



Vascular Screening: Safe and Cost Effective

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Most people have either read or heard about heart disease but they have heard very little about vascular disease. Detection, treatment and more important, how to prevent vascular disease needs to be broadly dispersed among patients. In most cases conditions that affect the peripheral vasculature can be serious even before they produce symptoms, so detection of vascular disease can significantly decrease the risk of death, disability and can potentially decrease the huge economic impact caused by these diseases.

Diseases that affect the carotid arteries, the aorta and peripheral arterial disease (PAD) are the three more serious noncardiac diseases. The carotid arteries are vessels that are located in the neck and carry blood to the brain, and blockage of these arteries can produce a fatal or disabling stroke. Strokes are the third leading cause of death in the United States and the leading cause of disability in our population. The aorta, main artery in the body that is located in the chest and abdomen, can be susceptible to dilatation due to progressive weakness of its wall, leading to the formation of an aneurysm that carries the risk of rupture, which almost always is fatal. A ruptured abdominal aortic aneurysm is the 10th leading cause of death in men over 55 years of age in this country. PAD leads to impaired supply of blood through the legs, which will cause pain, open ulcers that frequently do not heal and can lead to infection and amputation. PAD affects between 20-30 million people in our country and individuals who suffer from it carry a risk of dying from heart attacks or strokes that is three times more than those without the disease.

Vascular diseases and heart attacks are produced by the same cause, which is atherosclerosis. Atherosclerosis is the process by which the arteries of the body suffer deposits of cholesterol that harden the arteries, making them stiff, less susceptible to dilate when needed and that undergo a gradual narrowing in most cases or in others dilatation due to the weakness of its wall. It is essentially the same problem that manifests in different locations throughout the body. Hence patients that are at risk of a heart attack also are at risk of suffering from vascular disease. Well-recognized risk factors for a heart attack include: diabetes, hypertension, smoking, high cholesterol, low good cholesterol (HDL-cholesterol),



family history of heart attacks, and men 45 years old and older and women 55 years old and older.

In most cases when vascular disease is diagnosed in an early stage it can be treated more effectively and can avoid the complications that occur later. Screening of vascular disease is done with the use of a harmless, not painful, and fast test, which is ultrasound. People that should undergo vascular screening are those more than 55 years old and who have one of the risk factors mentioned above, or anybody who is over 50 and has a family history of abdominal aortic aneurysm. The tests that we more commonly use for cardiovascular screening are the following ones:

Ankle-Brachial Index

Very simple and inexpensive test used to diagnose PAD. A blood pressure cuff is used to measure the peak systolic pressure in both arms and then measures the same in both ankles and feet with the aid of an ultrasound probe. We take the peak systolic pressure in each leg and divide by the peak systolic blood pressure obtained in the arms. An ABI less than 0.90 is consistent with PAD.

Carotid Artery Duplex

By using an ultrasound probe we can image noninvasively the lumen of the arteries and walls. In the case of the carotid arteries we screen for: the intimal-medial wall thickness (IMT: the inner layer, followed by the muscular layer of the artery), atherosclerotic plaques that lead to blockages, percentage of narrowing, presence of blood clots and other diseases. Asymptomatic persons more than 45 years-old who have an increased IMT, have an increased independent predictor of transient cerebral strokes, strokes and heart attacks when compared to people with normal IMT.



Abdominal Aortic Ultrasound

Using the same ultrasound probe we can image the largest artery of the body, the aorta when it courses through the abdomen. Under normal conditions the artery has a diameter of less than 2.5 cm. When the diameter is more than 3 cm it is called an aneurysm. The larger the size of the aneurysm, the higher is the risk of rupture. Once the aneurysm is at least 4.5 cm, the risk of rupture increases significantly, so patients are often referred for surgery or for endovascular stenting (stents placed inside the lumen of the abdominal aorta through the patients groin without surgery).

Coronary Calcium

Through the use of computed tomography we can measure the amount of calcification that exists in the coronary arteries (arteries that give blood supply to the heart) and can assess the severity of coronary atherosclerosis. Since this test uses radiation it is not completely harmless like an ultrasound, its use is aimed at asymptomatic people who have an intermediate risk of having a heart attack.

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