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Case Report

Internal Medicine Section

Acute Type A Aortic Dissection Missed as Acute Coronary Syndrome

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ABSTRACT

Although the aortic dissection is not common, its outcome is frequently fatal, and many patients with aortic dissection die before referral to the hospital or any diagnostic testing. The symptoms of aortic dissection can be similar to myocardial ischemia.

A 66-year-old male referred to our hospital with suspicion of aortic dissection after echocardiography while evaluating for his high blood pressure. He had symptoms of acute coronary syndrome two years before and had done coronary angiography. On presentation to our hospital he had a high blood pressure. On reviewing his past medical history and examining, in the film of coronary angiography, the dissection flap in ascending aorta was identified.

Although type A aortic dissection is a catastrophic condition with high mortality and requires prompt surgical treatment but in some cases it may be misdiagnosed as acute coronary syndrome. Sometimes against its high mortality when left untreated, patients survive and are diagnosed later in life incidentally. So it is of great importance to have great clinical suspicion for aortic dissection in patients referring to the hospital with chest pain and the predisposing factors.

Keywords: Aortic dissection, Coronary angiography, Echocardiography, Myocardial ischemia

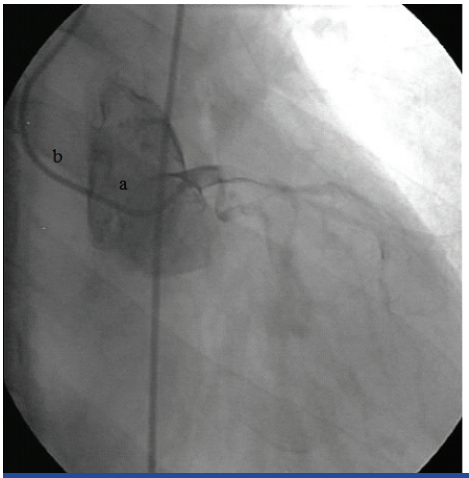
CASE REPORT

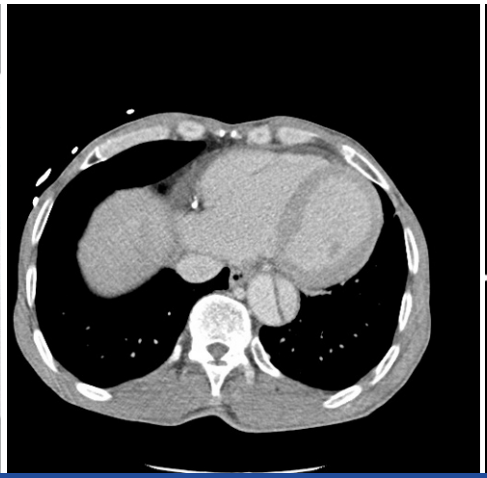
A 66-year-old male referred to our hospital with suspicion of aortic dissection after echocardiography in evaluating for his high blood pressure. He had no accompanying symptom. He had past medical history of hypertension under medical treatment and he was a smoker. He had a history of acute retrosternal and epigastric pain with radiation to his back and admission 2 years before with the impression of acute coronary syndrome with non-specific changes in electrocardiography and negative cardiac markers and had done coronary angiography without echocardiographic evaluation in another center. With the diagnosis of single vessel disease percutaneous coronary intervention was suggested but he had refused. On presentation to our hospital he had a systolic blood pressure of 180 mmHg and diastolic blood pressure of 95 mmHg. His pulse rate was 80 beats per minute and with respiratory rate of 14 per minute. No fever was detected and his arterial O_2 saturation was 98%. On physical examination he had an early to mid-diastolic murmur in his right sternal border. On serial electrocardiography he had no dynamic ischemic changes and had a sinus rhythm with the rate of 80. He had normal laboratory tests and negative cardiac markers. He was admitted with the impression of aortic dissection and was taken under observation.

