Making Sense of Longitudinal Data

Changes in ventricular function in babies with a functional single ventricle

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No Disclosures

Wilder TJ, McCrindle BW, Hickey EJ, DeCampli WM, Williams WG, Caldarone CA, Blackstone EH
Atrial Fibrillation

AF Prevalence (%)

CABG

No
Yes

Rajeswaran and Blackstone

Months
Objectives

Describe longitudinal data and a new method for analysis

Illustrate how a new method maximizes the information we can generate from longitudinal data

– Clinical example of critical LVOTO
Joint work of the Cleveland Clinic Clinical Investigations team under the direction of Drs. Eugene Blackstone, Rajeswaran Jeevananatham (HVI/QHS: biostatistics)
Longitudinal Data

Ventricular dysfunction

Years after birth

Months since surgery
Transfusion after Surgery

Rajeswaran and Blackstone
RV Function: 3882 echoes from 427 children with single RV

% Of echoes in each state

RV Dysfunction
- None
- Mild
- Moderate
- Severe

Mean age of SCPC = 7 mo.

Years after birth

% Of echoes in each state

0 1 2 3 4 5

Years after birth

Analytic Strategy
Data Exploration: Patten-Specific Profile

RV Dysfunction
- None/Mild
- Moderate/Severe

% RV Dysfunction vs. Years after birth
Data Analysis: Temporal Trends

Early Phase: Years after birth

Late Phase: Raw Data

% Probability vs. Years after birth
Data Analysis: Temporal Trends

% Probability

Years after birth

Early Phase

Late Phase
Data Analysis: Risk Stratification

Probability of RV dysfunction: Norwood

Probability of RV dysfunction: Hybrid
Areas of Interest

What is the rate of ventricular failure, and what factors influence that rate at various phases?

Comparing children with Right vs. Left single ventricle physiology: LVOTO vs. TA

– What are the differences in VF?
– What are the differences AVVR?
Thank You