
Authors and Disclosures

Journalist

Daniel M Keller, PhD

Daniel M. Keller is a freelance writer for Medscape.

Daniel M. Keller has no disclosures.

From Medscape Medical News Higher Burden of Ruptured Abdominal Aortic Aneurysms at Rural Hospitals but Mortality No Worse



Daniel M. Keller, PhD

October 15, 2010 (Washington, DC) — Rural hospitals face a disproportionate burden of ruptured abdominal aortic aneurysms (AAA), compared with urban hospitals. Despite that, at rural hospitals that can treat AAA, mortality is similar to their urban counterparts. A problem arises for hospitals that have to transfer patients for treatment, leading to delays in repair, according to a study presented here at the American College of Surgeons 96th Annual Clinical Congress.

Although survival rates for ruptured AAA have improved nationwide over the past 15 years, it has not been known whether this improvement extended to rural hospitals; it might be that the concentration of vascular services in high-volume centers have created a more severe disparity with rural areas. Lead investigator Rubie Maybury, MD, MPH, from the Department of Surgery at Georgetown University Hospital in Washington, DC, and colleagues decided to study how a rural location influences 3 outcomes: ruptured AAA presentation, transfer after ruptured AAA, and in-hospital mortality after ruptured AAA if the patient was admitted to the rural hospital or transferred.

The investigators undertook a retrospective cohort study from 2001 to 2007 using the Nationwide Inpatient Sample (NIS), the largest publicly available database of inpatient hospital stays, which contains information on approximately 20% of American community hospitals. The study consisted of patients who presented for intact AAA repair or a diagnosis of ruptured AAA. Patients were excluded if they were younger than 50 years of age; were admitted to the hospital; had traumatic, thoracic, thoracoabdominal, or other site aneurysms; or if the hospital ZIP code was not recorded. Vascular surgeon data for each county were obtained from the Society of Vascular Surgery online census of vascular surgeons.

The researchers identified 47,033 eligible patients from the NIS who were analyzed for ruptured presentation. Of these, 40,203 patients had intact repairs, and 6,830 were analyzed for transfer (148 of which were to outside hospitals). The 6,682 patients retained in the hospital to which they first presented were analyzed for in-hospital death.

Dr. Maybury said that patients admitted to rural hospitals were more likely to be white, female, insured by Medicare, or uninsured than patients admitted to urban hospitals. The rural hospitals were less likely to be teaching hospitals and were more likely to have performed fewer than 15 AAA repairs annually than the urban hospitals. "Contrary to my expectations, the per capita density of vascular surgeons was actually higher for patients in rural areas than for patients in urban areas," Dr. Maybury said.

After adjustment for patient, hospital, and health system characteristics, the researchers found a 2.47-fold higher risk for ruptured presentation among patients presenting to rural hospitals than among those presenting

to urban ones (95% confidence interval [CI], 1.90 - 3.19). Teaching hospital status was associated with a lower risk for ruptured presentation (odds ratio [OR], 0.79; 95% CI, 0.68 - 0.92). Dr. Maybury said increasing density of general practitioners and of vascular surgeons per capita were also associated with a lower risk for ruptured presentation.

"Among patients who presented with ruptured AAA, there was an 80% higher risk of being transferred to another hospital without first undergoing repair among patients who were treated at rural hospitals, compared with urban hospitals," she reported (OR, 1.80; 95% CI, 1.14 - 2.85). "Among patients who were retained in the hospital to which they first presented, there was no difference in the risk of in-hospital death between patients at rural and urban hospitals" (rural hospital OR, 0.96; 95% CI, 0.73 - 1.27). However, lower-volume hospitals (that performed fewer than 15 cases/year) were associated with a higher risk for death.

Dr. Maybury concluded that rural hospitals face a disproportionate burden of ruptured AAA. She said the data do not prove that patients in rural areas are more likely to have a ruptured AAA, but they do show that hospitals and surgeons in rural areas face a higher proportion of ruptured AAA repairs than elective AAA repairs.

"Rural hospitals are also more likely than urban hospitals to transfer patients with ruptured AAA. This leads to delay in repair, which is a known risk factor for death after ruptured AAA," she said. "Finally, for patients who are not transferred but are treated at the hospital to which they first present, the mortality was similar between patients treated at rural and urban hospitals."

Dr. Maybury said the disparities in outcomes between patients presenting at rural and urban hospitals are not because they get inadequate care at rural hospitals but because some of these hospitals might not be able to care for them at all, necessitating transfer to another hospital and incurring delays in treatment. She said the solution to address this disparity might be "systems-based changes to improve patient access to surgeons." One example would be improved training of emergency medical services personnel, so that they recognize the signs and symptoms of ruptured AAA and can transport patients directly to high-volume vascular surgery centers, eliminating the delay of transferring the patient from a facility that cannot repair the AAA. Another measure would be to increase screening for AAA in rural populations.

Samuel Finlayson, MD, MPH, assistant professor of surgery and community and family medicine at Dartmouth Hitchcock Medical Center in Lebanon, New Hampshire, was invited to discuss the study. He said the problem of analyzing discrepancies between rural and urban healthcare is difficult because of "a lot of moving parts." He speculated that the finding of a higher per capita density of vascular surgeons might result from a lower denominator (a smaller population) in rural areas. Access to vascular surgeons might still be limited in rural settings if surgeons are scattered far and wide.

He also wondered whether there could be a selection bias; patients coming a long distance to a rural hospital might be the "sturdier" ones, and the less sturdy ones might die before ever reaching the hospital. In urban settings, even the less robust patients might make it to a hospital alive, increasing the urban in-hospital mortality figures.

Dr. Maybury has disclosed no relevant financial relationships.

American College of Surgeons (ACS) 96th Annual Clinical Congress: Session SF20. Presented October 6, 2010.

Medscape Medical News © 2010 WebMD, LLC
Send press releases and comments to news@medscape.net.
