

Less invasive anesthetic methods better for endovascular aneurysm repair

October 27 2011

Researchers have identified a safer, more cost effective way to provide anesthesia for patients undergoing endovascular repair of an abdominal aortic aneurysm – a common, often asymptomatic condition that, if not found and treated, can be deadly.

A new study done by investigators at Wake Forest Baptist Medical Center found that using less invasive spinal, epidural and local/monitored anesthesia care (MAC) is better than general anesthesia for elective endovascular repair of infrarenal abdominal aortic aneurysms (EVAR).

Details of the research appear in the November issue of the [Journal of Vascular Surgery](#), the official publication of the Society for Vascular Surgery.

Aortic aneurysms are abnormal bulges, or "ballooning" in the walls of the aorta, the body's largest artery. Roughly the diameter of a garden hose, this artery brings oxygen-rich blood from the heart to the rest of the body. It extends from the heart down through the chest and abdominal region, where it divides into a blood vessel that supplies each leg. Although an aneurysm can develop anywhere along the aorta, most occur in the section running through the abdomen (abdominal aneurysms). An infrarenal abdominal [aortic aneurysm](#) is one that occurs in the belly, below the kidney arteries.

Occasionally an aneurysm may occur because of an area of weakness

within the artery wall. An aortic aneurysm is serious because it may rupture, causing life-threatening internal bleeding. The risk of an aneurysm rupturing increases as the aneurysm gets larger. Each year, approximately 15,000 Americans die of a ruptured aortic aneurysm, however the condition is usually asymptomatic until the point of rupture. As such, most aortic aneurysms are unexpectedly identified while a patient is having a computed tomography (CT) scan or ultrasound done for another condition. Men over the age of 65 with a history of ever smoking can have an ultrasound done to specifically screen for aneurysms as part of a "Welcome-to-Medicare" visit with their physician. When detected in time, an aortic aneurysm can usually be repaired with surgery.

Infrarenal abdominal aortic aneurysms make up about 95 percent or more of abdominal aortic aneurysms and, while they occur in both sexes, they are most prevalent in men older than 60, affecting about 3 percent of this population, explained study co-author Matthew S. Edwards, B.A., M.S., M.D., a professor of vascular and endovascular surgery and public health sciences at Wake Forest Baptist.

"That's a lot of people," Edwards said. "If aortic aneurysms aren't repaired, they can burst and 80 to 90 percent of people who have a ruptured aortic aneurysm die. It's necessary for those who are suitable candidates for surgery to have their aneurysms repaired."

EVAR has completely revolutionized the care of aneurysms, allowing doctors to do repairs through two small incisions in the groin, Edwards said. It is currently the most common procedure for repairing aortic aneurysms in the United States. Historic trends have led to general anesthesia being the most common mode of anesthesia used for this procedure, but it is sometimes associated with the development of pneumonia, the need for a breathing tube and other pulmonary complications, he explained.

Other anesthetic techniques can also be used, such as local anesthesia, local anesthesia plus sedation (called "monitored" or "MAC"), spinal anesthesia and epidural anesthesia. According to this study, these other methods result in a shortened hospital stay and fewer pulmonary complications.

"In our study, general anesthesia was associated with increased postoperative length of stay (LOS) and increased complications involving the lungs when compared to the other anesthetic methods," Edwards said.

The researchers collected data on 6,009 patients who had elective EVAR performed between 2005 to 2008 at one of 221 North American hospitals. General anesthesia was used in 4,868 of the cases, while 419 patients had spinal anesthesia during their procedure; 331 had epidural anesthesia; and 391 had local/MAC. Emergency cases and patients who had other procedures being done at the same time that required general anesthesia were excluded from the study.

The team then reviewed the data to evaluate rates of mortality, morbidity and length of stay (LOS), or how long the patient remained in the hospital after the procedure.

The researchers found that general anesthesia was associated with an increase in pulmonary complications when compared to spinal and local/MAC anesthesia. Use of [general anesthesia](#) also was associated with a 10 percent increase in LOS for general when compared to spinal anesthesia, and a 20 percent increase when compared to general versus local/MAC anesthesia. Trends toward increased pulmonary complications and LOS were not observed for general versus epidural anesthesia. No significant association between [anesthesia](#) type and mortality was observed.

"Our study data suggest that increasing the use of less invasive anesthetic techniques, when appropriate, may limit postoperative complications in EVAR patients," Edwards said.

Provided by Wake Forest Baptist Medical Center

Citation: Less invasive anesthetic methods better for endovascular aneurysm repair (2011, October 27) retrieved 27 April 2024 from <https://medicalxpress.com/news/2011-10-invasive-anesthetic-methods-endovascular-aneurysm.html>

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