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Aortic Dissection Involving the Ostium of Left Main Coronary Artery

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CASE REPORT

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A 58-year-old hypertensive man was referred from another hospital with diagnosis of myocardial infarction. He presented with a two hour sudden onset of severe chest pain radiating to his interscapular region. Pain did not respond to IV administration of nitrates and morphine. His blood pressure was 110/70 mmHg and physical examination revealed no murmurs. The ECG showed extensive ST-segment elevation in the anterior and lateral leads suggesting acute anterior myocardial infarction.

A transthoracic echocardiogram (TTE) demonstrated a dilated ascending aorta with an intimal flap that extended from the aortic valve to the mid-ascending aorta, (Figure 1) consistent with a Stanford type A acute aortic dissection (AAD). A multiplane transoesophageal echocardiogram (TOE) was then performed showing AAD extending into the aortic arch, the take-off of the left subclavian artery (Figure 2) and the descending aorta (Figure 3). The intimal flap was thin, smooth and showed a pulsatile mobility with systolic convexity towards the false lumen (Figure 4). Flow was present in the false lumen which was larger than the true lumen (Figure 5).

The left coronary ostium seemed to be obstructed by prolapse of the intimal flap during diastole (Figure 6). The aortic valve was normal and mild aortic regurgitation was noted caused by the aortic dilatation. Regional and global left ventricular function was normal. There were no periaortic or pericardial fluids.

The patient was transferred for emergency surgery and the ascending aorta was successfully replaced by a supracoronary interposition prosthetic graft.

DISCUSSION

Aortic dissection is a rare disease, with an estimated incidence of approximately 5-30 cases per 1 million people per year^{1,2}. Fewer than 0.5% of patients presenting to an emergency department with chest or back pain suffer from aortic dissection. Two thirds of patients are male, with an average age at presentation of approximately 65 years. A history of systemic hypertension, found in up to 72% of patients, is by far the most common risk factor. Atherosclerosis, a history of prior cardiac surgery, and known aortic aneurysm are other major risks¹⁻⁴. Acute myocardial infarction due to extension or of an acute Stanford type A aortic dissection is an infrequent but devastating situation. Several case reports of an aortic dissection in combination with a myocardial infarction have been published⁵⁻⁹. In almost all cases the right coronary artery was involved^{5,7}. We report a case of an aortic dissection involving the left main trunk of the coronary artery as a result of intimal flap prolapse, which initially was misdiagnosed as a common anterior myocardial infarction. Such misdiagnosis could

AORTIC DISSECTION INVOLVING THE OSTIUM OF LEFT MAIN CORONARY ARTERY

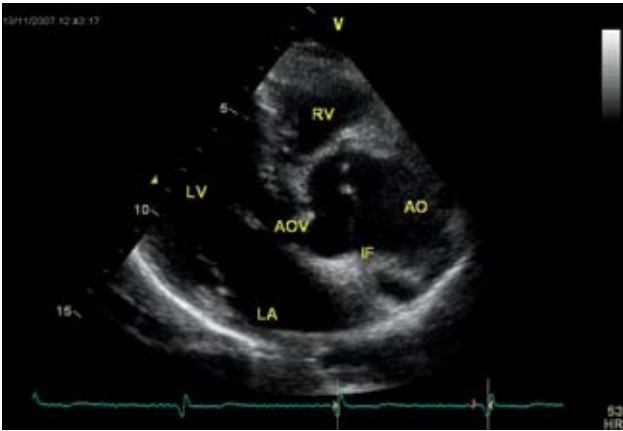


FIG 1. Transthoracic echocardiogram. Long axis view demonstrated dilated ascending aorta with the intimal flap