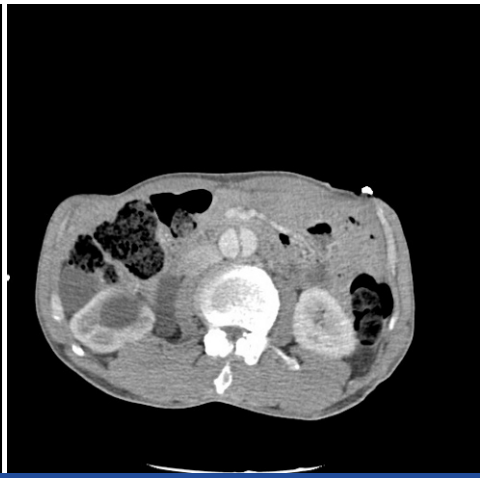
On reviewing his past medical history and examining, in the film of coronary angiography, the dissection flap in ascending aorta was identified [Table/Fig-1]. Transthoracic echocardiography was done for the patient and moderate aortic regurgitation with aortic dissection originating from above right sinus and extending to abdominal aorta with partially thrombosed false lumen and moderate sized circumferential pericardial effusion without haemodynamic effect was diagnosed. Taking in mind the stable vital signs of the patient and chronicity of aortic dissection he underwent CT angiography of coronary arteries and aorta which revealed normal origin of left main artery from true lumen and moderate to significant stenosis of left anterior descending artery, left circumflex artery and right coronary artery. Type A aortic dissection was also confirmed in the CT angiography originating from above the right sinus and extending to the abdominal aorta just below the renal arteries [Table/Fig-2,3].

Coronary artery bypass surgery with bypass of the LAD, RCA and LCx arteries by Saphenous vein grafts and aortic valve repair and dacron grafting of the ascending and aortic arch was done.

In the first postoperative day he had unstable vital signs and decreasing haemoglobin levels and for this reason he was taken







[Table/Fig-1]: Angiographic view showing true lumen (a) and false lumen (b) of Aorta. **[Table/Fig-2]:** CT angiographic view showing dissection flap in the ascending and descending aorta. **[Table/Fig-3]:** CT angiographic view showing dissection flap in the abdominal aorta.

to the operation room and on examination he had leakage from the anterior aspect of the dacron graft. The defect was repaired and he was admitted in the intensive care unit.

On the 3rd day after surgery he had fever and respiratory distress and after chest CT scan, aspiration pneumonia was diagnosed for the patient. Because of the increased respiratory distress he was intubated and antibiotic treatment was started for the patient. With about further treatment for 10 days he was weaned off the ventilator and after 5 days he was discharged in good medical condition. After 1 month and 6 months of follow up he had no complication and he was doing well.

DISCUSSION

In patients referred to the hospital with acute chest pain a few important differential diagnosis should be kept in mind which include: acute coronary syndrome, aortic dissection, pneumothorax and pulmonary thromboembolism. When the patients have specific electrocardiographic findings and positive cardiac markers for ischemia they can be managed as acute coronary syndrome without further investigation. But it is important to use further investigations for patients referring with unusual symptoms or not having the specific findings in initial para clinical investigations [1-3].

In aortic dissection pain is the most common symptom at presentation. The pain of an aortic dissection is midline and is experienced in the front and back of the trunk, depending on the location of the dissection. The pain could be sharp, tearing, or knife-like but the abruptness is the most specific characteristic of the pain [1].

About the anatomic classification of aortic dissection, two schemes have been defined. The DeBakey classification has shown 3 types: I, both the ascending and the descending aorta are diseased; II, only the ascending aorta is diseased; and III, only the descending aorta is diseased [4]. The Stanford classification has the following 2 types: type A, involving only the ascending aorta without having in mind the entry site location; and type B, involving the aorta distal to the origin of the left subclavian artery [5].

The predisposing factors to aortic dissection include the following: male gender, having chronic systemic hypertension, aortic aneurysm, aortic dilatation, anuloaortic ectasia, chromosomal aberrations (e.g., Noonan syndrome and Turner syndrome), coarctation of the aorta, aortic arch hypoplasia, aortic arteritis, hereditary connective tissue diseases (e.g., Ehlers-Danlos syndrome and Marfan syndrome), bicuspid aortic valve and direct iatrogenic trauma [1].

