of blood through the arteries. People with untreated blocked carotid arteries are more likely to have strokes.

What are the risk factors?
People who smoke cigarettes, are diabetic, have high levels of blood cholesterol, have high blood pressure, or have a genetic tendency toward it are at higher risk for developing a blocked carotid artery.

What are the symptoms?
Most people with blocked carotid arteries have no symptoms. The most common symptoms are transient ischemic attacks (TIAs), which are also called mini-strokes and can last from minutes to 24 hours. Examples of TIAs include:

- Unsteady gait, or loss of coordination.
- Slurred speech, weakness of the face, arm, or leg, numbness, or confusion.
- Sudden dizziness, trouble seeing, or trouble talking.

What are the risk factors?
Risk factors for carotid artery disease include:

- A history of stroke or transient ischemic attack (TIA)
- High blood pressure
- Any disorder that can damage the arteries, such as diabetes, lupus, or SLE
- High cholesterol levels
- Pregnancy
- Smoking
- Family history
- Aging

How is it diagnosed?
Several tests can detect carotid artery disease. An ultrasound test uses sound waves aimed at the kidneys and can tell doctors if the kidneys are normal, narrowed, or completely blocked. An angiogram involves placing a small needle in the upper thigh and injecting contrast material (dye) into the kidney blood vessels. Doctors then take x-rays of the vessels to detect areas of narrowing or blockage. Computed tomography (CT) scan and magnetic resonance imaging (MRI) can also be used.

How is it treated?
Treatment usually starts with medication to lower the blood pressure. If the medicine does not work well enough or the stenosis becomes worse, treatments are performed that directly treat the blockage. A tiny metal-mesh, expandable balloon catheter to open the blocked or narrowed arteries. Doctors insert the catheter into a small needle which is guided to the blockage. When the balloon inflates, it flattens the blockage (plaque) against the walls of the artery. A tiny metal-mesh, expandable tube called a stent is then placed to hold the artery open. For some patients, surgery is the best treatment for renal artery stenosis. Bypass surgery directs around the blockage so that blood can flow normally. Endarterectomy is another surgical treatment which removes the blockage.

Why is treatment important?
Renal artery stenosis can cause extremely high blood pressure which damages the kidney and increases the risk for stroke and heart attack. Blockage can also lead to dialysis.

For people with diabetes or poor circulation, proper control of blood pressure is very important. Many people with diabetes have nerve damage resulting in foot numbness. Foot ulcers may go unnoticed and untreated for long periods of time. Those with diabetes are more likely to get infections and have poor circulation in their legs and feet which may result in amputation. Poor circulation or arterial blockages can prevent healing and increase the risk of leg amputation. Guidelines for good protective foot care are listed below.

Carefully check the feet and legs every day for injury, blisters, cuts, bruises, or signs of infection including redness, swelling, warm or hot to the touch. Use a mirror to fully see the bottoms of the feet. If you cannot see, have someone look at your feet for you. Report any abnormal findings to your doctor.

Keep legs and feet clean. Wash them daily in warm (NOT HOT) water. Hot water may cause burns or blisters. Dry feet carefully, especially between the toes. Apply a light moisturizing lotion to the legs and feet every day. Do not apply lotion between the toes.

The Foot at Risk

Abdominal Aortic Aneurysm Endovascular Aneurysm Repair Peripheral Arterial Occlusive Disease Balloon Angioplasty

Cardiologist

Renal Artery Stenosis

The Foot at Risk

Do not walk barefoot or wear open shoes, not even slippers. Any injury (for example, a splinter) can cause an infection that might cause the loss of part of a foot or leg.

Wear properly fitted clean socks or stockings. Always wear socks with shoes. Avoid socks that do not allow moisture to dry.

Property fitting socks are important. Special shoes may be prescribed. New shoes should be worn only for short periods. Examine feet often to check that no sores are developing. Alternate shoes daily or allow the shoes to dry thoroughly between wearings.

Trim toenails straight across but not too short to minimize the possibility of ingrown toenails, which are prone to infection. If you cannot see well or have known blockages in the arteries, a podiatrist should trim your nails. In addition, a podiatrist should cut any corns, callouses or ingrown toenails.

If your feet are cold at night wear socks. Do not use hot water bottles, heating pads, warm compresses, or heating lamps near your feet.

If you smoke, STOP now! Not smoking will help preserve your circulation.

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Centers of Excellence

Peripheral Vascular Disease

Abdominal Aortic Aneurysm
Endovascular Aneurysm Repair
Peripheral Arterial Occlusive Disease
Balloon Angioplasty
Carotid Artery Occlusive Disease
Renal Artery Stenosis
Abdominal Aortic Aneurysm (AAA)

What is an abdominal aortic aneurysm?

The aorta is the main artery of the chest and abdomen that carries blood from the heart to all the body’s vital organs, and eventually to the legs and feet. An abdominal aortic aneurysm (AAA) is a weakening in the wall of the aorta that causes a widening or “ballooning” of a portion of the artery itself, much like a weak area of an old-fashioned rubber inner tube. An aneurysm may continue to grow larger and, if not treated, can burst (or rupture), often causing death.

What are the risk factors?

People over the age of 60, who have a family history of AAAs, suffer from high blood pressure or smoke are at increased risk. Aneurysms are more common in men than women. A family history is a special concern, so if any members of a person’s immediate family have an AAA, they should let their doctor know and a screening test can be scheduled.

