Bag of worms in coronary angiogram: an interesting case of right coronary artery collateral circulation

Sunil Srinivas, Shivanand Patil, Shivakumar Bhairappa, Rangaraj Ramalingam

Department of Cardiology,
Sri Jayadeva Institute of
Cardiovascular Sciences and
Research, Bangalore,
Karnataka, India

Correspondence to
Dr Sunil Srinivas,
sunilbmc98@gmail.com

DESCRIPTION

A 35-year-old man presented with effort angina for 3 months. He was a chronic smoker and had a history of anterior wall myocardial infarction 6 months before admission. He was not thrombolysed and managed conservatively at that time and, since then, he was on medical treatment.

Examination did not reveal any significant findings. Electrocardiogram showed q waves with T wave inversions in anterior chest leads. Echocardiogram showed regional wall motion abnormality in the anterior wall and septum with ejection fraction of 45%. Coronary angiogram revealed total occlusion of left anterior descending artery (LAD) at the ostium (figure 1). Distal vessel was formed by Rentrop Grade II collaterals from both left circumflex and right coronary (RCA) arteries. RCA was occluded at the proximal segment with distal vessel forming through serpiginous Rentrop Grade III intracoronary (homo) collaterals (figures 1 and 2, videos 1 and 2). These collaterals were seen as a bag of worms. The same collaterals were seen supplying distal LAD as intercoronary collaterals. Distal RCA after forming through collaterals was, in turn, seen giving collaterals to distal LAD (figures 2–4, videos 1 and 2). Patient underwent CABG successfully, after which his angina subsided.

Intracoronary collaterals, said to be derived from adventitial arteries or vasa vasorum, are not often seen in the left side but are common in RCA.¹

Figure 2 Right coronary artery (RCA) in left anterior oblique view which is occluded at the proximal end (white arrow) with distal vessel reforming (black arrow) through serpiginous intracoronary collaterals. Distal RCA, in turn, seen giving collaterals to left anterior descending artery.

When they are located in the proximal portion of this vessel, they are usually effective in opacifying the poststenotic area.¹ Such channels can be single or multiple and are frequent in the patient with angina but without infarction.²

Figure 1 Left coronary angiogram in right anterior oblique caudal view revealing occluded left anterior descending artery at the ostium with distal vessel faintly reforming through collaterals from major obtuse marginal artery (white arrows).

Video 1 Right coronary artery (RCA) in left anterior oblique cranial view seen occluded at the proximal end with distal vessel reforming through serpiginous intracoronary collaterals. Distal RCA, in turn, seen giving collaterals to left anterior descending artery.

To cite: Srinivas S, Patil S, Bhairappa S, et al. *BMJ Case Reports* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-007800

Video 2 Right coronary artery (RCA) in left anterior oblique view seen occluded at the proximal end with distal vessel reforming through serpiginous intracoronary collaterals. Distal RCA, in turn, seen giving collaterals to left anterior descending artery.

Figure 3 Right coronary artery in right anterior oblique view which is seen occluded at the proximal end (white arrow) with distal vessel reforming (black arrow) through serpiginous collaterals. Distal left anterior descending artery reforming through these collaterals is also seen.

Figure 4 Right coronary artery in left anterior oblique cranial view which is seen occluded at the proximal end (white arrow) with distal vessel reforming (black arrow) through serpiginous collaterals. Distal left anterior descending artery reforming through these collaterals is also seen.

Learning points

- ▶ Collateral circulation potentially offers an important alternative source of blood supply when the original vessel fails to provide sufficient blood.
- ▶ Timely enlargement of collaterals may even avoid transmural myocardial infarction and death in symptomatic patients.
- ▶ Patients with significant collaterals will have smaller infarcts, less ventricular aneurysm formation, improved ventricular function, fewer future cardiovascular events and improved survival.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Jochem W, Soto B, Karp RB, et al. Radiographic anatomy of the coronary collateral circulation. *Am J Roent Rad Ther Nucl Med* 1972;116:50–61.
- 2 Cosby RS, Giddings JA, See JR. Coronary collateral circulation. *Chest* 1974;66:27–31.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow