Long-term survival of renal transplant patients in the U.S. after cardiac valve replacement, & impact of valve selection

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Introduction

- Cardiac disease is the major cause of death in dialysis patients, accounting for 42% of all-cause mortality.
- The estimated two-year mortality following cardiac valvular replacement surgery in dialysis patients is approximately 60% (Herzog et al, Circulation 2002).
- There are no published data on the long-term outcome of renal transplant patients after valve surgery or on the impact of prosthesis type (tissue vs. non-tissue).
- In dialysis patients there is no difference in survival for tissue vs. non-tissue prosthetic heart valves (Herzog et al, Circulation 2002), and newly revised AHA practice guidelines reflect this prior study.

Purpose

- To compare the long-term survival of renal transplant patients undergoing heart valve surgery with "tissue" vs. "non-tissue" prosthetic valves.

Methods

- Data source: United States Renal Data System (USRDS) database (n=1,698,706 patients)
- Patients identified from hospitalizations for aortic (AVR) and/or mitral (MVR) valve replacement (ICD-9-CM codes 35.21, 35.22, 35.23, 35.24).
- Prosthetic valve type identified by ICD-9-CM codes (tissue=35.21, 35.23; non-tissue=35.22, 35.24).
- Concomitant CAB surgery identified by ICD-9-CM code 36.1X.
- Patient demographics included age, gender, race, renal diagnosis, prior ESRD duration, and comorbidity from hospital ICD-9-CM codes prior to valve surgery.
- Survival time was calculated from the date of surgery to censor or death.
- Long-term survival was estimated using the Kaplan-Meier method and independent predictors of death were examined in a comorbidity-adjusted (by Charlson score) Cox proportional hazards model.

Results

- The resulting cohort contained 1,363 transplant patients hospitalized for AVR and/or MVR.
- Tissue valves were received by 377 patients (28%).
- By site, 66% of patients had AVR, 25% MVR, and 9% both.
- Overall, 72.3% of valve replacements were non-tissue, while 27.7% were tissue.
- The use of tissue valves increased over time, from 13.4% in 1991-1995, to 37.4% in 2000-2004.
- Groups more likely to receive tissue valves included men, whites, and individuals with diabetes or hypertension as cause of renal failure.
- Coronary artery bypass surgery (CAB) was performed in 37% of patients.
- In-hospital death was 11.7% among the tissue valve group, and 15.1% among the non-tissue group (p = 0.10).
- Results from an adjusted proportional hazards model suggest that tissue valves are associated with decreased risk of mortality.

Conclusions

- Valve replacement is associated with significant mortality in renal transplant patients.
- These data suggest survival of renal transplant patients after valve surgery may be superior with tissue compared to non-tissue valves.