

## Risk of infective endocarditis among patients with tetralogy of fallot

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**Funding Acknowledgement:** Type of funding source: None

**Introduction:** Patients with tetralogy of Fallot (ToF) are considered at high risk of infective endocarditis (IE) as a result of altered hemodynamics and multiple surgical and interventional procedures including pulmonary valve replacement (PVR). The overall survival of patients with ToF has increased in recent years. However, data on the risk of adverse outcomes including IE are sparse.

**Purpose:** To investigate the risk of IE in patients with ToF compared with controls from the background population.

**Methods:** In this nationwide observational cohort study, all patients with ToF born in 1977–2017 were identified using Danish nationwide registries and followed from date of birth until occurrence of an outcome of interest (i.e. first-time IE), death, or end of study (July 31, 2017). The comparative risk of IE among ToF patients versus age- and sex-matched controls from the background population was assessed.

**Results:** A total of 1,156 patients with ToF were identified and matched with 4,624 controls from the background population. Among patients with ToF, 266 (23.0%) underwent PVR during follow-up. During a median follow-

up time of 20.4 years, 38 (3.3%) patients and 1 (0.03%) control were admitted with IE. The median time from date of birth to IE was 10.8 years (25th–75th percentile 2.8–20.9 years). The incidence rates of IE per 1,000 person-years were 2.2 (95% confidence interval (CI) 1.6–3.0) and 0.01 (95% CI 0.0001–0.1) among patients and controls, respectively. In multivariable Cox regression models, in which age, sex, pulmonary valve replacement, and relevant comorbidities (i.e. chronic renal failure, diabetes mellitus, presence of cardiac implantable electronic devices, other valve surgeries), were included as time-varying coefficients, the risk of IE was significantly higher among patients compared with controls (HR 171.5, 95% CI 23.2–1266.7). Moreover, PVR was associated with an increased risk of IE (HR 3.4, 95% CI 1.4–8.2).

**Conclusions:** Patients with ToF have a substantial risk of IE and the risk is significantly higher compared with the background population. In particular, PVR was associated with an increased risk of IE. With an increasing life-expectancy of these patients, intensified awareness, preventive measures, and surveillance of this patient group are advisable.

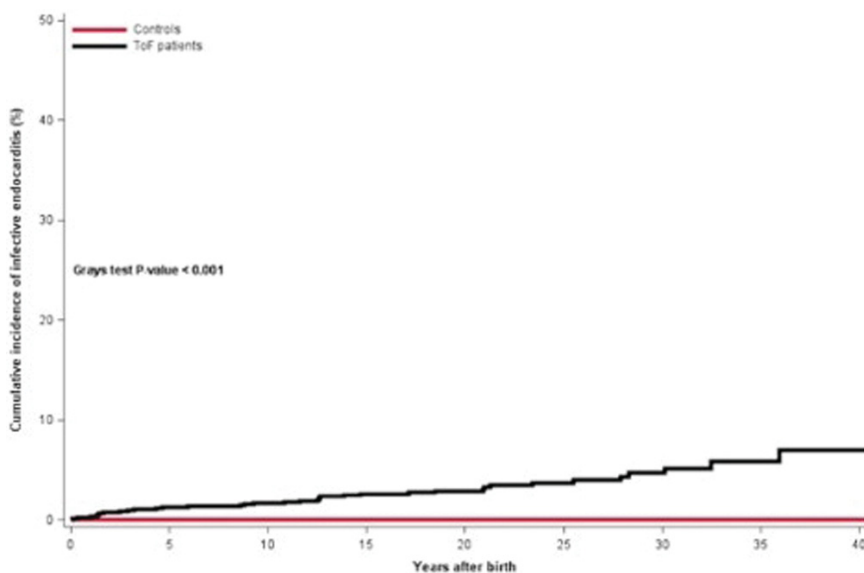


Figure 1. Cumulative incidence of IE