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Mechanism of Coronary Malperfusion Due to Type-A Aortic Dissection

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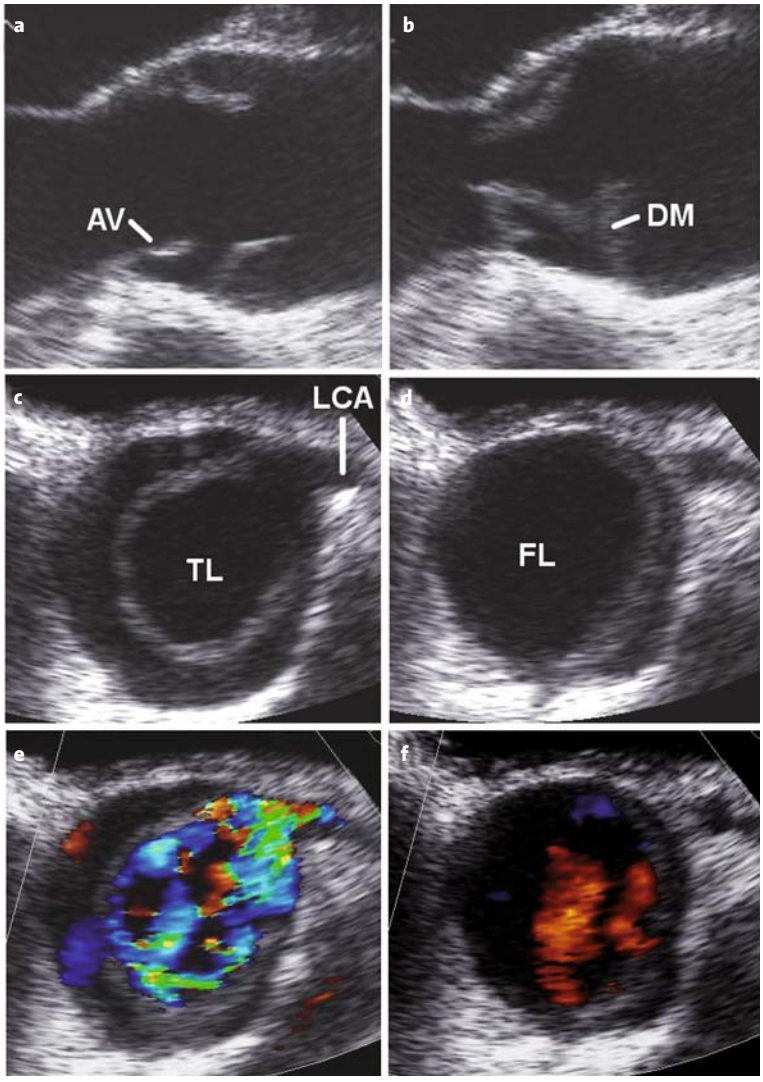
A 44-year-old man was admitted to a community hospital with acute onset of chest pain.

Based on ECG findings and a mild troponin elevation, the patient was initially treated for acute coronary syndrome. On the 2nd day of hospitalization, troponin increased to 12 ng/ml and transthoracic echocardiography showed severe aortic regurgitation, so that computed tomography was performed and revealed Stanford type-A aortic dissection of the ascending aorta. The patient was immediately transferred to the hybrid operating room of our hospital.



Figures 1a to 1f. Systolic (a, c, e) and diastolic (b, d, f) movement of the dissection membrane (DM) with prolapse of the dissection membrane through the aortic valve (AV). Short-axis view of the aortic valve showing the intermittent obstruction of the left coronary ostia (c–f; LCA). FL: false lumen; TL: true lumen.

Preoperative coronary angiography showed nonstenotic coronary heart disease. Intraoperative transesophageal echocardiography revealed an intimal flap beginning just above the aortic valve. During diastole, the intimal flap prolapsed through the aortic valve, resulting in intermittent diastolic occlusion of the coronary ostia (Figure 1). Emergency operation resulted in successful replacement of the ascending aorta and reconstruction of the aortic valve.

The postoperative course was uneventful.

Aortic dissection coexisting with coronary malperfusion is a relatively rare [1, 2] but fatal condition. Even in the absence of obstructive coronary artery disease, these patients can suffer from significant impairment of myocardial perfusion due to diastolic collapse of the true lumen and occlusion of the coronary ostia by the dissection membrane. Ultimately, symptoms can mimic acute myocardial infarction to the point that thrombolytic treatment may be initiated inappropriately.

References

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