



National Pediatric Cardiology
Quality Improvement Collaborative

Research Explained

Predictors and Outcomes of Arrhythmias on Stage I Palliation of Single Ventricle Patients

Czosek RJ, Spar DS, Anderson JB, Khoury PR, Webster G. *JACC Clin Electrophysiol.* 2022 Sep;8(9):1136-1144. doi: 10.1016/j.jacep.2022.06.010. Epub 2022 Aug 31..

NPC-QIC Research and Publication Committee (physician) and Nicole Sage (parent)

ABOUT THIS STUDY

Why is this study important?

- This study evaluated the incidence and impact of cardiac arrhythmias in the time period around the first stage of surgical repair in patients with single ventricle congenital heart disease. The study found that arrhythmias are commonly associated with worse outcomes. Given these findings patients undergoing stage I repairs may benefit from additional surveillance. Additionally, there is emerging evidence that treatment with heart rhythm medications may improve outcomes in patients with specific forms of arrhythmias.

What is the goal of the study?

- To describe risks for arrhythmias in patients having the first stage surgery for single ventricle disease and describe outcomes and treatment strategies.

How was this study performed?

- This study was performed using the NPC-QIC registry information.

What were the results of the studies?

- 2,048 patients were included in this study
- This study demonstrated that arrhythmias are a frequent during the first stage of repair and seen in up to 36% of patients with single ventricle congenital heart disease.
- Arrhythmias documented around the first stage of surgical repair were associated with worse outcomes than patients without arrhythmias.

- Patients treated with heart rhythm medications had improved survival outcomes compared to patients not treated and were similar to patients without arrhythmias.

What are the limitations of the study?

- There are several limitations predominately related to the use of retrospective database data and limited arrhythmic specific variables.
- The retrospective design does not allow determination of causality.

What it all means

- Cardiac arrhythmias are common in patients with single ventricle around the time of their initial surgical repair.
- Single ventricle patients with arrhythmia *may* have worse outcomes compared to those without arrhythmia but appear to be significantly improved with the use of antiarrhythmic medications.