three groups (log rank p=0.026, figure B): Cardiovascular death occurred in 3 patients (21.4%) with mild MF and 5 patients (26.3%) with severe MF. Of the patients without MF, none died of cardiovascular cause.

Although the presence of fibrosis was associated with a poor prognosis, the total amount of MF correlated poorly with the survival time (r = -0.403, p=0.003).

Conversely, no difference in cardiovascular mortality could be noted in the direct comparison between patients with mild MF and patients with severe MF.

Conclusion: The present data show the severe impact of MF on mortality in patients with AS. Even 10 years after AVR, significant differences in all cause mortality, as well as cardiovascular mortality could be noted. Of note, the total amount of MF made no difference in the long-term outcome. Therefore, care should be taken to avoid unnecessary delays in AVR, especially when myocardial fibrosis is not yet present.

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Sudden death in primarily asymptomatic patients with aortic valve stenosis

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Background: The risk of sudden cardiac death (SCD) in patients with asymptomatic aortic stenosis (AS) is thought to be low (1%) and largely independent on AS severity. We retrospectively analyzed outcome data from the Simvastatin and Ezetimibe in Aortic Stenosis (SEAS) study with the aim to assess the incidence and potential risk factors of SCD in this prospectively followed cohort of asymptomatic patients.

Methods: Of the 1873 patients included in the trial, 1204 (64%) with mild to moderate aortic stenosis (jet velocity 2.5–4.0 m/s), complete clinical, echocardiographic, and follow up data remained event-free (except for sudden death) throughout the study period.

Results: SCD occurred in 19 patients during a mean follow-up of 26.6±13.2 months (0.7%/year). Patients with SCD were older (p=0.01), had a higher left ventricular (LV) mass (p<0.001), tended to be female (p=0.11) and leaner (p=0.06) than surviving asymptomatic patients. None of the echocardiographic parameters of stenosis severity (or their development over time) were associated with SCD (e.g. jet velocity 3.1±0.4 vs. 2.9±0.5 m/s, p=0.33). Cox regression analysis identified age (HR 1.077, 95% CI 1.012–1.145 per year), LV mass (HR 1.013, 95% CI 1.003–1.024 per g/cm²), male gender (HR 1.307, 95% CI 1.111–1.545), and aortic valve area (HR 1.112, 95% CI 1.098–1.126 per cm²) as independent risk factors of SCD (all p<0.05).

Conclusion: Sudden cardiac death in asymptomatic patients with aortic stenosis is rare and strongly related to left ventricular mass but not stenosis severity.

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Causes of death in patients with severe aortic stenosis: a report from the CURRENT AS registry

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Background: The prevalence of aortic stenosis (AS) is increasing due to the aging population.

Purpose: To know if the patients with AS die from AS-related causes or not.

Methods and results: We used data from a Japanese multicenter registry, the CURRENT AS Registry, which enrolled 3,815 consecutive patients (female: 62%, mean age: 78±10 years) with severe AS (peak aortic jet velocity [Vmax] >4.0 m/s, mean aortic pressure gradient >40 mm Hg, or aortic valve area <1.0 cm²). The median follow-up period was 1176 (interquartile range: 733–1618) days, with a 93% follow-up rate at 2 year. Of 1449 deaths observed, 802 (55.3%) were from cardiac causes and 647 (44.7%) were from non-cardiac causes. Heart failure (25.8%) and sudden death (12.6%) caused the majority of cardiac deaths, whereas infection (12.6%) and malignancy (11.1%) were the main causes of non-cardiac deaths. In the initial aortic valve replacement stratum (N=1197), procedure-related death was the leading cause of cardiac death followed by HF and CAD, while in the conservative stratum (N=2618), HF was the leading cause of cardiac death, followed by sudden death. In a cause-specific Cox proportional hazard model, both non-cardiac factors (age, male, body mass index <22, diabetes, prior history of stroke, aortic/periipheral artery disease, dialysis, anemia, malignancy under treatment) and cardiac factors (atrial fibrillation, ejection fraction <50%, and low Vmax) were associated with non-cardiac death.

Conclusions: Death from non-cardiac causes, including infection and malignancy, is an important contributor to the overall mortality in patients with severe AS.

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Socioeconomic status, neighborhood deprivation and aortic valve stenosis

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Background: Low socioeconomic status (SES) is associated with atherosclerotic vascular disease, such as myocardial infarction (MI) and stroke. Less is known about an association between SES and valvular heart disease, including aortic stenosis (AS).

Purpose: To study if low SES, estimated by high neighborhood deprivation, is associated with increased incidence of AS.

Methods: We studied the Swedish population with nationwide registers during the study period of 1997–2010. A neighborhood deprivation index (NDI) was calculated based on four items: low education level (<10 years of formal education), low income, unemployment, and receipt of social welfare. NDI was categorized into low (<1 standard deviation [SD] below the mean), moderate (mean ±1 SD) and high (>1 SD above the mean) NDI, respectively.

Results: Birth year, family income, marital status, urban vs. rural residency, education and country of origin were included as individual sociodemographic covariates. The outcome was AS, defined by an ICD-10 diagnosis code of I25.0 or I25.2. Multilevel ( hierarchical) logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals. Analyses were stratified by sex. A sensitivity analysis studied MI as the outcome variable.

Results: The total study population (n=641 905) was divided into individuals living in neighborhoods with low (n=1 608 815 [24%]), moderate (n=857 387 [58%]) and high (n=1 175 723 [18%]) NDI, respectively. 63 227 incident aortic stenosis cases occurred. After adjustment for individual sociodemographic variables, high NDI compared to low NDI was associated with a slightly greater risk of AS (OR in men: 1.09 [1.05–1.14], OR in women: 1.10 [1.05–1.15]). The corresponding risk increase was much greater than doubled for MI (OR in men: 1.23 [1.21–1.25], OR in women: 1.28 [1.26–1.30]).

Conclusions: In this nationwide study of the Swedish population, living in a comparatively highly deprived neighborhood was only modestly associated with an increased risk of incident AS. The association was stronger for MI, indicating that AS may be less influenced by traditional socioeconomic risk factors.

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Combined aortic valve replacement and coronary artery bypass grafting: the impact of incomplete revascularization in long term survival


Introduction: Combined aortic valve replacement (AVR) and coronary artery bypass grafting (CABG) is associated with a greater risk of operative mortality and a worse late survival than isolated AVR or CABG. We aimed at evaluating the peri-operative results, long-term outcomes and time free from major cardiovascular and cerebrovascular events (MACCEs) of patients submitted to AVR plus CABG, and the impact of incomplete revascularization (ICR) in this setting.

Methods: From January 2003 to August 2015, 564 consecutive patients underwent combined AVR and CABG, and constituted the study population. Patients with other associated valvular surgeries were excluded. The anatomical conditional definition of complete revascularization (CR) was adopted, defined as at least the main-branch vessels were revascularized. Mean follow-up was 4.8±2.9 years and 100% and 94.3% complete for survival and MACCEs, respectively. Cox proportional hazards models were used to analyze risk factors for late mortality and MACCE incidence. Kaplan-Meier methods were used to plot sur-