Study examines anticoagulation treatment following aortic valve replacement

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Although current guidelines recommend 3 months of anticoagulation treatment after bioprosthetic aortic valve replacement surgery, a study that included more than 4,000 patients found that patients who had warfarin therapy continued between 3 and 6 months after surgery had a lower rate of cardiovascular death, according to a study in the November 28 issue of *JAMA*.

"Biological prostheses are preferred to mechanical valves for aortic valve replacement (AVR) surgery in elderly patients older than 65 years because of shorter life expectancy and lack of a need to use anticoagulation treatment in the long-term. Especially in these patients, the tradeoff between thromboembolic complications due to the valve implant and bleeding events as adverse effects from anticoagulation therapy must be balanced. Nevertheless, appropriate duration of anticoagulation treatment postoperatively is yet to be established because the risk of complications when the treatment is discontinued is unknown," according to background information in the article. The current recommendation of 3 months of warfarin treatment after bioprosthetic AVR surgery is primarily based on results from 1 retrospective study with a limited number of events.

Charlotte Merie, M.D., of the Copenhagen University Hospital Gentofte, Copenhagen, Denmark and colleagues investigated whether discontinuation of warfarin treatment within prespecified periods after bioprosthetic AVR surgery was associated with increased risk of thromboembolic complications, cardiovascular death, and bleeding

incidents. Through a search in the Danish National Patient Registry, 4,075 patients were identified who had bioprosthetic AVR surgery performed between January 1997 and December 2009. The researchers determined the incidence rate ratios (IRRs) of strokes, thromboembolic events, cardiovascular deaths, and bleeding incidents by discontinuing warfarin as opposed to continued treatment at 30 to 89 days, 90 to 179 days, 180 to 364 days, 365 to 729 days, and at least 730 days after surgery. Average age of the patients was 75 years; 41 percent were women.

Overall, 361 patients (8.9 percent) experienced a stroke, 615 (15.1 percent) had a thromboembolic event, and 364 (8.9 percent) encountered a bleeding incident after the date of surgery. During the observation period, 1,156 patients (28.4 percent) died, with 879 (76.0 percent) of these deaths related to cardiovascular disease. The IRRs for patients not treated with warfarin compared with those treated with warfarin were 2.46 for stroke; 2.93 for thromboembolic events; 2.32 for bleeding incidents; and 7.61for cardiovascular deaths within 30 to 89 days after surgery; and 3.51 for cardiovascular deaths within 90 to 179 days after surgery.

"Our study demonstrates that discontinuing warfarin therapy within the first 3 months after surgery is associated with a significant increase in the risk of stroke, thromboembolic complications, and cardiovascular death. The novelty of our study is the finding that discontinuing warfarin therapy within 90 to 179 days after surgery is associated with a significant increase in the risk of cardiovascular death," the authors write.

"International guidelines on anticoagulation after a bioprosthetic AVR have been written with limited data on the appropriate duration of warfarin treatment after surgery. Consequently, our study challenges current guidelines on the duration of antithrombotic treatment after

AVR surgery with biological valves by presenting results suggesting that these patients will gain from an additional 3 months of warfarin treatment in terms of reduced cardiovascular death without risking a significant increase in bleeding events."

Shamir R. Mehta, M.D., M.Sc., and Jeffrey I. Weitz, M.D., of McMaster University and Hamilton Health Sciences, Hamilton, Ontario, Canada, comment on the findings of this study in an accompanying editorial.

"Will the results of this study change practice in patients undergoing bioprosthetic aortic valve replacement? Should all of these patients receive warfarin for 3 months, or even for 6 months, as the authors suggest? Although there are limitations to this study, the answer to both of these questions is yes. This study shows that the rates of stroke and thromboembolic events in the first 6 months after bioprosthetic aortic valve replacement are substantial among patients not treated with warfarin. Use of warfarin was associated with a reduction in this risk and a reduction in cardiovascular mortality; these benefits are difficult to ignore."

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