

Images in Pediatric and Congenital Heart Disease

Anomalous Coronary Blood Flow Drainage to PLSVC in Congenital Coronary Sinus Stenosis

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A one-year-old girl is followed in our outpatient clinic for aortic valve stenosis without coronary arteries nor coronary sinus abnormalities assessed by X-ray, ECG and echocardiogram examinations. To further characterize her disease, cardiac catheterization was performed. Abnormal venous return of coronary blood flow was detected on ascending aortography. Angiogram of the left coronary artery (LCA) revealed drainage to right atrium (RA) via the vertical vein, known as a persistent left superior vena cava (PLSVC), innominate vein (Inn V) and superior vena cava (SVC) (Fig. 1a). Right coronary artery (RCA) blood flow also returned to the RA via the same circulation (Fig. 1b) and to a lesser degree, via the normal coronary sinus. When a Swan-Ganz balloon catheter was placed in the PLSVC for the vessel occlusion, dynamic T-wave changes were noted in leads III and aVf on the elec-

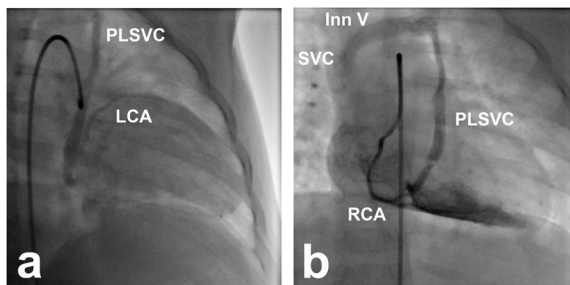


Fig. 1 Coronary venous return from LCA and RCA Venous return from a) LCA and b) RCA drained to RA via PLSVC, Inn V and SVC.

trocardiogram (ECG), suggestive of transient myocardial ischemia with PLSVC balloon catheter occlusion (Fig. 2). The T-wave changes were actually smaller than we expected. The reasons of this are possibly incomplete vessel occlusion and persistent normal anatomical circulation from coronary sinus to RA.

Congenital coronary sinus abnormalities are extremely rare.¹⁾ In cases of coronary sinus stenosis or atresia, however, the PLSVC and/or Inn V drains the coronary circulation. Inadvertently disruption of this abnormal coronary circulation may result in coronary ischemia during congenital cardiac surgery procedure. Thus, pre-operative planning may benefit from careful

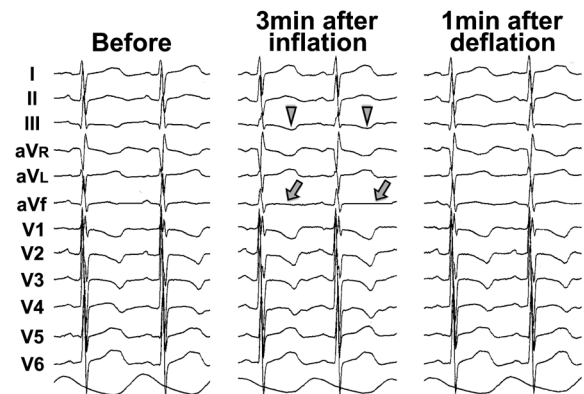


Fig. 2 ECG recording pre- and post-balloon occlusion test

The shape of T waves in III (arrowheads) and aVf (arrows) leads changed only during PLSVC balloon occlusion.

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definition of abnormal coronary circulation. However, at least in this case, it seemed impossible to detect this anomaly before cardiac catheterization. Thus, checking ST- and T-wave changes in ECG is needed by clamping Inn V during surgery when the amputation of Inn V is planned.

Conflict of Interest

None.

Note

Supplementary movies are provided online for this article.

References

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