

Minimally invasive treatment for ruptured aneurysm: Safe, reduces mortality

March 25 2012

A burst aneurysm (a local area of bulge) in the abdominal aorta—the largest blood vessel in the body -- is a deadly condition. In fact, about half of these patients don't make it to the hospital in time. Those who do more often than not face open surgery to repair the blood vessel. This study finds that a minimally invasive interventional radiology treatment for ruptured aneurysms called endovascular aneurysm repair (EVAR) is safer than open surgical repair and is associated with lower mortality rates, say researchers Society of Interventional Radiology's 37th Annual Scientific Meeting in San Francisco, Calif.

Abdominal aortic [aneurysm](#) is a local area of [bulge](#) or dilatation in the abdominal aorta. If left untreated, this bulge can increase in size and—after reaching a certain size--it can burst or rupture causing fatal internal bleeding. In the United States, 9 percent of the population over the age of 65 years has an abdominal aortic aneurysm, and there are 15,000 deaths per year from ruptured abdominal aortic aneurysms. A man is four times more likely to suffer an aneurysm of this kind than a woman, and smokers are also four times as likely to develop the condition.

"People with peripheral arterial disease are at risk of an aneurysm, which is a weakening and abnormal bulging of a major artery. Once this area of bulge ruptures, this can lead to fatal internal hemorrhage," explained Prasoon Mohan, M.D., co-author of the study from the department of diagnostic and interventional radiology at Saint Francis Hospital in Evanston, Ill. "Prior to the development of minimally invasive

endovascular repair, it was customary for individuals to undergo [open surgery](#), but now the majority of these elective aneurysm repairs are being done by endovascular technique. It's only a question now of getting clinicians and institutions to use the same technique in emergency settings for ruptured aneurysms," he added.

"We found that endovascular aortic repair resulted in significantly fewer hospital deaths after treatment compared to open surgery, and the hospital stay associated with endovascular repair was less than that of open surgery," said Mohan.

Once an abdominal aortic aneurysm reaches a particular size, treatment is recommended to prevent its rupture. An abdominal aneurysm can be treated by open surgery or by minimally invasive endovascular technique. Open surgery requires a large incision in the abdomen and replacement of the dilated portion of the aorta with a synthetic blood vessel. In endovascular repair, an interventional radiologist makes a small incision in the groin, which serves as an entry point for a thin wire catheter that is guided through the femoral artery to the dilated portion of the aorta using advanced medical imaging. Once in place, a stent graft that is compressed into the catheter is opened up and the edges of the stent push against the aortic wall and stays in place. Blood flows through the stent graft instead of the abnormally dilated aorta and prevents it from rupturing.

For this retrospective study, researchers mined the National Inpatient Sample (NIS), the largest national all payer database containing information on around 8 million hospital encounters per year. This database is a part of the larger Healthcare Cost and Utilization Project. The objective was to find all cases of ruptured AAA from 2001 to 2009 that were treated by either endovascular repair or open surgery and to compare their outcomes. They found that 38,858 individuals, with an average age of 74, had ruptured AAA and received one of these two

treatments. Endovascular repair was used to treat 6,790 patients; 32,069 individuals had open surgery.

The researchers reported that 39.7 percent of patients who received open surgery died in the hospital, compared to 28.2 percent of patients who received EVAR. The average length of hospital stay for people who had EVAR was about 11 days, but those who received open surgery stayed almost 14 days. While 35 percent of patients were able to go home without requiring further in-patient rehabilitation after endovascular repair, only 22 percent of those who received open surgery were discharged to their homes. Interestingly, regardless of the type of repair, women had worse outcomes compared to men after the procedure.

"Endovascular aortic repair involves less recovery time and fewer discharges to in-patient care facilities, potentially saving insurers, institutions and individuals money," he added.

"Interventional radiology has made enormous contributions to the progress of modern medicine in the last few decades. No other group of specialists have contributed so many innovations, especially in the field of minimally invasive therapy, for such a broad range of diseases in such a short period of time. Endovascular abdominal aortic aneurysm repair has been one of those great innovations," said Mohan. "I believe endovascular aortic repair will be the procedure of choice for emergency treatment of ruptured aneurysms in the future. It has proven valuable and it saves lives," he added.

Provided by Society of Interventional Radiology

Citation: Minimally invasive treatment for ruptured aneurysm: Safe, reduces mortality (2012, March 25) retrieved 4 May 2024 from <https://medicalxpress.com/news/2012-03-minimally-invasive-treatment-ruptured-aneurysm.html>

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