Rare disease

Single coronary artery presenting as angina

Zhan Yun Lim, Nimit Shah, Fouad Amin, Mohamed Al-Obaidi

Department of Cardiology, Wexham Park Hospital, Slough, Berkshire, UK

Correspondence to Zhan Yun Lim, zhanyun_lim@yahoo.com

Summary

The authors present an unusual case of chest pain in an 84-year-old Caucasian woman.

BACKGROUND

In our experience in a district general hospital, this was the first presentation of single coronary artery. This is a rare congenital abnormality which we wanted to share with the community.

CASE PRESENTATION

The patient was an 84-year-old Caucasian woman who presented with atypical chest pain of increasing frequency and eventually occurring at rest. Her medical history included

hypertension, hypercholesterolaemia and type 2 diabetes mellitus.

INVESTIGATIONS

Her ECG showed a first degree heart block with incomplete left bundle branch block morphology.

Her troponin T was 0.02 µg/l (normal range <0.03 µg/l), while the rest of her bloods were unremarkable.

A decision to perform coronary angiography was made on the basis of chest pain at rest, multiple risk factors and

Figure 1 Coronary angiogram showing the left anterior descending (top) and the circumflex artery.

Figure 2 Coronary angiogram following the circumflex artery as it transverse the coronary sulcus.

conduction abnormality on ECG. This revealed a congenitally absent right coronary artery (type I) with the right coronary artery continuing from the atrioventricular circumflex artery (figure 1–3). There was moderate diffuse atheroma in the left anterior descending artery but no occlusive disease.

Her coronary angiogram was also complicated by ventricular fibrillation during left coronary injection which was terminated by electrical cardioversion. Although there have been no previous case reports linking risks of ventricular fibrillation with single coronary artery disease, there were also no technical problems during the procedure itself.

TREATMENT

The chest pain was likely not cardiac in origin with non-flow limiting moderate coronary artery disease.

OUTCOME AND FOLLOW-UP

The patient remained asymptomatic and well 3 months after her presentation.

DISCUSSION

This is the first case of isolated single coronary artery in our experience. Single coronary artery as a isolated finding is a rare congenital anomaly with an incidence of 0.024–0.066%.^{1 2} Classification of this anomaly was initially proposed in 1979 by Lipton *et al*¹ and further modified by Yamanaka and Hobbs³. The classifications divide the presentation into origin of the anomaly: type I: continuation of the normal artery into the missing artery's territory; type II: continuation of the anomaly from the proximal part of the other normal artery; and type III: left anterior descending and circumflex artery originating from the proximal part of the right coronary artery.

CT coronary angiography is a useful adjunct to evaluate the anatomy of the single coronary artery non-invasively and can assist in delineating the proximal course of the artery.^{4 5 6}

Figure 3 Coronary angiogram showing the circumflex artery transversing the posterior side of the heart.

Learning points

- ▶ Single coronary artery anomaly is a rare entity.
- ▶ There may be a higher risk of ventricular arrhythmia during contrast injection of a single artery.
- ▶ Patients with a single coronary artery can live well into their 80s without significant coronary artery disease.

Acknowledgements Wexham Park Hospital Catheter Lab.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Lipton MJ**, Barry WH, Obrez I, *et al*. Isolated single coronary artery: diagnosis, angiographic classification and clinical significance. *Radiology* 1979;**130**:39–47.
2. **Desmet W**, Vanhaecke J, Vrolix M, *et al*. Isolated single coronary artery: a review of 50,000 consecutive coronary angiographies. *Eur Heart J* 1992;**13**:1637–40.
3. **Yamanaka O**, Hobbs RE. Coronary artery anomalies in 126,595 patients undergoing coronary arteriography. *Cathet Cardiovasc Diagn* 1990;**21**:28–40.
4. **Angelini P**, Velasco JA, Flamm S. Coronary anomalies: incidence, pathophysiology, and clinical relevance. *Circulation* 2002;**105**:2449–54.
5. **Rodríguez-Granillo GA**, Rosales MA, Pugliese F, *et al*. Prevalence and characteristics of major and minor coronary artery anomalies in an adult population assessed by computed tomography coronary angiography. *EuroIntervention* 2009;**4**:641–7.
6. **Angelini P**, Villason S, Chan AV Jr, *et al*. Normal and anomalous coronary arteries in humans. In: Angelini P, ed. *Coronary Artery Anomalies: a Comprehensive Approach*. Philadelphia, PA: Lippincott Williams & Wilkins 1999:27–79.

This pdf has been created automatically from the final edited text and images.

Copyright 2010 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.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Lim ZY, Shah N, Amin F, Al-Obaidi M. Single coronary artery presenting as angina. *BMJ Case Reports* 2010;10.1136/bcr.05.2010.2964, date of publication

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