Images in CAD

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Left/right coronary artery-left ventricular fistulae with color flow image observed during transthoracic echocardiography

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Coronary artery fistula (CAF) is a relatively common anomaly, but it rarely drains into the left ventricle from both coronary arteries [1,2]. A 72-year-old woman visited our hospital complaining of chest pain. Her initial high-sensitivity cardiac troponin I level was slightly elevated, but her electrocardiogram showed no significant ST change from the previous examination. Her initial chest radiography showed cardiomegaly.

Echocardiography showed left ventricular hypertrophy and low normal left ventricle systolic function (EF 55%). Color Doppler echocardiogram revealed multiple abnormal blood flow from the left ventricle apex toward the left ventricle chamber (Fig. 1a, Supplementary video 1 and 2, Supplemental digital content 1, *http://links.lww.com/MCA/A494*). In pulsed wave Doppler mode, the diastolic flow into the left ventricle was confirmed suggesting CAFs (Fig. 1b, Supplementary video 2, Supplemental digital content 2, h*ttp://links.lww.com/MCA/A495*).

Coronary angiography showed no significant luminal narrowing; however, multiple CAFs were observed. Left coronary angiography revealed multiple CAFs originating from the distal portion of the left anterior descending artery and left circumflex artery and draining into the left ventricle (Fig. 1c, Supplementary video 3, Supplemental digital content 3, *http://links.lww.com/MCA/A496*). Right coronary angiography also showed multiple CAFs originating from the distal part of the right coronary artery and terminating to the left ventricle Fig. 1d, Supplementary video 4, Supplemental digital content 4, *http://links.lww.com/MCA/A497*). The number of shunts was considerable and a hemodynamically significant shunt can cause symptoms; some physicians term this the 'coronary steal phenomenon' [1,2].

We diagnosed multiple CAFs, probably with coronary steal syndrome. In this patient, we identified CAFs draining to the left ventricle through echocardiography. In conclusion, echocardiography is still a useful modality for suspecting and confirming CAFs. When a CAF is present, a dilated feeder vessel, termination chamber and abnormal flow pattern can be observed by using the combination of pulsed and color Doppler echocardiography [3].

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

References

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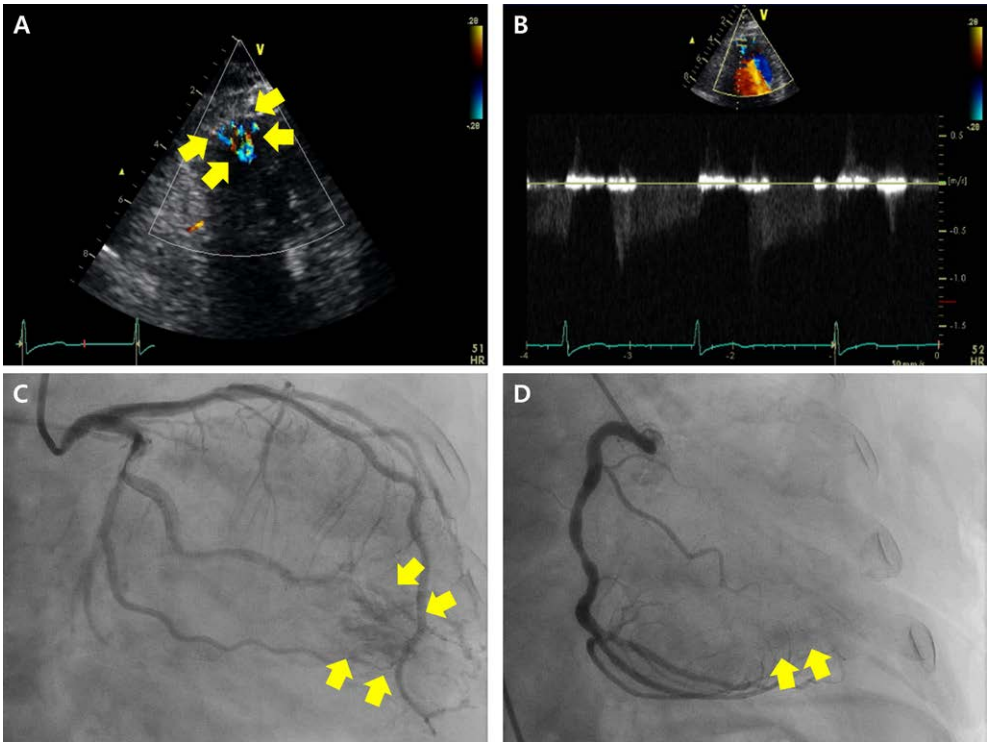
Fig. 1.



(a) On transthoracic echocardiography, multiple transmural blood flow in the left ventricle apex myocardium was seen. (b) In pulsed wave Doppler mode, the diastolic flow into the left ventricle was confirmed indicating coronary artery flow pattern. (c) Left coronary angiogram, right anterior oblique (RAO) caudal view. Contrast flow into the left ventricle arising from the LAD and LCX was seen. (d) Right coronary angiogram, RAO caudal view. Contrast flow into the left ventricle originating from the RCA was seen. LAD, left anterior descending; LCX, left circumflex; RCA, right coronary artery.