

A significant 'coronary steal' by thebesian veins, a rare congenital coronary defect masquerading as acute coronary syndrome

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DESCRIPTION

A 72-years-old woman presented with intermittent chest pains, anterolateral T-wave inversions on ECG and troponin-T of 6290 ng/L. Acute coronary syndrome treatment was initiated. The coronary angiography demonstrated tortuous calcified coronaries without any significant obstructive lesion. However, late dye acquisition images revealed a capillary blush originating from the diagonal branch of left anterior descending artery (figures 1 and 2) and the distal right coronary artery (figures 3 and 4) feeding into the ventricular cavity through intramural thebesian vein connections, almost producing a ventriculogram (figures 5 and 6).

This episode which otherwise would be an undetectable plaque event, turned out to be one of significant myocardial injury due to background presence of the 'the coronary steal' syndrome.

Persistence of embryonic coronary artery fistulas in form of diffuse vascular network directly draining oxygenated blood from the coronaries into the ventricles bypassing the myocardial capillary network are called thebesian veins. Coronary artery fistulas are rare (<0.2%¹), remain silent and often discovered incidentally on coronary angiogram or

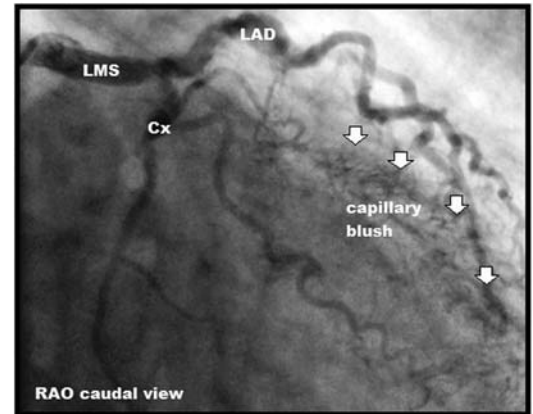


Figure 2 The flow through the coronary artery fistula (thebesian veins) in the diagonal branch of left anterior descending artery is seen (in late dye acquisition images) as a capillary blush (marked with arrows) in the RAO caudal view. This flow is causing drainage of oxygenated blood directly from coronaries into the ventricular cavity.

ventriculography.² They rarely become haemodynamically significant and become a non-atherosclerotic cause of angina via the coronary steal phenomenon.³ Case reports of steal

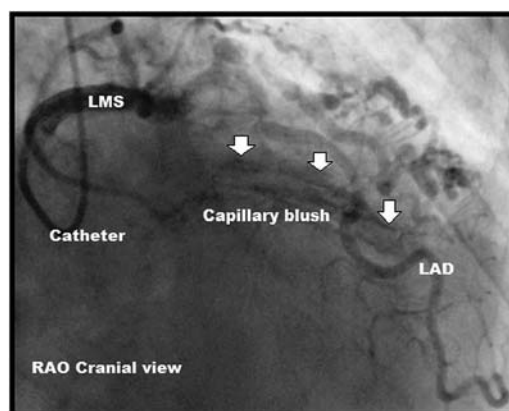


Figure 1 The flow through the coronary artery fistula (thebesian veins) in the diagonal branch of left anterior descending artery is seen (in late dye acquisition images) as a capillary blush (marked with arrows) in the RAO cranial view. This flow is causing drainage of oxygenated blood directly from coronaries into the ventricular cavity.

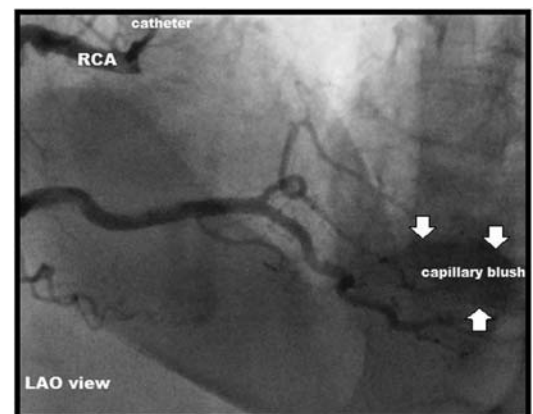


Figure 3 The flow through the coronary artery fistula (thebesian veins) in the distal right coronary artery is seen (in late dye acquisition images) as a capillary blush (marked with arrows) in the LAO view. This flow is causing drainage of oxygenated blood directly from coronaries into the ventricular cavity.



