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**Research Explained**

Longitudinal Follow-Up of Children With HLHS and Association Between Norwood Shunt Type and Long-Term Outcomes: The SVR III Study

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ABOUT THIS STUDY

**Why is this study important?**

* This study examines health outcomes of children with single ventricle conditions (HLHS or other single right ventricle anomaly) in the Single Ventricle Reconstruction III Trial (SVR III) up to the age of 12.
* It adds to prior studies that looked at outcomes for patients who were given two of the most common single ventricle surgeries just after birth, the modified Blalock-Taussig-Thomas (mBTT) shunt or the Right Ventricle to Pulmonary Artery shunt (RVPA conduit/Sano).

**What is the goal of this study**

* To see if the type of shunt makes a difference in health outcomes of children with single ventricle heart conditions.
* To see if the type of shunt makes a difference to:
	+ How well the right ventricle functions (measured by ejection fraction)
	+ Living to the age of 12 and living to that age without a heart transplant
	+ How much a child can exercise, and if they have more health problems

**How was this study performed?**

* Children who had been in previous SVR trials in several different hospitals were tracked over a period of time (a “prospective study”) and had a cardiac MRI, an exercise test, and an echocardiogram during the time of the study.
* Researchers looked for these health complications happening during the time of the study:
	+ Protein losing enteropathy (PLE)
	+ Plastic bronchitis
	+ Neurologic events such as strokes
	+ Additional and unplanned surgeries or interventions.

**What were the results of the study?**

* Of initial total study patients, 313 (57%) lived until 12 years old and did not need a heart transplant. There was a small but not significant difference in survival between the patients receiving the different types of shunt.
	+ RVPA (163 of 277 [59%]) vs. mBTT (144 of 267 [54%])
* There were no differences in the racial/ethnic makeup of patients getting the two different types of shunt.
	+ A greater percentage of Hispanic patients got the RVPA conduit.
* The number of unplanned surgical operations were similar between groups.
* There was no difference in function of the right ventricle between the two groups.
* There was no difference in atrial or ventricular arrhythmias between groups.
* There was no difference in strokes or seizures between groups.
* There were no differences between groups in exercise performance.
* Children with the RVPA conduit had higher rates of PLE (5% vs 2%, p = 0.04) and needed more catheter interventions (14 vs 10 per 100 patient-years, p = 0.01).

**What were the limitations of the study?**

* RV function could have contributed to survival bias, meaning RV function could have contributed to more transplant-free death in one shunt group over the other.
* Patients were more likely to be identified as underrepresented minority, potentially limiting generalizability.

**What it all means**

* The type of shunt has little effect on right ventricular function, post-Fontan survival and exercise performance.
* The RVPA conduit had higher rates of PLE and catheter interventions; however, other problems were similar between groups.
* Rates of mortality and different health problems are still very high and there is a great need for more research, innovation, and investment to improve the lives of children with single ventricle heart conditions.