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PATHOPHYSIOLOGY OF CORONARY BLOOD FLOW IN CONGENITAL HEART DISEASE

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Background and aims: The effects of CHD on CF are poorly mapped. The aim of this study was to investigate the effects of volume and pressure overload and increased coronary perfusion pressure on coronary flow (CF) in patients with congenital heart disease (CHD).

Methods: Posterior descending coronary artery flow was measured using transthoracic Doppler echocardiography in lesions with right ventricular pressure or volume overload: pulmonary valve stenosis (PS) and atrial septal defects (ASD). Left anterior descending coronary artery flow was measured in lesions with left ventricular pressure or volume overload: coarctation of the aorta (CoA) and ventricular septal defect (VSD). The CF data in each patient group were expressed as the percent of the median for healthy controls from the same age group.

Results: The CF values were 172% in VSD, 185% in ASD, 233% in PS, and 773% in CoA patients. In CoA patients left ventricular mass ($r=0.81$, $p=0.001$), systolic blood pressure ($r=0.72$, $p<0.0001$), diastolic blood pressure ($r=0.77$, $p<0.0001$), systolic wall tension ($r=-0.77$, $p=0.004$), and signs of inflammation (log CRP, $r=-0.75$, $p=0.007$) correlated with CF.

Conclusions: The increase in CF and velocity was most significant in patients with CoA. In newborns, increased coronary perfusion pressure seems to be the most important factor for increased CF, even if the pressure is not assumed to cause a significant increase in flow over the auto-regulatory range of 70-130 mmHg. We also showed that inflammation decreases CF.

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MID TO LONG-TERM FOLLOW-UP OF 56 CHILDREN WITH KAWASAKI DISEASE COMPLICATED WITH MEDIUM OR GIANT CORONARY ANEURYSMS

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Objective: This study sought to evaluate the mid to long-term prognosis of medium or giant coronary aneurysms (CA) in children with Kawasaki disease (KD).

Method: The clinical data of children with medium or giant CA due to KD were analyzed, which include size and location of CA, clinical presentations, echo and 64 slice-spiral CT coronary angiogram.

Results: Fifty-six children were included. The median follow-up time was 3.5 years. The cardiac event rate was 4/35(11.4%) in children with giant CA, while no cardiac event occurred in children with medium aneurysms. Two children with giant CA died of myocardial infarction 10 month and 4 years after the acute phase of KD. Other two with giant CA suffered from angina pectoris 2 month and 14 years respectively after the acute phase of KD. In the convalescent phase, 58.4% of the aneurysms had the tendency to regress, and 34.9% of the affected coronary artery branches totally recovered. Multiple logistic regression shows that the age of the onset, follow-up period and the initial size of the aneurysm are influencing factors of the regression of the aneurysms ($P<0.05$). 64-slice spiral CT coronary angiogram have the advantage in detecting coronary artery calcification and lesions in distal-end of coronary artery.

Conclusion: The CA due to KD has the tendency to regress during the convalescent phase, cardiac events occurred only in patients with giant CA. The overall cardiac events rate is probably lower as compared to those reported from other regions.