

Right coronary artery ectasia with coronary arteriovenous fistula mimicking Takotsubo-like left ventricular dysfunction in the electrocardiogram

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Abstract A coronary arteriovenous fistula is an abnormal connection between a coronary artery and any of four chambers in the heart. We report a unique case with a fistulae originating from right coronary artery and draining into the right atrium via coronary sinus although Takotsubo-like left ventricular dysfunction or acute myocardial infarction was initially thought to have occurred according to the electrocardiogram finding.

Keywords Coronary artery ectasia · Coronary arteriovenous fistula · Coronary sinus · Takotsubo-like left ventricular dysfunction

Abbreviations

ECG Electrocardiogram
TTE Transthoracic echo
RCA Right coronary artery
RA Right atrium

Case in point

We present the case of an 85-year-old woman, with a chest pain who suffered from lumbar compression fracture. Electrocardiogram (ECG) on admission demonstrated anterior and inferior symmetric T-wave inversions (Fig. 1). Takotsubo-like left ventricular dysfunction or acute myocardial infarction was suspected as a cause of

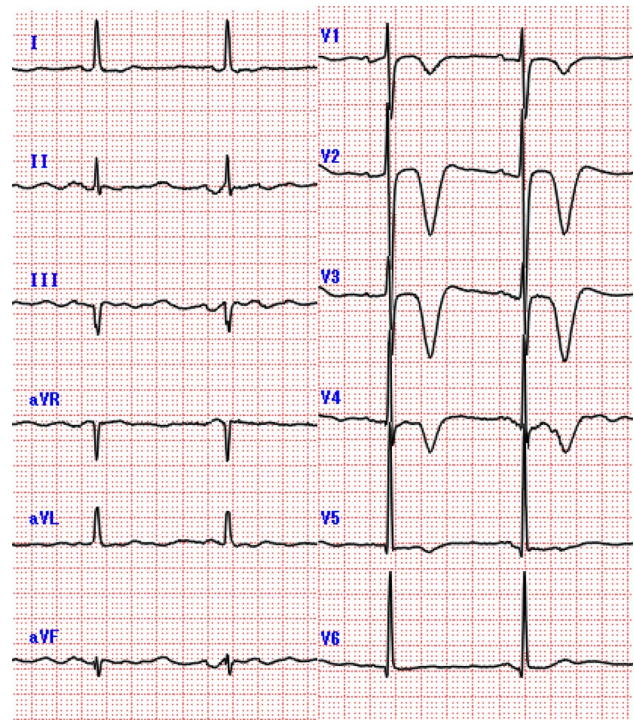


Fig. 1 Electrocardiogram on admission. Electrocardiogram on admission demonstrated anterior and inferior symmetric T-wave inversions

chest pain. However, transthoracic echo (TTE) showed no asynergy in the left ventricular motion with estimated pulmonary arterial pressure at 48 mmHg. In the non-invasive coronarography with a 64-multidetector computed tomography, a giant right coronary artery (RCA) ectasia with a maximal diameter of 16 mm which was suggested to have coronary arteriovenous fistula originating from RCA and draining into the right atrium (RA)

