

Unexpected Outcome of a Floating Thrombus in the Ascending Aorta

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Abstract

We report the case of a 46-year-old woman, without any known systemic disease in the past, a history of car accident two months earlier with fracture of the left arm and the jaw. She presented to a local hospital, with prolonged precordial pain of ON/OFF occurrence, where acute coronary syndrome (ACS) was diagnosed and treated with conventional (aspirin, clopidogrel, β -blockers, heparin) treatment. She was then transferred to our hospital for cardiac catheterization.

Coronary angiography showed normal coronary arteries, a moving filling defect was visible in the ascending aorta. An immediate transesophageal echocardiography revealed a free floating mass attached to the left cusp of the aortic valve and occluding the left main coronary trunk, a trace of aortic valve regurgitation. The patient was hemodynamically unstable. Urgent operation was carried on and resection of the mass was done.

Keywords: Ascending aorta; Floating thrombus; Coronary angiography; Cardiopulmonary bypass

Case Report

46-year-old female, without past medical history other than a car accident causing a left arm and a jaw fracture, presented a syncope lasting couple minutes, to get up later with no neurological sequel. She refused to go to the hospital and have passed the whole day shopping. On arrival back home, she had a severe precordial pain of ON/OFF nature that obliged her to go to a local hospital, where acute coronary syndrome (ACS) was diagnosed and treated with conventional treatment (aspirin, clopidogrel, nitroglycerin, and heparin). She was then transferred to our hospital for cardiac catheterization. On patient arrival, endotracheal intubation was performed, no abnormalities were found on examination of the heart, the electrocardiogram (ECG) showed ST-segment elevations in leads V2, V3, V4, V5, and V6. The supine chest X-ray showed mild pulmonary congestion with normal mediastinum. The systolic blood pressure was 90 mmHg, diastolic 60 mmHg; the pulse rate was 82 bpm. BUN and creatinine were normal. The total CK was 10000U/L. A prompt coronary angiography was done which showed normal coronary arteries. A moving filling defect was visible in the ascending aorta (Figure 1). The patient was hemodynamically unstable and intraaortic balloon pump was inserted. As the patient's hemodynamic state deteriorated, counterpulsation was immediately terminated. A transesophageal echocardiography revealed a free floating mass (1,8 x 1,1cm) attached to the left cusp of the aortic valve that resulted in occlusion of the left main stem during diastole, severe septal and anterolateral wall hypokinesis, a trace of aortic valve regurgitation. The estimated left ventricular ejection fraction (LVEF) was 20%.

The patient was transferred immediately to the operation room. Through a median sternotomy, cardiopulmonary bypass (CPB) was instituted by means of cannulation of the ascending aorta and the right atrium. Anterograde and retrograde cardioplegia were used. The aortic root was transversely incised. A floating pedunculated mass attached to an atherosclerotic plaque on the left cusp of the aortic valve was found. The mass was in close proximity to the left main stem ostium, causing intermittent occlusion of the latter (Figure 2). The mass was excised and the aortotomy was closed directly with a running suture. The aortic cross clamp time was 30 minutes. Sinus rhythm resumed early after releasing the aortic cross clamp but it was impossible to wean CPB despite inotropic drugs and IABP support. Transesophageal

echocardiography revealed septal and anterolateral wall akinesis. The LVEF was estimated to be less than 5%. A central extracorporeal membrane oxygenation (ECMO) was then installed and the patient was transferred to the intensive care unit. The immediate postoperative chest X-Ray showed moderate pulmonary congestion. On the second postoperative day, the chest X-Ray showed severe pulmonary edema. Cardiac contractility was evaluated by a daily echocardiography. On the seventh day, a better myocardial contractility was noted and the LVEF was estimated at 20%. However, attempts to wean the ECMO support were unsuccessful, despite the use of inotropic drugs and IABP. The patient was kept on ECMO support for eight more days and died of pulmonary hemorrhage awaiting a donor for cardiac transplantation.

Discussion

Floating thrombi in the aorta are a rare finding in the absence of any coagulation abnormality. They often represent a surgical emergency. This life threatening appears to be more common in female smokers in their fifth decade.

Atherosclerosis, dissection, trauma, malignancy and coagulopathies have been associated with aortic mural thrombi [1]. Intraluminal thrombus may be located in the ascending aorta, even without extensive atherosclerotic plaques [2].

In our patient, the origin of the aortic thrombus was atheromatous plaque/lesion located on left aortic valve cusp; the remaining cusps and the ascending aorta were intact/free from atherosclerosis. The base of the thrombus was pedunculated to an atherosclerotic plaque located on the left cusp of the aortic valve. The mass was in close proximity to the left main coronary trunk, causing intermittent occlusion of the latter.

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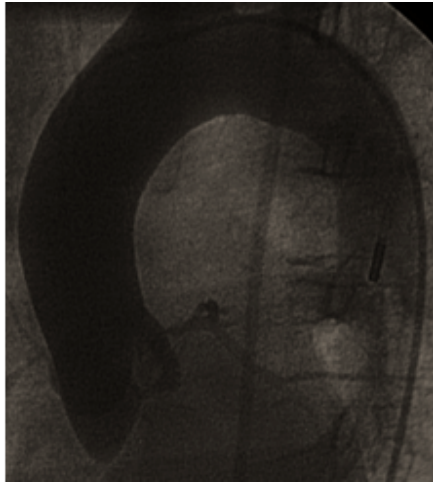


Figure 1: Left oblique view of coronary angiogram shows a filling defect was visible in the ascending aorta.

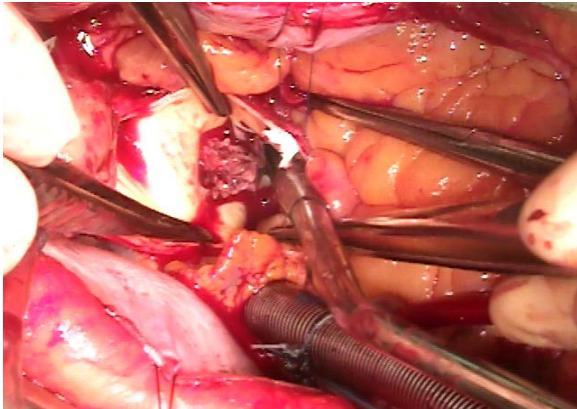


Figure 2: Left oblique view of coronary angiogram shows a filling defect was visible in the ascending aorta.

Thrombolysis has been suggested as a promising therapy for aortic thrombus [3,4] and in some cases heparin and oral warfarin have led to complete resolution in 3 months [5]. However, long-term anticoagulation for the complete resolution of a floating, friable thrombus carries unacceptable risk of partial lysis and distal embolization.

Conclusion

Despite aggressive medical and surgical treatments, consequences of a floating thrombus in the ascending aorta could be dramatic.

Walther et al. removed a thrombus from the aortic arch under hypothermic circulatory arrest, using retrograde perfusion through the femoral artery during extracorporeal circulation. In our patient, the thrombus was located in the first part of the ascending aorta. Therefore, we proceeded in routine way and we placed the arterial perfusion cannula in the proximal ascending aorta as for regular aortic valve replacement, an antegrade and retrograde cardioplegia were used, aortic root was transversely incised. After the thrombus had been excised, the aortic incision was sutured with a double suture lines.

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