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Acute anterior myocardial infarction with pectus carinatum

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ABSTRACT

We presented a case of acute anterior myocardial infarction caused by left anterior descending artery occlusion in a patient with pectus carinatum. The electrocardiogram (ECG) on admission showed counterclockwise rotation and T wave inversion only in leads V1–V2. Computed tomography revealed that this patient with pectus carinatum had greater septal angle. Electrocardiographic counterclockwise rotation due to greater septal angle in pectus carinatum led to atypical ECG findings of acute myocardial infraction.

A 61-year-old male with pectus carinatum presented to the emergency department with chest pain. The electrocardiogram (ECG) on admission showed counterclockwise rotation (transitional zone: between V1 and V2) and T wave inversion was observed only in leads V1–V2 (Fig. 1). However, the echocardiogram showed significant asynergy in the anterior wall and cardiac enzyme levels were elevated,

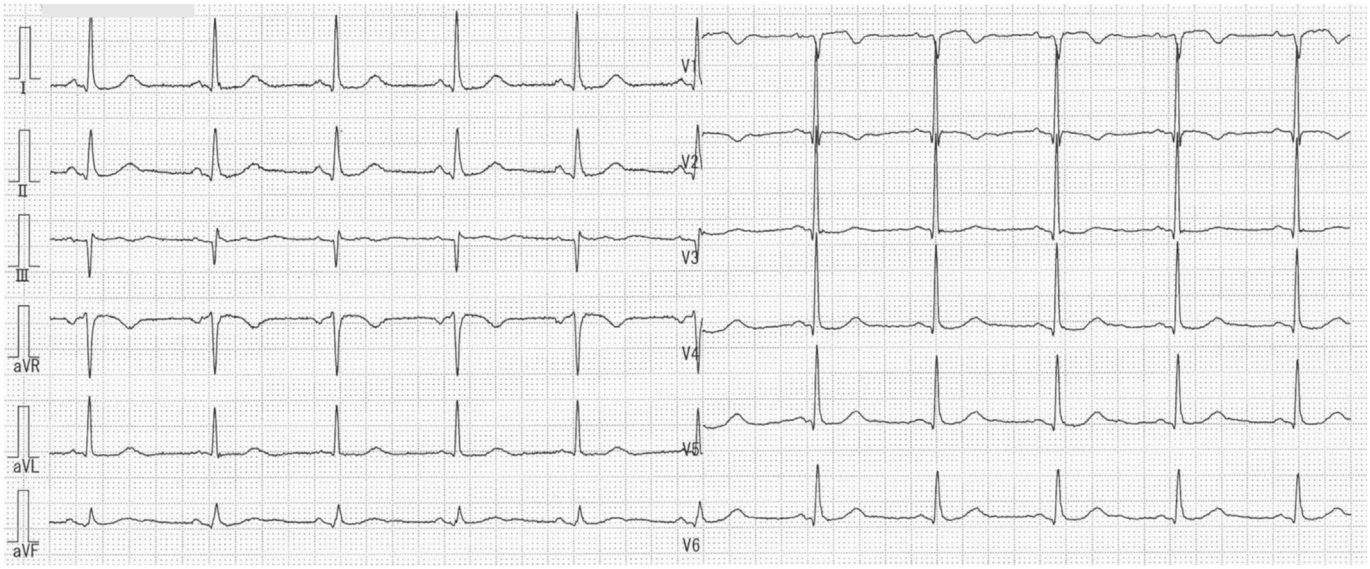

Fig. 1. Electrocardiogram on admission.

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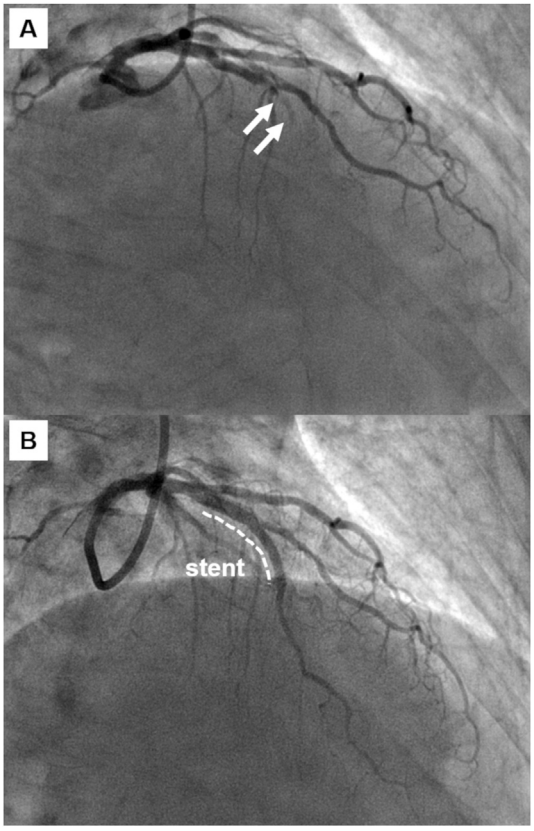

