

Mild residual pulmonary stenosis after correction of Tetralogy of Fallot is associated with a reduced risk of pulmonary valve replacement during follow-up

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Introduction

Pulmonary valve replacement (PVR) is often performed in corrected Tetralogy of Fallot (ToF) patients with pulmonary regurgitation, in order to reverse right ventricular dilatation and its adverse clinical outcome. Comprehensive knowledge about the predictive value of pre-operative, peri-operative and early post-operative parameters for the risk of PVR during follow-up can be of great value for counselling of patients with ToF and their parents. The aim of this study was to determine the influence of several clinical, surgical and echocardiographic parameters on the need for PVR during follow-up in corrected ToF patients. Specifically, the influence of a residual pulmonary stenosis on the need for PVR was investigated.

Methods

The study was a retrospective cohort study. Patients were included if their initial diagnosis was ToF, and if clinical follow-up had taken place at our center for a minimum of five years. Patient characteristics, surgical parameters and post-operative parameters were reviewed, with special focus on the first available data about the presence and severity of post-operative pulmonary regurgitation and stenosis. Univariate and multivariate Cox proportional hazards regression analyses were performed to identify predictors for PVR.

Results

A total of 171 ToF patients were included. A total of 71 (41.5%) patients underwent PVR, with a median interval between corrective surgery and PVR of 24.2 years. Multivariate analysis showed that older age at corrective surgery (Hazard Ratio (HR)=1.20, $p < 0.001$) and the use of a patch (transannular patch HR=7.55, $p < 0.001$, RVOT patch HR=5.95, $p < 0.001$) significantly predicted PVR during follow-up. Moreover, a mild residual pulmonary stenosis (peak systolic gradient 15 to 30 mmHg) was independently associated with a reduced risk of PVR, as compared with the patients with a gradient < 15 mmHg (HR=0.47, $p = 0.020$) and those with a gradient > 30 mmHg (HR=0.37, $p = 0.022$).

Conclusions

Besides known risks factors for PVR, such as older age at repair and the use of a patch, post-operative mild residual pulmonary stenosis with a peak systolic gradient between 15 and 30 mmHg is independently associated with a reduced risk of PVR during follow-up of corrected ToF patients.