Mortality from Aortic Stenosis Across the Spectrum of Severity: Analysis of Big Data from the National Echo Database of Australia

G. Strange1-6, S. Stewart2-6, D. Celermajer1-6, T. Marwick1-4, G. Scalia2, D. Prior2, M. Ilton3, D. Playford1

1 University Of Notre Dame, Fremantle, Perth, Australia
2 University of Sydney, Sydney, Australia
3 University of Adelaide, Adelaide, Australia
4 University of Melbourne, Melbourne, Australia
5 The Prince Charles Hospital, Brisbane, Australia
6 Royal Darwin Hospital, Darwin, Australia

Background: Echocardiogram (echo) is pivotal in evaluating aortic stenosis. We evaluated mortality with aortic stenosis in a large cohort, matched with mortality.

Methods: Using the National Echo Database of Australia (>530,000 echos) linked with National Death Index, survival was determined from the last recorded echo to census in October 2017. Data were available from 352,844 individuals (186,820 men, mean age 60.8 ± 18.0 years; 166,024 women, mean age 60.9 ± 19.2 years) with a mean follow-up of 5.4 years.

Results: Peak aortic valve velocity (AVvel) was recorded in 278,955 patients, demonstrating a J-shaped mortality pattern with highest age- and sex-adjusted risk profile in those individuals (n = 52,010) in the upper quintile (>1.8 ms and mean aortic gradient of 13 mmHg, hazard ratio 1.29 [95% confidence interval 1.25-1.32], p < 0.001) relative to the lowest quintile. One- and 5-year mortality was 5.0% and 14.9% in the lowest quintile vs 9.2% and 28.1% in the highest quintile, respectively. The upper quintile was then further examined for survival against increasing gradients (n = 4,4340).

Adjusting for age, sex and ejection fraction, the long-term mortality risk (up to 15 years) plateaued at a mean gradient ≥30.9 ± 1.3 mmHg (AVvel >3.71 ± 0.26 ms), with an adjusted hazard ratio of 0.94 (95% confidence interval 0.82-1.08, p = 0.4) compared with the highest quintile of that group (mean gradient 59.9 ± 9.4 mmHg, AVvel > 4.96 ± 0.47 ms). One- and 5-year mortality were similar for those with mean gradient ≥30–39 mmHg (10.9% and 32.6%, respectively), 30–40 mmHg (11.8% and 33.0%, respectively), and >40 mmHg (13.7% and 34.5%, respectively).

Conclusion: Aortic stenosis is associated with significant mortality across the spectrum of severity, including mild disease. There is no discernible difference in survival between ‘moderate’ and ‘severe’ aortic stenosis.

http://dx.doi.org/10.1016/j.hlc.2018.06.476