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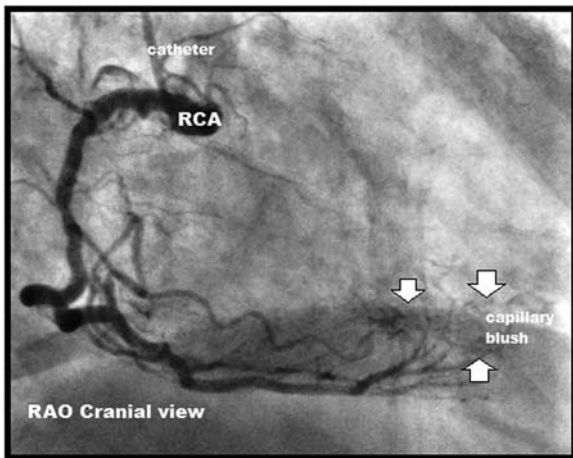


Figure 4 The flow through the coronary artery fistula (thebesian veins) in the distal right coronary artery is seen (in late dye acquisition images) as a capillary blush (marked with arrows) in the RAO cranial view. This flow is causing drainage of oxygenated blood directly from coronaries into the ventricular cavity.

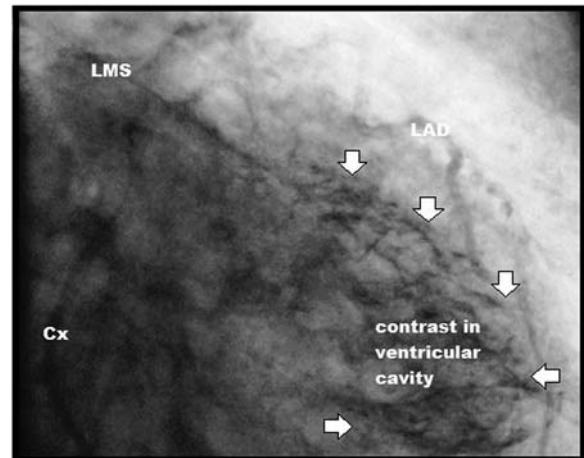


Figure 6 The flow of contrast through the thebesian veins into the ventricular cavity producing a ventriculogram (ventricle seen in diastole).

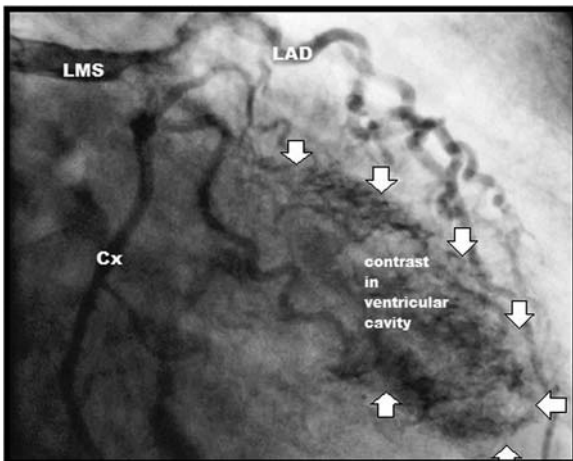


Figure 5 The flow of contrast through the thebesian veins into the ventricular cavity producing a ventriculogram (ventricle seen in systole).

Learning points

- ▶ Non-atherosclerotic coronary arterial anomaly may be associated with myocardial ischaemia producing angina symptoms and troponin rise.
- ▶ A good image for cardiology trainees to remember.

phenomenon are reported in adults^{4 5} and neonates.⁶ A case of paradoxical exacerbation of myocardial ischaemia with nitrates increasing the ‘steal’ is reported.⁷ People may present with ischaemic ECG changes,^{4 8} positive troponin⁴ and even bacterial endocarditis.⁹ These malformations were also reported in a carrier of fragile X syndrome.¹⁰

Contributors RA prepared the manuscript while AG supervised the manuscript. JS is the consultant responsible for the patient.

Competing interests None.

Patient consent Obtained.

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