



## **Education**

### **Atherosclerosis**

#### **What is atherosclerosis?**

Atherosclerosis occurs when fats and cholesterol build up in the artery wall. This buildup makes the artery stiffer and narrower than normal and blocks the flow of blood and oxygen to the body.

Atherosclerosis affects mainly the medium-sized arteries, such as the heart (coronary) arteries, neck (carotid) arteries, brain (cerebral) arteries, and kidney arteries. It is also found in the aorta, which is the largest artery in the body, and in the smaller branches of the aorta that go to the arms and legs. Atherosclerosis tends to build up near branching points in the arteries.

Atherosclerosis gets worse over time and is more common as people get older. It is the leading cause of death and disability in the US.

#### **How does it occur?**

There are at least 5 things that put you at higher risk for atherosclerosis:

- smoking
- high cholesterol
- high blood pressure
- diabetes
- close family members with atherosclerosis.

Atherosclerosis usually develops slowly. First, something damages the inner lining of an artery. The damage may be caused by high blood pressure in the artery. Other causes may be damage by a virus, irritants such as nicotine or drugs, or an allergic reaction.

Specialized white blood cells move into the injured wall of the artery. These specialized cells start to gobble up fats and cholesterol. The blood cells may gobble up so much that they burst. This causes more injury and starts the cycle again.

Platelets are cells in the blood that help blood to clot. Platelets recognize an injury and stick themselves to the injured area. One of the ways that platelets try to fix the injured artery by making more muscle cells grow in the wall of the artery. This thickens and stiffens the artery wall. The amount of scar tissue in the injured area increases. The thickened area is then called a plaque.

Some plaques grow very slowly and begin to block the inside of the artery. In time, plaque may block the artery enough to reduce the blood flow through it. When that happens, the part of the body beyond the narrowing begins to suffer from lack of oxygen.

The plaque may slowly get larger or it may break open. When the surface of a plaque breaks open, a blood clot forms at the rupture. The clot may get big enough to block the flow of blood through the artery. No one knows what causes plaques to rupture. When the blood flow is blocked, a heart attack or stroke can result.

#### **What are the symptoms?**

Atherosclerosis may not be noticed for many years until it causes symptoms. The symptoms may be constant or they may come and go. They may include problems such as:

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- pain in the leg muscles when you exercise (intermittent claudication)
- pain in the chest (angina)
- dizziness
- a mini-stroke (transient ischemic attack, or TIA).

### **How is it diagnosed?**

Your health care provider will ask about your symptoms and examine you. You may have one or more of these tests:

- angiogram, which uses special x-rays to show the walls of the arteries and any blockage
- ultrasound, which uses sound waves to make pictures of your arteries
- electrocardiogram (ECG), which can show if your heart muscle has been hurt or could be hurt by lack of blood flow
- Doppler ultrasound, which can test for blockage and measure the speed of blood flow in your arteries.
- MRI (magnetic resonance imaging) scan, which uses magnetism, radio waves, and a computer to produce images
- CT (computed tomography) scan, in which x-rays are taken at different angles and then combined by a computer.

### **How is it treated?**

Depending on your symptoms, your health care provider may prescribe medicine to reduce blood clotting, relax the blood vessels, or lower cholesterol. You may need surgery or angioplasty. Your provider may also treat conditions related to the atherosclerosis, such as kidney damage or coronary artery disease.

Your health care provider may want you to make major lifestyle changes to try to stop or reverse the buildup of plaque in your arteries. These lifestyle changes are described below as ways to take care of yourself.

### **How can I take care of myself?**

- Take the medicine prescribed and follow your health care provider's advice for lifestyle changes.
- Have your blood pressure and blood cholesterol checked regularly.
- If you smoke, quit. Tell your provider if you need help quitting.
- If you are overweight, talk to your provider about losing weight.
- Exercise regularly under the guidance of your provider.
- Switch to a low-fat, low-cholesterol, high-fiber diet. Your provider or a dietician can tell you which foods to avoid.
- Talk to your provider about taking an aspirin a day. There may be reasons why you should not take aspirin. Your provider may prescribe other medicines that can slow the progress of atherosclerosis.

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