Stenting, Open Repair Trials: No Clear Winner

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NICE, FRANCE — Advocates of endovascular aneurysm repair had high hopes that three large randomized, controlled trials conducted in Europe—EVAR I, EVAR II, and DREAM—would establish the procedure's superiority over open repair. Recently published results have been equivocal, however, and the closest an expert speakers' panel could come to consensus was that informed patient preference should be the deciding factor for the time being.

"I think today it's too close to call," Jim A. Reekers, M.D., Ph.D., concluded after presentations by the principal investigators and a heated audience discussion at the annual meeting of the Cardiovascular and Interventional Radiological Society of Europe.

"The patient can make up his own mind because we don't have a definite answer yet," said Dr. Reekers, a radiology professor at the University of Amsterdam, who discussed implications at the special session.

The three multicenter studies focused on abdominal aortic aneurysm repair.

British investigators led by Roger Greenhalgh, M.D., conducted the Endovascular Aneurysm Repair (EVAR) I trial at 34 centers in the United Kingdom. They enrolled patients who had aneurysms at least 5.5 cm in diameter and were fit for either endovascular or open repair.

EVAR I randomized 543 patients to stenting and 539 to open repair. Early results favored stenting, as its 30-day mortality rate of 1.7% was two-thirds less than the 4.7% reported for patients who had open repair (Lancet 2004;364:843-8).

By 4 years, however, all-cause mortality had leveled off at about 28% for both groups. The stenting cohort had fewer aneurysm-related deaths (4% vs. 7%), but more postoperative complications (41% vs. 9%).

The Dutch Randomized Endovascular Aneurysm Management (DREAM) trial group led by Jan D. Blankensteijn, M.D., enrolled patients with aneurysms at least 5 cm in length at 28 centers in the Netherlands and Belgium. It randomized 171 to stenting and 174 to open repair.

Again the early results favored stenting, which had an operative mortality rate of 1.2% vs. 4.6% in the open-repair group. Severe complications were fewer (N. Engl. J. Med. 2004;351:1607-18).

Once more, the results were not sustained. Two years after randomization, both cohorts had cumulative survival rates approaching 90%. Though open repair had more aneurysm-related deaths (5.7% vs. 2.1% for stenting), the investigators attributed the difference to the perioperative period. Aneurysm-related mortality was similar after the first 30 days. About two-thirds of both groups were free of moderate to severe complications (N. Engl. J. Med. 2005;352:2398-405).

Only unfit patients who were not candidates for surgery entered the EVAR II trial at 31 hospitals in the United Kingdom. The investigators assigned 166 to stenting and 172 to no intervention.

All told, 197 patients (including 47 who had been assigned to no intervention) underwent some form of aneurysm repair. During the follow-up period, 142 patients died; in 42 cases the deaths were related to aneurysms.

There were no significant differences in overall mortality or aneurysm-related survival (Lancet 2005;365:2187-92).

All three studies reported higher costs with stenting. The investigators attributed this, in part, to mandates for intensive follow-up in patients undergoing a new procedure.

The Dutch investigators similarly found costs to be about 4,500 euros higher with stenting, according to Dr. Blankensteijn, a professor of vascular surgery at the Radboud University Nijmegen (the Netherlands) Medical Center.

Dr. Greenhalgh, head of the department of vascular surgery at the Imperial College School of Medicine and Charing Cross Hospital in London, rejected a suggestion from the audience that the results favored open repair. "If open repair were clearly superior I would say EVAR is dead. If EVAR and open repair are neck and neck, then it is possible that EVAR is ahead," he said. "At the 4-year point, there is a small but significant benefit of EVAR. Therefore EVAR is close to open repair or better."

From a patient's perspective, he added, improved short-term risk with EVAR could be the deciding factor. For a man who is going to become a grandfather in 6 months, the early advantage could be more important than comparable survival at 4 years or the higher cost to society.

"But you have to say it comes at a cost, that [the patient] will be chained to your institution for period of time and might need repeat interventions," Dr. Greenhalgh advised, adding that increased complications with stenting did not increase mortality. Most of the complications were minor. ■

CLINICAL GUIDELINES FOR FAMILY PHYSICIANS

Abdominal Aortic Aneurysm Screening

NEIL S. SKOLNIK, M.D., AND MARIA J. BERTUCCI, M.D.