Fig. 2. Coronary angiogram. (A) Occlusion of the middle segment of the left anterior descending artery (white arrows). (B) After percutaneous coronary intervention with a drug-eluting stent (white dotted line).

which suggested acute anterior myocardial infarction. Coronary angiogram revealed the occlusion of the middle segment of the left anterior descending artery (Fig. 2A). The culprit lesion was treated with a drug-eluting stent (Fig. 2B). On the next day after percutaneous coronary intervention, the ECG in the prone position showed more deep T wave inversion and a change of transitional zone to between V2 and V3 compared with the ECG in the supine position (Fig. 3A and B). Computed tomography revealed that this patient had greater septal angle (i.e. angle between the interventricular septum and horizontal axis of the body). Moreover, the septal angle changed from 62° in the supine position to 37° in the prone position (Fig. 3C and D). A patient with pectus carinatum had greater septal angle and electrocardiographic counterclockwise rotation, which led to atypical ECG findings of acute myocardial infraction.

Pectus carinatum, chest wall protuberance, is a rare type of the congenital chest wall anomality and accounts 5–15% of the deformity, whereas pectus excavatum, chest wall depression, is the most common type (approximately 90%) [1]. In patients with congenital chest wall anomality, ECG changes occur because of alterations in the position of the heart. Despite of the previous reports regarding ECG changes in pectus excavatum [2,3], little has been reported on ECG changes in pectus carinatum.

In our case, a patient with pectus carinatum had atypical ECG findings of acute anterior myocardial infraction. This could be explained by greater septal angle in pectus carinatum. A previous study reported that greater septal angle was related to electrocardiographic counterclockwise rotation and the representative case of counterclockwise rotation in their report had not only greater septal angle but also chest wall protuberance [4]. In addition, in our case, the transitional zone was changed in a clockwise direction and the septal angle was reduced by the prone position. Anatomical rotation of the heart can be changed by the body position in patients with pectus carinatum, different from individuals with normal chest wall. In examining patients with pectus

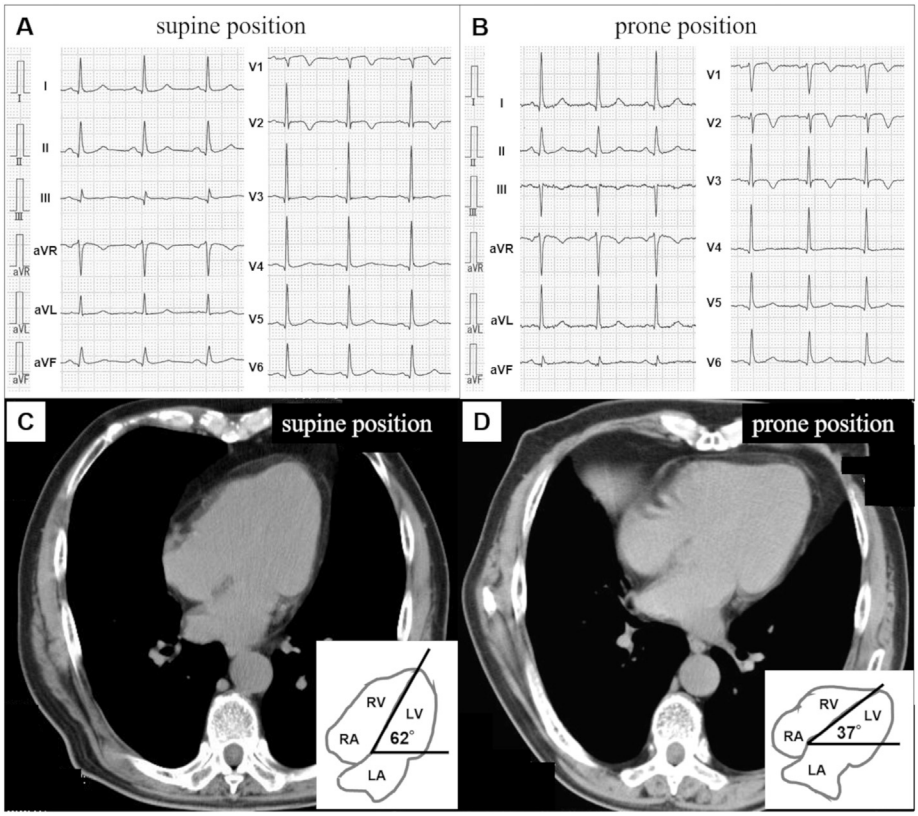

Fig. 3. Electrocardiogram. (A, B) Change of transitional zone. Computed tomography. (C, D) Change of septal angle.

carinatum, it may be useful to record ECG at the prone position to exclude the influence of electrocardiographic counterclockwise rotation due to greater septal angle.

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