

A Case of Complicated Acute Type B Aortic Dissection

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ABSTRACT

A 65 year lady with chest and back pain was referred to our hospital with suspected case of acute coronary syndrome. A computed tomography (CT) aortic angiogram showed dissection of abdominal and thoracic aorta. Patient was initially treated by drugs for controlling heart rate and blood pressure with analgesics but due to progression of disease and involvement of left subclavian artery ostium referred for surgical intervention. She underwent left carotid-subclavian bypass and TEVAR (Thoracic endovascular aortic repair) with good outcome. The present case is a good demonstration revealing that in absence of clinical suspicion and diagnostic imaging, acute aortic dissection represents a diagnostic dilemma which requires immediate action.

Key Words: acute type B aortic dissection, medical management

Introduction

Acute aortic dissection (AAD) is a medical emergency which without appropriate treatment has 75% mortality within 2 weeks of the disease onset.¹ It usually presents with severe chest pain of sudden onset which without proper clinical evaluation and diagnostic imaging may be confused with acute myocardial infarction or pulmonary embolism and treated with drugs (Antithrombotic and anticoagulants) which are contraindicated in AAD. Some times pain may migrate to back if the dissection extends down the aorta. Less commonly the sign & symptoms are due to organ hypoperfusion and include peripheral ischemic syndromes, syncope, myocardial infarction or neurological symptoms.²⁻⁴ Symptoms may occur due to organ compression by an expanding haematoma (e.g dyspnea by tracheal or bronchus compression, dysphagia by esophageal compression or hoarseness by laryngeal nerve compression).⁵ Painless AAD has been also reported.^{6,7} There are three major classification system for aortic dissection depending on it's location and extent of aortic involvement. These are (1) DeBakey types I, II and III; (2) Stanford types A and B and (3) The anatomical categories proximal and distal (Fig. 1). The basic principal of all these system of classification is for distinguishing aortic dissections with or without ascending aorta involvement as therapeutic approach and clinical outcome is determined by its involvement. Usually surgery is indicated if ascending aorta is

involved and medical management considered in cases of AAD without involvement of ascending aorta. Proximal or type A dissections occur in about two-thirds of cases, with distal or type B dissection comprising the remaining one-third.⁸

Case Report

A 60-years old hypertensive lady was referred to our hospital with suspected acute coronary syndrome with the complaints of shortness of breath for one day and abdominal pain for 2 days. Pain started at upper abdomen and lower chest, intense and sharp in nature radiated to lower abdomen and back. Initially she was admitted in a hospital as acute abdomen (Acute pancreatitis). Next day she developed respiratory distress and referred to our hospital. On examination her blood pressure was 180/100 mmHg and pulse 88 beat per minute. She had epigastric tenderness and on auscultation of lungs bilateral basal crepitation with rhonchi. Remainder of physical examination was unremarkable. Lab results showed mild anaemia, other results including amylase, lipase and cardiac markers were within normal limit. ECG showed T inversion in precordial and inferior leads. Her echocardiogram revealed absence of regional wall motion abnormality with good LV systolic function but there was mild pericardial and left sided plural effusion with suspected dissection of descending thoracic aorta from origin of

left subclavian artery. X-ray chest showed bilateral plural effusion more on left side. For confirmation CT aortic angiogram was done which showed linear posterior intimal separation/dissection flap, extending from the level of origin of subclavian artery, where a small detached atherosclerotic plaque was seen. Inferiorly there was thin dissection involving whole thoracic & abdominal aorta extending into right common iliac artery up to it's bifurcation. Intramural thrombus/hematoma was also seen in thoracic & upper abdominal aorta. Patient was initially treated conservatively with analgesics, antihypertensive medications (Amlodipine, Prazosin & ACE-I) and to control heart rate, Ivabradine (As patient had wheeze Beta-blocker was avoided). Aspiration of plural fluid from left side revealed hemorrhagic exudative effusion. Patient's respiratory distress, blood pressure and pulse rate was controlled but there was persisting abdominal pain. With suspicion of extension of the dissection patient was advised for surgical intervention. Patient went abroad and underwent left carotid-subclavian bypass with TEVAR. Post operative recovery was uneventful and now patient is stable with well controlled blood pressure and pulse rate.

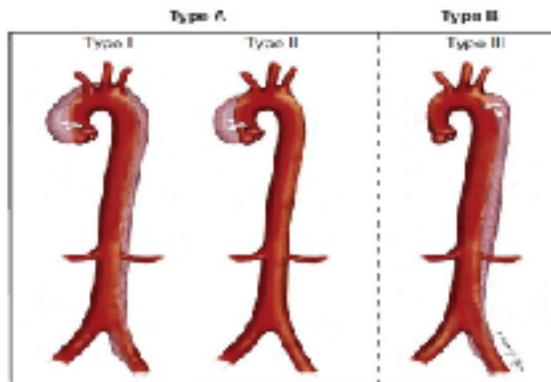


Fig-1: Types of aortic dissection



Fig-2: Echocardiogram showing suspected aortic dissection from origin of subclavian artery.

