Article Link: https://jamanetwork.com/journals/jama/fullarticle/2735820

Association Between Transcatheter Aortic Valve Replacement and Early Postprocedural Stroke

Article Summary:

Abstract

Importance Reducing postprocedural stroke is important to improve the safety of transcatheter aortic valve replacement (TAVR).

Objective This study evaluated the trends of stroke occurring within 30 days after the procedure during the first 5 years TAVR was used in the United States, the association of stroke with 30-day mortality, and the association of medical therapy with 30-day stroke risk.

Design, Setting, and Participants Retrospective cohort study including 101 430 patients who were treated with femoral and nonfemoral TAVR at 521 US hospitals in the Society of Thoracic Surgeons/American College of Cardiology Transcatheter Valve Therapies Registry from November 9, 2011, through May 31, 2017. Thirty-day follow-up ended June 30, 2017.

Exposures TAVR.

Main Outcomes and Measures The rates of 30-day transient ischemic attack and stroke were assessed. Association of stroke with 30-day mortality and association of antithrombotic medical therapies with postdischarge 30-day stroke were assessed with a Cox proportional hazards model and propensity-score matching, respectively.

Results Among 101 430 patients included in the study (median age, 83 years [interquartile range {IQR}, 76-87 years]; 47 797 women [47.1%]; and 85 147 patients [83.9%] treated via femoral access), 30-day postprocedure follow-up data was assessed in all patients. At day 30, there were 2290 patients (2.3%) with a stroke of any kind (95% CI, 2.2%-2.4%), and 373 patients (0.4%) with transient ischemic attacks (95% CI, 0.3%-0.4%) . During the study period, 30-day stroke rates were stable without an increasing or decreasing trend in all patients (*P* for trend = .22) and in the large femoral access subgroup (*P* trend = .47). Among cases of stroke within 30 days, 1119 strokes (48.9%) occurred within the first day and 1567 (68.4%) within 3 days following TAVR. The occurrence of stroke was associated with a significant increase in 30-day mortality: 383 patients (16.7%) of 2290 who had a stroke vs 3662 patients (3.7%) of 99 140 who did not have a stroke died (*P* < .001; risk-adjusted hazard ratio [HR], 6.1 [95% CI, 5.4-6.8]; *P* < .001). After propensity-score matching, 30-day stroke risk was not associated with whether patients in the femoral cohort were (0.55%) or were not (0.52%) treated with dual antiplatelet therapy at hospital discharge (HR, 1.04; 95% CI, 0.74-1.46) nor was it associated with whether patients in the nonfemoral cohort were (0.71%) or were not (0.69%) treated with dual antiplatelet therapy (HR, 1.02; 95% CI, 0.54-1.95). Similarly, 30-day stroke risk was not associated with whether patients in the femoral cohort were (0.57%) or were not (0.55) treated with oral anticoagulant

therapy at hospital discharge (HR, 1.03; 95% CI, 0.73-1.46) nor was it associated with whether patients in the nonfemoral cohort were (0.75%) or were not (0.82%) treated with an oral anticoagulant (HR, 0.93; 95% CI, 0.47-1.83).

Conclusions and Relevance Between 2011 and 2017, the rate of 30-day stroke following transcatheter aortic valve replacement in a US registry population remained stable.

Type of Study: Retrospective Cohort Study → not considered highest level of evidence but are considered valuable because they follow groups of individuals over a time to see whether they develop a disease/outcome of interest.

Key Points:

- Post-TAVR stroke is a significant complication associated w/ increased morbidity & mortality.
- Purpose of the study was to determine the incidence of post-TAVR stroke within 30 days of the procedure
- 101, 430 participants were selected from the Society of Thoracic Surgeons/American College of Cardiology Transcatheter Valve Therapy (STS/ACC TVT) Registry which includes 524 US hospitals. Selection took place from November 9, 2011 – May 31, 2017.
- Older women were shown to have increased propensity for developing post-TAVR stroke. These patients were also more likely to develop in-hospital A.fib s/p procedure compared to participants who did not develop stroke after the procedure.
    - Mortality was increased for patients who developed stroke overall.
- Majority of post-TAVR strokes occurred w/in the first 3 days following procedure. Strokes that occur during the procedure "are potentially modifiable by the use of cerebral embolic protection devices". It was found, however, that this device does not decrease the incidence of developing stroke once the procedure is completed. There is minimal statistical significance between device and control groups.
- Single antiplatelet therapy after TAVR is as effective as dual antiplatelet therapy to prevent ischemic events and decrease risk of bleeding.
- In conclusion, the incidence of 30-day stroke s/p TAVR is considered "stable". 2,290 patients (2.3% of participants) developed a stroke of any kind by day 30.