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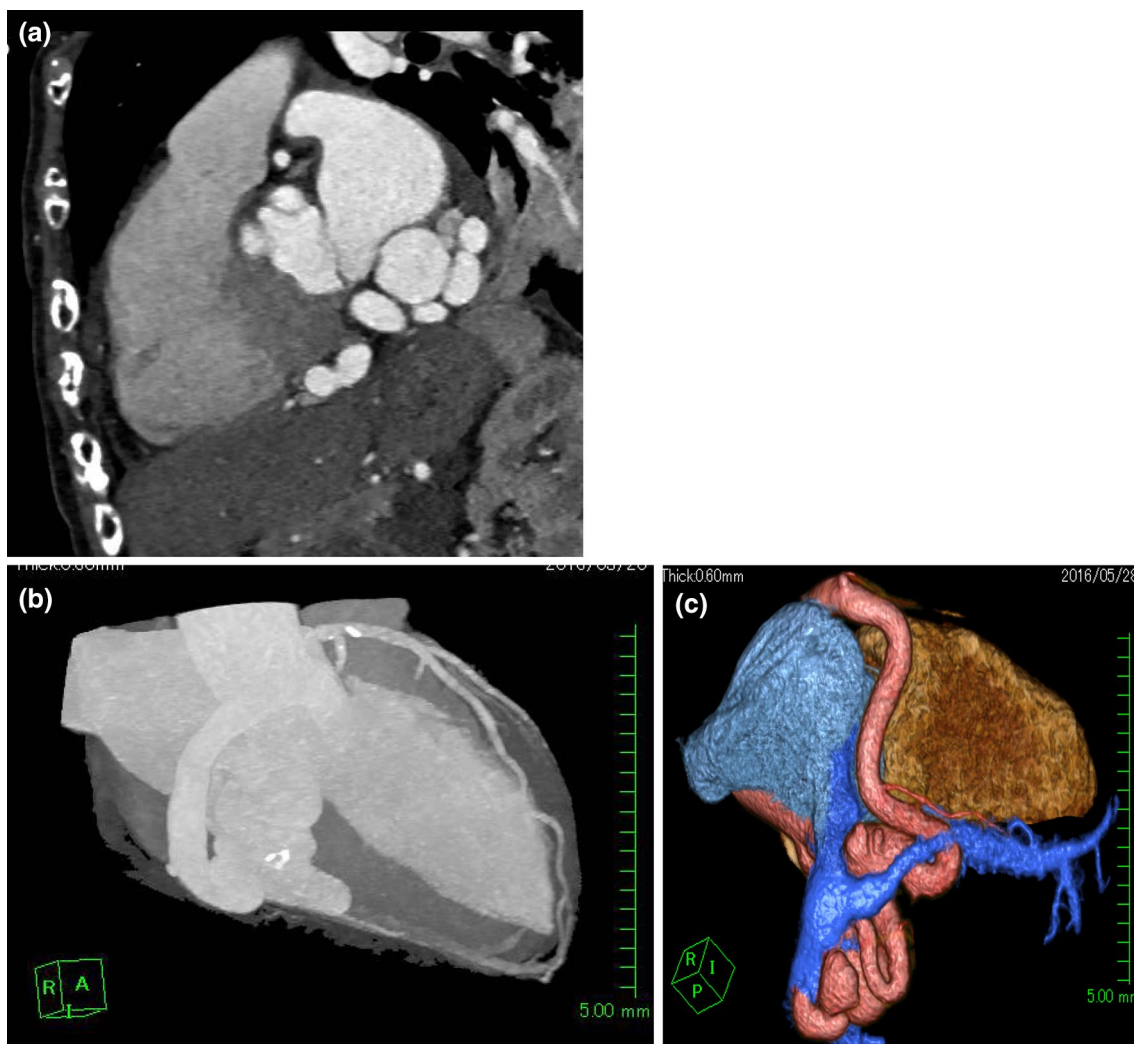


Fig. 2 Images of coronary artery on computed tomography. A sagittal multi-planar reconstruction image of cardiac computed tomography (CT) (a). A maximum intensity projection image of CT (b). A volume rendered image of computed tomography shows a giant right

coronary artery ectasia with coronary arteriovenous fistula originating from right coronary artery and draining into the right atrium via coronary sinus (c)

(Fig. 2 a, b, c). After 6 days later, the patient underwent coronary angiography, which showed a fistulae originating from RCA and draining into the RA (Fig. 3). In a right heart catheterization, oxygen partial pressures were 52 mmHg at the lower portion of RA, 60 mmHg at the ostium of coronary sinus (CS) and 106 mmHg at distal portion of CS. The O_2 step-up between chambers (CS/RA vs. right ventricle) were observed, suggesting the left-to-right shunt via CS. A coronary arteriovenous fistula is an abnormal connection between a coronary artery and any of four chambers in the heart. While the connection

between RCA and right ventricle was the most common [1, 2], coronary sinus drainage has been found in 7% of surgical cases [1, 3]. In the present case, although Takotsubo-like left ventricular dysfunction or acute myocardial infarction was initially thought to have occurred, there was symmetric T-wave inversion in V1 on ECG, and was no asynergy in the left ventricular wall motion on TTE. Thus, the symptom in this patient might be caused by volume overload in right heart system due to RCA-RA fistula.



Fig. 3 A coronary angiography image. A coronary angiography showed a fistulae originating from the right coronary artery and draining into the right atrium

Compliance with ethical standards

Conflict of interest The authors declare no conflict of interest.

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