Predicting mortality in children with critical heart disease by use of heart rate turbulence and heart rate variability.

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Introduction. No reports have clarified the relationship between mortality and autonomic function in children with critical heart disease.

In an attempted to clarify this relationship, we assessed heart rate turbulence and variability as an indicator of autonomic function in children

Subjects. 7 patients with critical heart disease.

Cause of death 1 Primary pulmonary hypertension 2 Eisenmenger syndrome 2 Hypoplastic pulmonary artery 2 Cardiomyopathy with critical heart disease.

Method. 24-hour electrocardiography Analog-digital conversion Heart rate variability using MemCalk/CHIRAM software. Analysis of ventricular premature contraction for Heart rate turbulence

Heart rate variability High frequency power (HF) Low frequency to high frequency power ratio (LF/HF) Lorentz plots 1/f value.

Heart rate turbulence

Turbulence onset : the difference between the mean of the first two sinus RR intervals after ventricular premature contraction and the last two sinus RR intervals before the VPC

Turbulence slope : the maximum positive slope of a regression line over five subsequent sinus-rhythm RR intervals.

Patients data over 3 periods: over 2 years before death 6 to 24 months before death under 6 months before death.

Summary

We assessed autonomic function of children with critical heart disease.
Patients with critical heart disease have low parasympathetic nerve activity since 2 years before death.
Turbulence onset is also sensitive predictor of cardiac deterioration.
Parameters of 1/f value and Turbulence slope are not useful for predicting mortality in children with critical heart disease.