Early and late outcomes after trans-catheter aortic valve implantation in patients with previous thoracic irradiation

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Background Thoracic radiation therapy exposes to aortic stenosis and surgery is associated with high morbidity-mortality rates. Trans-catheter aortic valve implantation (TAVI) may represent an interesting alternative, but experience remains limited in this setting. We compared late outcome in a Radiation group and a matched population undergoing TAVI and identified predictive factors of late survival.

Methods Between October 2006 and April 2011, 288 consecutive patients underwent TAVI in our institution, of whom 27 had previous chest radiation. They were matched 1:1 on age, sex and TAVI approach with a control population.

Results Mean age was 72±13 years in the Radiation group versus 75±6 in the control group (p=0.52), 48% were male and 15% had a tricus-arial approach. Procedural success was 89% (n=24) in the Radiation group versus 96% (n=26) in controls and 30-day survival was 93±5% in both groups. Follow-up was complete in all patients (median 3.4; interquartile range [2.6–4.2] years). Five-years survival rates were 32±10% in the Radiation group and 41±11% in controls (p=0.27). In Radiation group, the cause of death was respiratory failure secondary to radiation-induced fibrosis or sepsis in 54% of cases. In multivariate analysis, we identified 3 predictive factors of late death in Radiation group: 1 pre-procedural variable: the absence of Beta-blockers therapy (HR=36.3 [4.1–325.2], p=0.001), and 2 post-procedural variables: creatinine peak (HR=1.04 [1.02–1.07], p=0.0001) and infectious complications (HR=7.8 [1.7–36.0], p=0.0009). In the Radiation group, 89% of survivors were in NYHA class I-II at last follow-up.

Conclusion Patients of the Radiation group displayed high mortality rates even though not significantly different from the control population. In patients with radiation valvular disease, the use of B-blockers was an independent prediction of late survival after TAVI which deserves further consideration. Moreover, respiratory failure was the main cause of death, emphasizing the need for a careful pulmonary evaluation. Finally, we show a sustained improvement in functional results after TAVI in this particular population.

The author hereby declares no conflict of interest

Additional value of exercise-stress echocardiography in asymptomatic patients with aortic valve stenosis

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Aims Usefulness of exercise-stress echocardiography for risk-stratification of asymptomatic patients with aortic stenosis (AS) is still debated (Class Ib recommendation). The exercise-induced increase in transvalvular gradient has been proposed as a prognostic factor but data are scarce. We sought to evaluate the additional prognostic value of echocardiographic parameters during exercise-stress echocardiography.

Methods In this observational prospective study, we enrolled all consecutive asymptomatic patients with moderate/severe AS and normal ejection fraction who underwent an exercise-stress echocardiography at our institution. Clinical and echocardiographic data at rest and at peak exercise were collected. The composite primary outcome variable was the occurrence of AS related events (symptoms or heart failure related to the AS or cardiovascular death during follow-up).

Results Among the 121 patients enrolled, 35 (29%) had an abnormal exercise test (occurrence of symptoms or abnormal blood pressure profile during exercise) and were operated on within the following weeks. Eighty-six patients (mean [±45]; age 67 [57–75] years, 68 male, mean gradient 46 [35–52] mmHg, aortic valve area 0.97 [0.82–1.11]) had a normal exercise test and 39 (48%) reached the clinical endpoint during follow-up (17.5 [10.9–36.4] months). The proposed threshold of 18 mmHg mean gradient increase had no prognostic value. In multivariate analysis, rest mean gradient (p<0.001; HR 1.07 [1.03–1.11]) but not exercise-induced increase mean gradient (p=0.4; HR 0.69 [0.29–1.65]) were predictive of outcome.

Conclusion Exercise-induced increase in mean gradient was not predictive of outcome in patients with normal exercise-test. Our results raise question regarding the additional value and therefore the use of exercise-stress echocardiography for risk-stratification of asymptomatic patients with AS.

The author hereby declares no conflict of interest

Prognosis of cardiac valve interventions among indigenous populations: a retrospective cohort study in New Caledonia

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Introduction Data on the management of valvular heart disease is scarce in the Pacific, a region where rheumatic heart disease remains endemic.

Methods We included patients presenting to the single tertiary centre in New Caledonia and who underwent heart valve surgery for the first time (2005–2010). Clinical, echocardiographic, surgical data and outcomes were collected in 2013. We explored potential factors associated with major cardiovascular events as a composite endpoint.

Results Among the 180 patients included, 95 (52.8%) were male; mean age was 48.2 years (±19.3), 124 (78.9%) were Pacific islands, 122 (70.9%) presented in heart failure (70.9%) and 125 (69.4%) had rheumatic heart disease. 84 patients (46.7%) received a mechanical prosthetic valve. Median follow-up was 4.7 years (IQR 3.5–6.7). Early postoperative mortality rate was 2.8%. The incidence of annual mortality was 31.75% (95% CI 19.77–43.72) (including 25.78% cardiovascular death; 95% CI 15.01–36.55). The annual incidences of stroke and severe bleeding were 38.23% (95% CI 24.07–52.39) and 36.54% (95% CI 22.49–50.58), respectively. We did not identify factors associated with outcomes according to the aetiology (rheumatic heart disease versus other) or the procedure (mechanical prosthetic valve versus other).

Conclusion In the Pacific heart valve interventions are mainly performed in young patients with underlying rheumatic heart disease. Post-operative mortality is low but morbidity remains high.

The author hereby declares no conflict of interest

Assessment of left ventricular filling pressure in severe aortic stenosis: a comparison of echocardiographic and catheterization data

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Introduction The non-invasive assessment of left ventricular (LV) filling and LA pressure in patients with aortic stenosis (AS) remains challenging. The aim of our study was to identify the echocardiographic parameters that may predict elevated pulmonary capillary wedge pressures (PCWP) mea-