What are the symptoms?

Most of the time no symptoms are associated with AAAs. Most are found by chance during routine physical examination, or when tests or x-rays are done for other health problems. Occasionally, a person may have low back pain or abdominal pain. Symptoms associated with an AAA require immediate attention.

What is an abdominal aortic aneurysm repair?

Endovascular AAA repairs are done through a small incision. During surgery, the weakened portion of the aorta is replaced with a polyester or teflon graft that is carefully matched and sewn into place. The incision is on the abdomen or the flank.

New endovascular grafting technology allows the vascular surgeon to repair an AAA by delivering a graft inside the blood vessels through a small incision in each groin. Endovascular repair is not possible for every AAA.

Endovascular AAA symptoms. The doctor can check for these problems by getting pictures (CT scans, ultrasonograms) of the endograft at regular intervals. If a problem is detected it may need treatment. Follow-up includes a check up and CT or ultrasound scan at one month, six months, 12 months and every year thereafter.

Can all patients with AAA have an endovascular repair?

No. In order to work properly, an endograft must fit into and completely seal off the aneurysm. If the blood vessel is too large or has too many twists and turns, the endograft will not fit or seal off the aneurysm and the AAA will not be repaired. Doctors decide who can have a endovascular repair by looking at the x-rays (CT scans and angiograms).

Are thoracic aortic aneurysms treated with endografts?

In the chest, the aorta travels behind the lungs along the backbone. When this part of the aorta becomes enlarged it is called a thoracic aortic aneurysm (TAA). These aneurysms can be surgically repaired by splitting the ribs and replacing the enlarged part of the aorta. Some of these aneurysms can be treated with an endograft, which requires only a small incision on the groin area. The size, shape, and location of a TAA determine whether doctors can perform an endovascular repair.

What is peripheral arterial occlusive disease?

Why do people need a balloon angioplasty?

Balloon angioplasty treats blockages that usually occur because of atherosclerosis (hardening of the arteries). Arteries are tubes that blood flows through in order to bring oxygen and nutrients to all of the body’s vital organs and muscles. When blockages occur, blood flow decreases in the organs or muscles that the artery supplies do not get enough oxygen or nutrients. This problem can cause different symptoms depending on where an artery is blocked. For example, blockages in the leg arteries can cause cramps with walking while blockages in the kidney arteries can cause high blood pressure and eventual kidney failure.

Can all blockages be treated with balloon angioplasty?

No. Some blockages are best treated with surgery. The location of the blockage and the patient’s symptoms often help doctors determine which treatment is better.

What is a balloon angioplasty?

Balloon angioplasty is a way of opening a blocked blood vessel. Instead of using surgery to cut the blood vessel open, doctors can in some cases use a small tube called an endograft that is inserted inside of the blood vessel and direct it to the area that is blocked. The balloon on the end of the tube pushes the blockage out of the way and allows more blood to flow through the artery.

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How do they do it?

The doctor will do a physical examination and take a medical history. Pulses should be checked in the feet, legs, and groin. If the pulse exam is abnormal, ultrasound may be performed to identify the location and amount of arterial narrowing. Other special x-rays, such as an arteriogram may be required.

How is it treated?

If you smoke, stop! Prescribed medications should be taken as needed to lower blood pressure or lower the level of fats in the blood. Diet changes may be needed. Exercise is also important to maintaining good arterial circulation.

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What is peripheral arterial occlusive disease?

It is a type of atherosclerosis, a hardening and narrowing of the arteries that supply blood to the arms and legs. Atherosclerosis is caused by a build up of cholesterol and calcium on the inside of the arteries. These deposits are called plaques. The plaques may become so thick that they completely block the flow of blood through the arteries. In most cases, it affects the legs. Problems result when blood flow to the extremities is severely decreased.

What are the risk factors?

People who smoke cigarettes, are diabetic, have high blood pressure levels, high blood pressure, or have a family history of circulation problems are more likely to develop peripheral arterial occlusive disease.

What are the symptoms?

This disease progresses slowly, without symptoms, until the arteries have become seriously blocked. The first symptom is usually pain in the legs when walking or exercising. As the blockages worsen, so does the pain. One or both legs may be painful and pain may also be felt in the thighs or buttocks. This pain usually occurs with walking, quickly goes away when resting, and returns when activity is started again. Feet may seem cooler. Some hair loss may happen on the legs and the top of the foot. Cuts and scrapes take longer to heal. When the circulation is bad enough a person may have pain even while resting or have sores that will not heal.

How is it diagnosed?

The doctor will do a physical examination and take a medical history. Pulses should be checked in the feet, legs, and groin. If the pulse exam is abnormal, ultrasound may be performed to identify the location and amount of arterial narrowing. Other special x-rays, such as an arteriogram may be required.

How is it treated?

If you smoke, stop! Prescribed medications should be taken as needed to lower blood pressure or lower the level of fats in the blood. Diet changes may be needed. Exercise is also important to maintaining good arterial circulation.

Not all blockages require a procedure. However, procedures to improve circulation may be required for serious blockages. The treatment choices include: (1) removing the blocked portion of the artery; (2) creating a bypass using a piece of vein or synthetic material; or (3) catheterization and balloon dilation, where a small tube is inserted into an artery in the groin and a small balloon is inflated to widen the blocked area of the artery. If the disease is extremely severe and improving the circulation is not possible, amputation of a leg or foot may become necessary.

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