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Images in Anesthesiology: Anomalous Single Coronary Artery from the Pulmonary Artery

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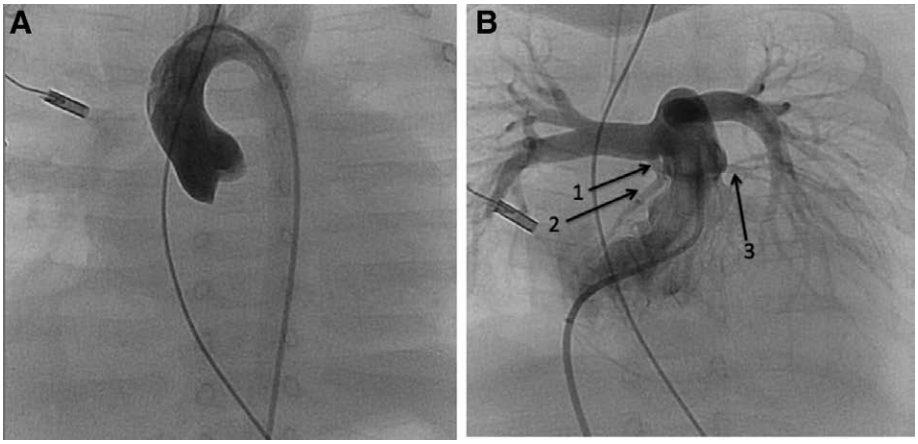

ANOMALOUS single coronary artery from the pulmonary artery (ASCAPA) is a rare congenital anomaly with high mortality. The images illustrate coronary anatomy of an 8-week-old, 3.5-kg infant who experienced cardiac arrest immediately after an uneventful ophthalmologic procedure under general anesthesia. Panel A of the figure demonstrates an aortogram with no coronary ostia (Supplemental Digital Content 1, Video, http://links.lww.com/ALN/B372). Panel B shows coronary filling after injection of the pulmonary artery, revealing a short single coronary (1) bifurcating into right (2) and left (3) branches (Supplemental Digital Content 2, Video, http://links.lww.com/ALN/B373).

ASCAPA is described in case reports, rarely with good surgical outcome.[1] Survival correlates with early diagnosis, heralded by symptoms of myocardial ischemia including poor feeding and weight gain. Electrocardiogram may show ischemia; echocardiography may reveal ventricular dysfunction and mitral regurgitation but not coronary abnormalities. Cardiac catheterization provides definitive diagnosis. ASCAPA is fatal without surgical palliation consisting of aortic reimplantation of the coronary artery.

Blood delivered to the coronaries in ASCAPA originates from the pulmonary artery, explaining its reduced oxygen content and lower perfusion pressure.[2] Coronary perfusion depends on elevated pulmonary vascular resistance (PVR); as PVR falls in the neonatal period, blood flow increases to the lungs, creating coronary steal and resultant ischemia. Anesthetic goals include maintaining coronary perfusion pressure by maintaining PVR and myocardial contractility.[3] A ductus arteriosus maintained with prostaglandin may be the only supply of oxygenated blood to the coronaries.[1] The baby depicted in these images had elevated pulmonary pressures of unclear etiology, which allowed survival to 8 weeks of age.

Competing Interests

The authors declare no competing interests.

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