Abdominal Aortic Aneurysms Backgrounder

Endovascular Innovations

Abdominal Aortic Aneurysms

The aorta is the largest artery in the body. It's the primary vessel that carries oxygen-rich blood away from the heart to the abdomen, pelvis and legs. The aorta runs from the heart through the center of the abdomen. If this artery weakens in the abdomen, the vessel wall may dangerously expand or bulge while blood is pumped through it. This expansion is known as an abdominal aortic aneurysm (AAA).

Causes and Consequences
AAAs develop slowly over time and often cause no symptoms. As the aneurysm expands, tears in the aorta can occur (rupture), or blood leaks into the vessel wall (dissection). The eventual outcome of an untreated AAA is typically rupture, an emergency situation in which the artery bursts, causing extensive internal bleeding that usually leads to death.

Prevalence
In the United States, an estimated 1.2 million people have an AAA and data shows that AAAs are responsible for approximately 15,000 deaths annually.1 Ruptured AAAs are the third leading cause of sudden death among men in the United States over age 602; only 10-25 percent of people with undiagnosed AAAs survive a rupture.3 AAAs are one of the most preventable causes of death because they are highly treatable and curable in 95 percent of men and women when detected before rupture occurs.4

Risk Factors
Individuals over age 60 are most likely to develop an AAA.5 For men of this age, the risk is significantly greater: AAAs are five to ten times more common in men than in women.6 Family history of AAAs, smoking or a history of smoking, cardiovascular disease, high blood pressure, and high cholesterol also increases one’s risk of developing an AAA. With certain risk factors, the incidence of AAA in women can match or exceed that of men.

Diagnosis
Early diagnosis of AAAs is critical to managing them. The larger the AAA, or the faster it grows, the more likely it is to rupture. The risk of rupture increases when the aneurysm
is larger than about twice the normal diameter of a healthy aorta. Because AAAs are usually asymptomatic, they are typically found incidentally after chest x-rays (radiographs) or other imaging studies are conducted for another reason. Serial ultrasound (sonography) can accurately determine the aneurysm's size, shape and location.

**Treatment Options**
The traditional, open surgical approach for treating AAAs is done through an incision made just below the breastbone that extends to the top of the pubic bone. This procedure removes the diseased portion of the aorta and replaces it with a graft, a fabric tube. However, because of the close proximity of the abdominal aorta to the heart and the high pressure of blood flowing through it, surgery on the abdominal aorta can be extremely risky. As a result, physicians started in the late 1990s to utilize a new, less-invasive AAA treatment known as endovascular aortic repair (EVAR).

In contrast to open surgery, EVAR involves a keyhole procedure in which a stent graft - a tube of woven polyester reinforced with a wire skeleton - is compressed on a delivery catheter, allowing it to be threaded through an artery in the groin and expanded at the site of the aneurysm. Once in place, the stent graft creates a new path for blood flow, reducing pressure on the aneurysm and the risk of rupture. While open surgical repair is more invasive, requiring a minimum hospital stay of five days and several months for complete recovery, the hospital stay and recovery time following endovascular repair is typically much shorter.

2 Ohki T, Veith FJ. Endovascular Repair of Ruptured, AAAs In treating AAAs, endovascular repair may hold the key over open repair to lowering mortality. *Endovascular Today*. January 2004;47-51.
4 Diagnosis and Treatment." Find the AAAnswers. 10 Nov. 2010 <http://www.findtheaanswers.org/get-the-facts/diagnosis-and-treatment/>

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