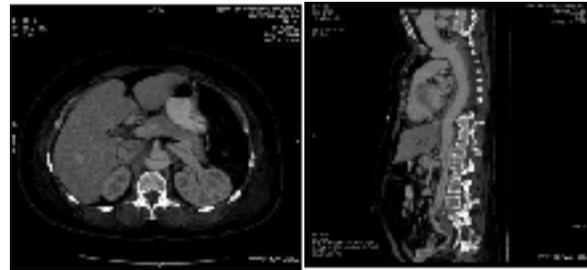


Fig-3: Contrast enhanced curved reconstruction and axial image demonstrating an intimal flap that separates the two channels in descending aorta (DeBakey type III)

Discussion

Incidence of aortic dissection, the most lethal disease of aorta is around 3/1000, 000/year.⁹ Mortality rate is 33% with 24 hours and 50% within 48 hours if proper treatment is not given.¹⁰ In general Stanford type A dissection has higher in-hospital mortality rate (30%) whereas type B has a better prognosis (10% in-hospital mortality).¹¹ In some studies, 31-39% of AAD's are misdiagnosed most commonly as AMI and by giving anti-thrombotic agents the incidence of major bleeding, haemodynamic instability or in-hospital mortality are significantly increased.¹²⁻¹⁵ When there is suspicion of AAD by history, the physician should complete physical examination including blood pressure, auscultation of heart murmur & evaluating the pulses. There may be feature of aortic regurgitation (aortic valve involvement in Type A AAD), disparity of greater than 20 mm Hg in systolic blood pressure of each arm (due to involvement of subclavian artery) or pulse deficit (defined as weak or absent pulse in the carotid, brachial or femoral which are common in type A). Some times there may be abdominal tenderness around naval due to mesenteric ischemia (in type B) in which mortality rate is 45-87%.¹⁶ According to the IRAD data, 15% of all deaths of patients with type B dissection were related to mesenteric ischemia.¹ A chest X-ray is the first imaging modality which may show a widened mediastinum, abnormal aortic contour or tracheal/ esophageal dilation. However in the IRAD review 12% of initial chest X-ray was reported as normal.¹⁷ A ECG may reveals complications of dissection like AMI. Aortography was previously considered the gold standard test for diagnosis. But now most frequently performed tests to diagnose aortic dissection and its complications are CT scan,

transesophageal echocardiogram and magnetic resonance imaging (MRI). Some authors recommend coronary angiogram as chronic coronary atherosclerosis (present in 25% of patients) may hamper surgical outcome.¹⁶ According to guidelines of ACCF/AHA (American College of Cardiology Foundation/American Heart Association), Class I recommendation for definitive management of AAD involving the ascending aorta is to go for urgent evaluation for emergency surgical repair and AAD involving descending aorta should be managed medically unless life-threatening complications develop (e.g. Symptoms of organ hypo perfusion, progression of dissection, enlarging aneurysm, inability to control blood pressure or symptoms).¹⁸ Different studies showed excellent outcome of medical management in patients with uncomplicated distal dissection of aorta. The 30-days survival rate is as high as 92% in this group.¹⁷ Principal of medical management is to control pain, blood pressure and heart rate to decrease the shear forces on the dissected aorta with close surveillance to identify sign of disease progression and/or hypo perfusion. In all of the three guide line from European¹⁹, American 1 and Asian (Japanese)²⁰ societies, the target of lowering systolic blood pressure (SBP) in AAD is to 100-120 mmHg. Beta blockers are the first drug of choice and if necessary by intravenous route. If there is any contraindication of beta blocker, nondihydropyridine calcium channel-blocking agents (CCB) are alternative. Angiotensin-converting enzyme inhibitor (ACE-I) or other vasodilators may be also added for proper control of SBP. According to IRAD global registry, use of beta blocker was associated with improved survival in all patients ($p=0.03$) but use of CCB was associated with improved survival selectively in type B dissection. Use of ACE-I did not improve survival.²¹ There is no recommendation for target heart rate (THR) in guide line of European society of cardiology whereas the recommended THR should be below 60/min according to ACCF/AHA and below 50/min according to Japanese society which can be achieved concomitantly by beta blocker or CCB used for blood pressure control. Our patient was initially treated with beta blocker and ACE-I but we had to refer her for surgical intervention as she has persistent back pain probably due to downwards extension and also for involvement of left subclavian artery ostium, despite proper control of her heart rate and blood pressure.

Conclusion

AAD is relatively uncommon but potentially fatal condition if not properly treated in time. The clinical outcome is determined by a variety of factors. Though reliable modalities of diagnosis are available but a high level of suspicion remains key for prompt diagnosis and management. Recent society guidelines and finding from IRAD have made significant contributions to our approach to management specially the medical management of acute type B aortic dissection.

Conflict of interest: We have no conflict of interest

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