Abdominal aortic aneurysm ruptures are responsible for more than 9,000 deaths per year in the United States. AAA is diagnosed when the infrarenal aortic diameter is more than 3.0 cm. Risk of death increases with diameter, especially for AAAs more than 5.0 cm. Almost all deaths from AAAs occur in men between the ages of 65 and 80. Deaths in women usually occur in those aged 85 and older. The United States Preventive Services Task Force has issued an updated recommendation statement for AAA screening (Ann. Intern. Med. 2005;142:198-202), as well as an evidence review (Ann. Intern. Med. 2005;142:203-11).

Guidelines are most useful when they are available at the point of care. A concise yet complete handheld computer version of this guideline is available for download, compliments of FAMILY PRACTICE NEWS, *at www.redi-reference.com.*

Epidemiology

The 1-year incidence of AAA rupture is 9% for those with infrarenal aortic diameter between 5.0 and 5.9 cm, 10% for those with diameter of 6.0-6.9 cm, and 33% for those with diameter 7.0 cm or greater. Typically, surgery is recommended for AAAs larger than 5.0 cm or for aneurysms expanding more than 1.0 cm per year.

In men between the ages of 50 and 79, the prevalence of AAAs greater than 5.0 cm is 0.5%. The overall AAA prevalence is 4%- 9% in men and 1% in women.

Risk factors for AAA include being male, being aged 65 years or older, and having smoked 100 cigarettes or more in a lifetime. Lesser risk factors include family history, coronary heart disease, claudication, hypercholesterolemia, hypertension, cerebrovascular disease, and increased height. Being female, being black, and having diabetes are all associated with a decreased AAA risk.

The Evidence

The USPSTF based its recommendations on its review of four randomized, controlled studies. The first study involved 67,800 white men aged 65-74. Surgery was performed when AAAs were more than 5.4 cm in diameter. There was a reduction of mortality due to AAA by 42% in the screened population, compared with the nonscreened population. A metaanalysis of this study and three other, less robust trials showed that screening resulted in a 43% relative risk reduction of AAA-related mortality. All-cause mortality was unchanged.

In patients with a negative ultrasound at age 65, death from AAA rupture is rare. Also, incidence for new AAA within 10 years is low (0%-4%). So, a negative ultrasound at age 65 virtually excludes risk for future AAA.

AAA Surveillance

The Society for Vascular Surgery and the Society for Vascular Medicine and Biology recommend a surveillance schedule with ultrasound examination once AAA is discovered.

Treatment

Currently, there are two surgical approaches to AAA repair more than 5.0 cm. There is no statistically significant mortality benefit to surgery over surveillance in AAAs between 4.0 and 5.4 cm.

Open surgical repair is the only proven intervention that leads to decreased long-term mortality. However, it is associated with an in-hospital mortality of 4%-5% and a complication rate of about one-third. Complications include renal failure, ischemic colitis, MI, respiratory failure, and spinal cord ischemia.

A newer approach is endovascular repair (EVAR). Although EVAR has a significantly reduced 30-day mortality rate (about 1.5%), long-term effectiveness is unknown. Older endovascular devices had a yearly rupture rate of about 1% and a 2% risk of conversion to open surgical repair. This conversion is associated with a 24% mortality rate.

Recommendations

The USPSTF recommends a one-time screening ultrasound of men between the ages of 65 and 75 who have ever smoked at least 100 cigarettes. They found that the benefits of screening and subsequent repair of larger aneurysms (greater than 5 cm) outweighed the potential harm of increased early surgeries and their associated morbidity and mortality.

They noted that there is good evidence that ultrasound is effective and economic for screening. Overall, AAA screening with ultrasound has a 95% sensitivity and 100% specificity.

Though screening men between the ages of 65 and 75 who had never smoked did lead to decreased mortality, the USPSTF found that the lower prevalence of AAA reduced the potential benefit. The increased number of surgeries, associated morbidity and mortality, and the potential psychological impact were potential harms. So it did not recommend for or against screening in this population.

The USPSTF recommended against screening women because of the low prevalence of large aneurysms in women. The potential harms of screening were the same as in men who had never smoked.

The Bottom Line

Men aged 65-75 who have smoked 100 cigarettes or more in their lifetimes should undergo one-time AAA ultrasound screening. There are no specific recommendations for men who have never smoked. Do not screen women. Refer patients to a vascular specialist if they have an AAA greater than 4.5 cm.

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