

## YIA-2

### **The Impact of the Stage I Palliative Strategy on Echocardiographic Changes in Cardiac Size and Function in Children with Hypoplastic Left Heart Syndrome. A comparison between the Norwood and the Hybrid approach.**

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**Background:** Hybrid palliation may have theoretical advantages to preserve right ventricular (RV) function in hypoplastic left heart syndrome (HLHS) patients when compared to the Norwood procedure. The aim of this study was to compare echocardiographic indices of RV function in patients after the hybrid and Norwood procedure throughout all stages of HLHS palliation.

**Methods:** A retrospective study was performed in 76 HLHS patients (34 after hybrid and 42 after Norwood) with available protocol-driven echocardiography. Indices for RV size, shape and function (systolic, diastolic and global), tricuspid valve (TV) size and degree of regurgitation (TR) were obtained at 5 specific time points: 1. at baseline before stage I procedure, 2. before stage II, 3. after stage II, 4. before Fontan, 5. after Fontan.

**Results:** Median follow-up was 4.9 years (range 1.1-8.5 years) of all 76 participants, of whom 50 underwent second stage palliation and 23 Fontan completion. Baseline characteristics before stage I procedure of both groups were comparable. At pre-stage II evaluation, RV fractional area change (FAC) and E/E' ratio ( $32\pm 7\%$  vs.  $27\pm 6\%$ ;  $p=0.04$  and  $12.14\pm 4.11$  vs.  $8.66\pm 3.58$ ;  $p=0.02$ , respectively) were significantly higher in Norwood patients as compared to hybrid. After stage II, the FAC difference became insignificant ( $29\pm 7\%$  vs.  $25\pm 8\%$ ;  $p=0.08$ ), although E/E'-ratio remained significantly higher in Norwood patients ( $18.65\pm 8.30$  vs.  $11.07\pm 7.01$ ;  $p=0.04$ ). Before and after Fontan completion, RV systolic function equally improved in both groups as expressed by a higher FAC and improved qualitative RV function. Moderate/severe TR was frequently present especially in Norwood patients after stage II (13 patients after Norwood vs. 4 after hybrid), which significantly improved at pre-Fontan assessment (moderate/severe TR in 3 Norwood patients and 1 hybrid) and after Fontan completion (moderate TR in only 1 patient per group).

**Conclusion:** Norwood and hybrid surgical strategies had equivalent echocardiographic indices of RV size, shape, systolic and diastolic function throughout the full course of palliation of HLHS, offering no favorable Fontan candidacy by either of the two techniques. Small differences in individual indices of RV function are likely to be explained by differences in physiology or surgical timing between both groups, rather than by intrinsic differences in myocardial and valve function.