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Case Report

Extensive dissecting aneurysm of the ascending aorta

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ABSTRACT

We present the case of a 69-year-old female surviving an extensive dissecting thoracic aortic aneurysm. Due to the initial presentation with angina and epigastric pain the first working diagnosis was acute coronary syndrome. However, on transthoracic and transesophageal echocardiography (TEE), the dissecting aneurysm (type Stanford A) could be detected. Our article stresses the importance of imaging for the rapid and accurate diagnosis of thoracic aortic aneurysms with dissection. In our case, TEE detected the intimal flap separating true and false lumen, and the consecutive hemodynamically relevant aortic valve regurgitation, in addition to the aneurysm extent. The patient underwent surgical repair with aortic arch replacement and recovered without sequelae.

<**Learning objective:** In patients with severe hypertension and coronary artery disease presenting with atypical chest pain, ECG and troponin T assessment should be complemented by imaging of the heart and the ascending aorta to rule out aortic dissection.>

Introduction

Population-based studies suggest an incidence of acute thoracic aortic dissections from 2 to 3.5 cases per 100 000 person-years [1,2]. However, the true incidence of acute thoracic aortic dissections is unknown, because acute thoracic aortic dissections can rapidly be fatal. Approximately 40% of thoracic aortic dissection patients die immediately, 1% of patients die per hour after the acute event, and 5–20% die perioperatively [3].

The safest and most rapid investigation is transesophageal echocardiography (TEE), ideally performed together with the cardiac surgery team standing by in the emergency room already [4]. Together with transthoracic echocardiography, immediate diagnosis of complications of type A aortic dissection such as pericardial effusion and severe aortic regurgitation is possible. This is of particular importance in hemodynamically unstable patients, when computed tomography (CT) or magnetic resonance imaging (MRI) scans cannot be performed immediately. However, for visualization of the exact extension of the dissection dimension, CT or MRI scans should be used according to the clinical need and preoperative planning [5,6].

Case report

A 69-year-old woman was admitted to a rural hospital for severe hypertension complicated by chronic renal failure, angina, recurrent neurological symptoms (vision disorders), and epigastric pain radiating into her back. The patient had a history of coronary bypass grafting 1 year previously, and two myocardial infarctions leading to only slightly reduced systolic left ventricular function (ejection fraction 50%). Blood testing revealed a leukocyte count of $10.5 \times 10^3/\mu l$ (norm $4–10 \times 10^3/\mu l$), anemia with a hemoglobin level of 10.1 g/dl (norm 12–16 g/dl), elevated C-reactive protein levels (18.7 mg/dl; norm <0.5 mg/dl), and impaired kidney function (serum creatinine 2.5 mg/dl; norm 0.6–1.1 mg/dl). Troponin T was low with 0.02 ng/ml (norm <0.1 ng/ml), whereas lactate dehydrogenase was elevated up to 290 U/l (norm 125–243 U/l). Serum electrolytes and coagulation check were normal.

For acute coronary syndrome, a coronary angiogram was performed showing high-grade ostial stenosis of the left anterior descending (LAD) artery, an occlusion of the mid LAD, and a stenosed anastomosis of the left internal mammary artery graft to distal LAD. No revascularization procedure was performed at this time due to impaired kidney function.

For worsening chest pain and hypertension with systolic blood pressure up to 230 mmHg, accompanied by vision disorders, the patient was sent to our hospital 1 week after the initial presentation. In the chest pain unit she was diagnosed as having a non-ST

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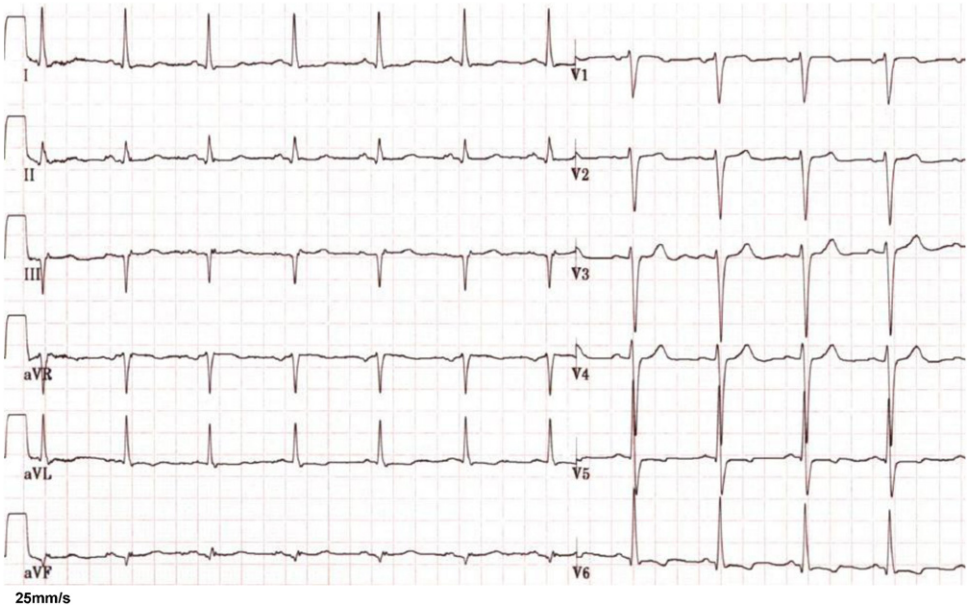

