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Atrioventricular valve repair in patients with functional single-ventricle physiology: impact of ventricular and valve function and morphology on survival and reintervention.

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Abstract

OBJECTIVE:

This study was to determine whether atrioventricular valve repair modifies natural history of single-ventricle patients with atrioventricular valve insufficiency and to identify factors predicting survival and reintervention.

METHODS:

Fifty-seven (13.5%) of 422 single-ventricle patients underwent atrioventricular valve repair. Valve morphology, regurgitation mechanism, and ventricular morphology and function were analyzed for effect on survival, transplant, and reintervention with multivariate logistic and Cox regression models. Comparative analysis used case-matched controls.

RESULTS:

Atrioventricular valve was tricuspid in 67% and common in 28%. Ventricular morphology was right in 83%. Regurgitation mechanisms were prolapse (n = 24, 46%), dysplasia (n = 18, 35%), annular dilatation (n = 8, 15%), and restriction or cleft (n = 2, 4%). Postrepair insufficiency was none or trivial in 14 (26%), mild in 33 (61%), and moderate in 7 (13%). Survival in repair group was lower than in matched controls (78.9% vs 92.7% at 1 year, 68.7% vs 90.6% at 3 years, P = .015). Patients with successful repair and normal ventricular function had equivalent survival to matched controls (P = .36). Independent predictors for death or transplant included increased indexed annular size (P = .05), increased cardiopulmonary bypass time (P = .04), and decreased postrepair ventricular function (P = .01). Ventricular dilation was a time-related factor for all events, including failed repair.

CONCLUSIONS:

Survival was lower in single-ventricle patients operated on for atrioventricular valve insufficiency than in case-matched controls. Patients with little postoperative residual regurgitation and preserved ventricular function had equivalent survival to controls. Lower grade ventricular function and ventricular dilation correlated with death and repair failure, suggesting that timing of intervention may affect outcome.