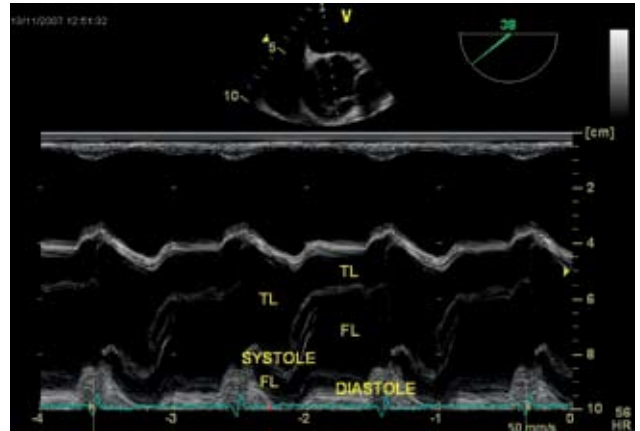


FIG 4 Transoesophageal echocardiogram. Mobility of the intimal Flap

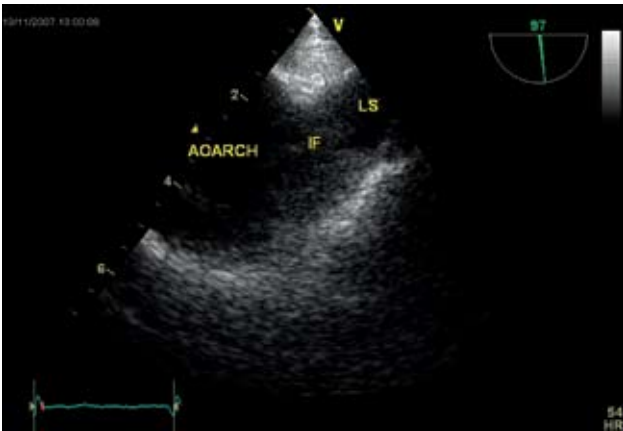


FIG 2. Transoesophageal echocardiogram. Extension of the intimal flap to the take-off of the left subclavian artery

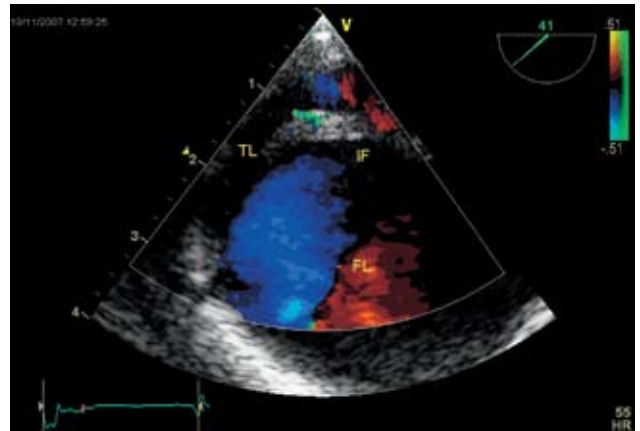


FIG 5 Transoesophageal echocardiogram. Color flow Doppler in the false lumen



FIG 3. Transoesophageal echocardiogram. Extension of the intimal flap to the take-off of the left subclavian artery

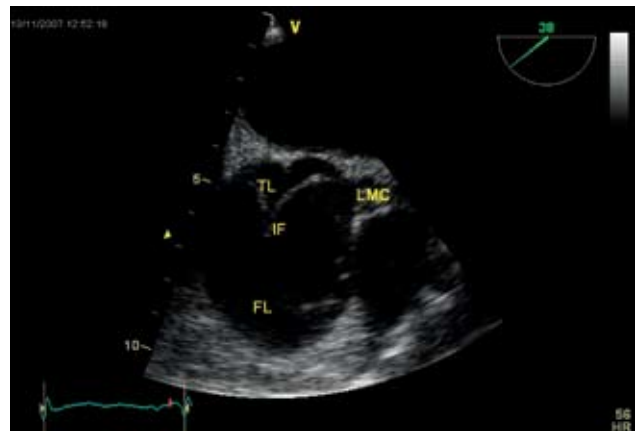


FIG 6 Transoesophageal echocardiogram. Prolapse of the intimal flap into the ostium of the left main coronary artery during diastole.

lead to thrombolysis or primary percutaneous coronary intervention with catastrophic consequences.

Transthoracic echocardiography has limited value in the evaluation for AAD, primarily because of its inadequacy in visualizing the distal ascending and descending aorta. Transesophageal echocardiography overcomes many of the limitations of TTE because of the proximity of the esophagus to the aorta. It also is widely available, relatively safe, and easy to perform at the bedside even in unstable patients. The sensitivity of TOE for AAD has been reported to be as high as 98%, and specificity ranges from 63% to 96%¹⁰⁻¹¹. Multiplane TOE provides superb images of the pericardium and detailed assessment of aortic valve function and also is extremely effective at visualizing coronary artery involvement in comparison to CT and Magnetic Resonance angiography (Table 1). The area of the distal ascending aorta and of the aortic arch, where the trachea interposes between esophagus and aorta, is a blind spot in TOE.

Type A AAD is a true surgical emergency, because these patients have a high risk of life-threatening complications including cardiac tamponade, acute aortic regurgitation, coronary flow obstruction, and occlusion of aortic branch vessels. The mortality rate is 1% to 2% per hour early after symptom onset⁴. In an IRAD review of 547 patients who had type A dissection, the inhospital mortality rate of patients treated medically (reasons for nonsurgical treatment were comorbid conditions, old age, and patient refusal) was 56%, compared with 27% for those treated with surgery¹². This degree of difference may result in part from comorbid conditions in the medically treated patients. Because of high mortality with medical therapy alone, surgical treatment is indicated in all patients who have type A dissections, with the exception of patients who have serious concomitant conditions that, in the opinion of the surgical team, preclude surgery¹³.

CONCLUSION

Aortic dissection is a rare and acutely life-threatening cause of acute chest and back pain. Delays in diagnosis and misdiagnoses are common, frequently with catastrophic consequences. The key to diagnosis is maintaining a high index

of suspicion for dissection, especially in patients who present with acute severe chest or back pain.

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