

# Higher Mortality Rates in Medically Treated Patients with *Staphylococcus aureus* Prosthetic Valve Endocarditis

Sohail MR, Martin KR, Wilson WR, et al. Medical versus surgical management of *Staphylococcus aureus* prosthetic valve endocarditis. *Am J Med* 2006;119:147–54.

## Study Overview

**Objective.** To determine whether medical and surgical therapies are equally effective in treating patients with *Staphylococcus aureus* prosthetic valve endocarditis (PVE).

**Design.** Retrospective case series.

**Setting and participants.** Medical records of patients with *S. aureus* PVE who were treated at Mayo Clinic from 1980 to 2000 were examined.

**Main outcome measure.** Impact of treatment on in-hospital mortality.

**Main results.** Of 55 patients with *S. aureus* PVE, 23 patients (42%) were treated medically and 32 (59%) were treated surgically. Mortality rates were slightly higher in medically treated patients as compared with surgically treated patients (48% versus 28%; odds ratio, 2.3;  $P = 0.13$ ). Patients who were older (aged  $\geq 50$  years) or who had an American Society of Anesthesiologists (ASA) score of IV were more likely to die than younger patients or those with lower ASA scores. Medically treated patients who were young and received prompt treatment generally had better survival rates than older medically treated patients whose treatments were delayed.

**Conclusion.** Although surgically treated patients appeared to have better outcomes, a subset of patients with *S. aureus* PVE (age  $< 50$  years; ASA score  $\leq$  III; no cardiac, central nervous system, or systemic complications) may do well with medical treatment alone.

## Commentary

Infective endocarditis is an uncommon but serious complication of valve replacement surgery, and although its incidence is less than 5% at 10 years after surgery [1], it carries a high mortality rate [2]. When *S. aureus* is the infecting agent, the common consensus is that the standard of care should include surgical debridement followed by valve replacement. However, there are little data to support this approach.

Sohail and colleagues examined the relationship between

treatment (medical versus surgical) and clinical outcomes in patients with *S. aureus* PVE and found that patients who were treated surgically seemed to have better outcomes. However, important limitations to the authors' approach make conclusions about optimal therapy very difficult. First, because this was a retrospective study, the authors could not control for the method by which the patients were treated (medical versus surgical). Patients treated medically were older and significantly sicker. This suggests that some of the sickest patients were relegated to medical therapy either by patient choice or by surgeon choice. Further, given the large observed differences in age and severity of illness between groups, there may be unmeasured confounders that affected the relationship between treatment and mortality. Although the authors tried to adjust for measured differences between the 2 treatment groups, important unmeasured differences probably exist, which makes it difficult to conclude that surgery is better than medical therapy.

The most important finding was that Sohail et al identified a group of patients who can be treated relatively safely with medical therapy (ie, young patients without systemic complications). Although sample sizes were small, the lack of any deaths in this subset of patients was reassuring. Finally, patients who were ASA class III and treated medically had low mortality rates, especially compared with those patients who were ASA class IV.

## Applications for Clinical Practice

Although it remains unclear whether 1 treatment approach to *S. aureus* PVE (ie, medical versus surgical) is superior to the other, it appears that patients who are young, clinically stable, and without systemic complications can likely be treated safely using medical therapy alone.

—Review by Ashish K. Jha, MD, MPH

## References

1. Rutledge R, Applebaum RE, Kim BJ. Mediastinal infection after open heart surgery. *Surgery* 1985;97:88–92.
2. Tornos P, Sanz E, Permanyer-Miralda G, et al. Late prosthetic valve endocarditis. Immediate and long-term prognosis. *Chest* 1992;101:37–41.