Fig. 1. Electrocardiogram (25 mm/s) demonstrating regular sinus rhythm of normal frequency, left axis deviation, abnormal Q wave in III and aVF and a poor progression of R in precordial leads together with preterminal negative T waves in V5-6.

segment elevation myocardial infarction (NSTEMI) with persistent severe chest pain, electrocardiographic changes (Fig. 1), and a positive troponin T test (troponin T 0.22 ng/ml). Chest X-ray (Fig. 2) showed enlarged mediastinum and ruled out pneumothorax and pulmonary congestion. For NSTEMI, the patient was sent to the catheter laboratory where percutaneous coronary intervention of the ostial LAD was performed without complications. After the procedure, the chest pain resolved but epigastric and back pain persisted, as well as high inflammatory markers. On echocardiography, a giant dissecting aneurysm of the ascending aorta (Fig. 3A) was detected, with the intimal flap being visible directly above the coronary sinus (Video). Color Doppler imaging displayed a turbulent flow pattern inside the dissected aneurysm, as well as a moderate aortic regurgitation (Fig. 3B). No pericardial effusion was detected, and left ventricular function was still only slightly impaired. The consecutive CT scan (Fig. 4A) suggested a covered rupture of the

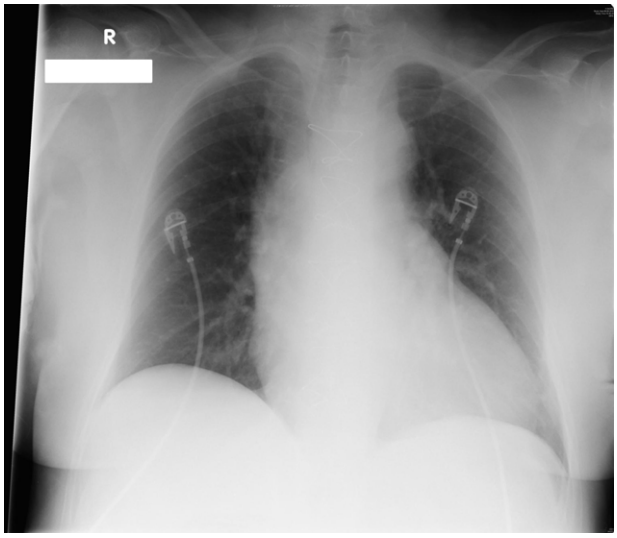

Fig. 2. Chest X-ray showing an enlarged mediastinum as well as an increased heart size, in addition to sternal cerclages, while pneumothorax and pulmonary congestion were ruled out (chest X-ray performed in bed).

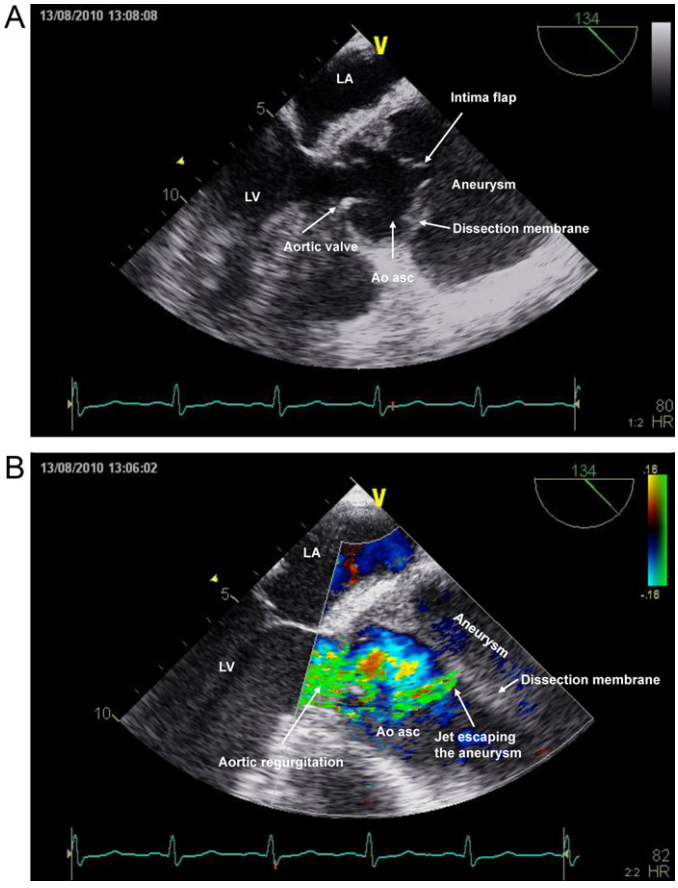

Fig. 3. (A) Transesophageal echocardiogram view of the long axis (134°) showing the left ventricular outflow tract, the aortic valve, and the aneurysm entry. Of note, the intima flap mimics a reflection of the aortic valve and (B) Transesophageal color Doppler showing the severe aortic regurgitation and the diastolic jet escaping the aneurysm's false lumen. Ao asc, aorta ascendens; LA, left atrium; LV, left ventricle.