Survival in moderate and severe aortic stenosis patients with and without symptoms: a multicenter clinical cohort study

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Background: Untreated moderate and severe aortic stenosis (AS) is associated with poor long-term survival, however the association of symptom status with mortality risk remains unknown.

Methods: Echocardiography report data from an 80-site national cardiology service was extracted and classified into: No AS (mean AV gradient $<10.0\text{mmHg}$ or peak AV velocity $<2.0\text{m/s}$, and AVA $>1.5\text{cm}^2$), moderate AS (20.0-39.9mmHg/3.0-3.9m/s and AVA $>1.0\text{cm}^2$) or severe AS ($\geq 40.0\text{mmHg}/\geq 4.0\text{m/s}$ and/or $\leq 1.0\text{cm}^2$). Symptom status was extracted using Natural Language Processing of cardiologist reviews and mortality extracted from the National Deaths Index. Native valve AS severity, symptoms and survival were examined during a fixed 2-year follow-up.

Results: 29,368 individuals (mean age 60.9±17.4 years, 50.3% male) experienced 1,140 fatal events, more likely in severe than moderate AS, but not increased by the presence of symptoms: 16.8 deaths per 1000 person-years in no AS, 35.4 per 1000 person-years in asymptomatic moderate AS, 32.5 per 1000 person-years in symptomatic moderate AS, 68.7 per 1000 person-years in asymptomatic severe AS and 56.1 per 1000 person-year in symptomatic severe AS ($p<0.001$ compared with no AS). In adjusted models (including age, sex and cardiac damage score), symptomatic moderate and severe AS had similar mortality to asymptomatic moderate AS, with only asymptomatic severe AS showing increased mortality (HR 1.67, 95% CI 1.17-2.38, $p=0.005$).

Conclusions: Mortality is increased in both moderate and severe AS, with and without symptoms. The high rates of mortality in asymptomatic severe AS warrants re-examination of the role of symptoms in management decisions, including clinical trials to address whether earlier AVR in asymptomatic moderate and severe AS improves mortality.