Background

The aorta supplies oxygen-rich blood to the body’s organs and tissues travelling from the heart. An aortic aneurysm is an abnormal widening of the aorta, resulting from weakening of its wall. This may occur in the chest near its origin from the heart, known as a thoracic aortic aneurysm, or lower down in the abdomen, known as an abdominal aortic aneurysm. Aortic aneurysms may expand over time without causing symptoms, but may eventually rupture, resulting in death unless emergency surgery or a repair procedure is performed immediately. Screening, surveillance and early intervention for high-risk individuals are critical to prevent this life-threatening scenario.

Risk factors

There are numerous factors, both environmental and genetic, which predispose an individual to the development of an aortic aneurysm. These include increased age, male gender, high blood pressure and elevated blood cholesterol levels, which cause fat deposition within the arterial wall, known as atherosclerosis. Smoking is an extremely important modifiable risk factor with a direct correlation shown between the number of cigarettes smoked per day and the risk of developing an abdominal aortic aneurysm. There is also an increased risk of aortic aneurysm associated with inflammatory disorders such as giant cell arteritis and genetic disorders, such as Marfan syndrome and Ehlers-Danlos syndrome, whereby defects in the body’s connective tissue reduces the strength and structural integrity of the aortic wall. In addition, those patients with a positive family history of aortic aneurysms are at an increased risk independent of any genetic disorders. While genetic disorders and family history cannot be prevented, the risk of aneurysm development can be reduced by modification of environmental risk factors, such as by smoking cessation, blood pressure control and a cholesterol-lowering diet or medications.

Screening

For abdominal aortic aneurysms, abdominal ultrasound represents a highly accurate and non-invasive screening tool. Similarly, for thoracic aortic aneurysms, screening may involve ultrasound imaging of the heart, known as echocardiography, or computed tomography (CT) or magnetic resonance imaging (MRI) of the chest. Given the catastrophic nature of a ruptured aortic aneurysm and the availability of accurate, safe and cost-effective screening tools, screening is usually recommended for those at increased risk, in particular those with a known family history of aortic aneurysm or a known associated genetic disorder. Universal screening, however, is generally not recommended as the mortality benefit at a population level is likely to be low, and screening for aneurysms may lead to psychological distress, especially for those individuals for whom an aneurysm is identified and treated conservatively. The benefits and risks of screening should be weighed against each other and discussed with your healthcare professional.

For more information, please visit the following websites:
https://my.clevelandclinic.org/health/diseases/16742-aorta-aortic-aneurysm