The pathogenesis of aortic dissection may include intimal rupture which continues to cleavage formation and then propagation of the dissection flap into the tunica media, or it can be due to intramural haemorrhage and haematoma formation in the tunica media subsequently continued by perforation of the intima [1].

About one fourth of the patients with aortic dissections die before being admitted in the hospital. The mortality rate of patients who have untreated proximal aortic dissections increases by 1-3 percent every hour after presentation and is approximately 25% during the first 24 h after the initial presentation [6,7]. Less than 10% of untreated patients with proximal aortic dissections live for one year, and almost all of the patients die within ten years of presentation [8].

Clinical suspicion is the most important step in diagnosing this disease. Confirming the diagnosis and differentiating between the different types are the next two steps in evaluating these patients. The diagnosis should be confirmed as soon as possible, preferably with a noninvasive method which is easily available [9].

The different modalities used for the diagnosis of aortic dissection include: chest radiography, computed tomography scanning, magnetic resonance imaging, transthoracic echocardiography, transesophageal echocardiography and aortography which are used according to the circumstances [1].

In our case the patient was admitted with unspecific symptoms two years before and he had no specific ischemic changes in his electrocardiography and negative cardiac markers. Unfortunately without any further evaluation such as chest X ray and echocardiography, angiography was done for the patient and the diagnosis of aortic dissection was missed as acute coronary syndrome. Fortunately against its high mortality rate the patient survived and he was diagnosed two years later while evaluating and managing his high blood pressure.

CONCLUSION

Sometimes when aortic dissection is left untreated, against its high mortality patients survive and are diagnosed later in life either incidentally or with the complaint of chest or back pain. So in the setting of evaluation of acute coronary syndrome it is important to consider other differential diagnosis, especially when initial examination by ECG or cardiac markers is non-diagnostic or borderline.

REFERENCES

[1] Khan IA, Nair CK. Clinical, diagnostic, and management perspectives of aortic dissection. *Chest Journal*. 2002;122(1):311-28.
[2] Bickerstaff LK, Pairolero PC, Hollier LH, Melton LJ, Van Peenen HJ, Cherry KJ. Thoracic aortic aneurysms: a population-based study. *Atherosclerosis*. 1982;15:29.
[3] Spittell PC, Spittell JA, Joyce JW, Tajik AJ, Edwards WD, Schaff HV, et al., editors. Clinical features and differential diagnosis of aortic dissection: experience with 236 cases [1980 through 1990]. *Mayo Clinic Proceedings*; 1993;68(7):642-51.
[4] De Bakey M. Surgical management of dissecting aneurysm of the aorta. *J Thorac Cardiovasc Surg.* 1965;49:130-49.
[5] Daily PO, Trueblood HW, Stinson EB, Wuerflein RD, Shumway NE. Management of acute aortic dissections. *The Annals of Thoracic Surgery.* 1970;10(3):237-47.
[6] Archer AG, Choyke PL, Zeman RK, Green CE, Zuckerman M. Aortic dissection following coronary artery bypass surgery: diagnosis by CT. *Cardiovascular and Interventional Radiology*. 1986;9(3):142-45.
[7] Pitt M, Bonser R. The natural history of thoracic aortic aneurysm disease: an overview. *Journal of Cardiac Surgery*. 1996;12(2 Suppl):270-78.
[8] Meszaros I, Morocz J, Szlavi J, Schmidt J, Tornoci L, Nagy L, et al. Epidemiology and clinicopathology of aortic dissection: a population-based longitudinal study over 27 years. *CHEST Journal.* 2000;117(5):1271-78.
[9] Cigarroa J, Isselbacher E, DeSanctis R, Eagle K. Medical progress. diagnostic imaging in the evaluation of suspected aortic dissection: old standards and new directions. *American Journal of Roentgenology*. 1993;161(3):485-93.

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