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Case Report

Acute aortic intramural hematoma as a cause of acute abdominal pain: case report and review of literature

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ABSTRACT

A middle aged male patient with sudden onset of severe upper abdominal pain was diagnosed as acute aortic intramural hematoma (IMH) by CT scan and treated conservatively in view of Type B IMH with prompt recovery. AAS (Acute Aortic Syndrome) needs to be considered in any acute abdominal pain, especially when the diagnosis is doubtful. There are three components of AAS namely aortic dissection (AD), intramural hematoma (IMH) and penetrating aortic ulcer (PAU), AD being more common. Aortic dissection is primarily categorized by Stanford classification (Type A: involves the ascending aorta; Type B: involves only the descending aorta) or the more comprehensive DeBakey classification. It presents as sudden, severe, tearing chest or back pain, requiring immediate treatment. The IMH has similar symptoms and is also classified by Stanford into Type A and Type B. Type A may need surgical treatment, whereas Type B IMH may be managed conservatively. CT angiography is usually the investigation of choice.

Keywords: Aortic dissection, Angiography, Epigastric pain, Pericardial effusion, Hypertension

INTRODUCTION

Abdominal pain is a common symptom experienced in many disorders. Acute epigastric pain is caused by several conditions like-peptic ulcer disease, hollow viscus perforation, pancreatitis, cholecystitis, dyspepsia, venous thrombosis, esophageal perforation, acute aortic syndrome (AAS) and a few other causes. Clear history, examination and diagnostic work up is required to come to an early diagnosis.Prompt identification of etiology is essential for an appropriate treatment. Acute aortic syndrome is not a common diagnosis in patients presenting with epigastric pain, but nevertheless, a very important cause. It comprises a variety of disorders namely: classic aortic dissection, intramural hematoma, incomplete dissection and penetrating aortic ulcer. It is most essential to quickly diagnose these conditions causing acute upper abdominal pain as they are life threatening and early diagnosis can be curative. Important also is the need for multidisciplinary care for these patients. Aortic dissection is most common and more known among the clinical AAS causing acute abdominal pain. Intramural hematoma of aorta is equally important though rare.[1]

CASE REPORT

A 61-year old man presented to the emergency room with complaints of severe epigastric pain, radiating to back of 1 day duration. There was nausea but no vomiting, jaundice or fever. Initial examination revealed hypoxia and abdominal tenderness. He had no diabetes but had a history of hypertension, Coronary artery disease (CAD) for which PTCA was done a few months before the present episode. Provisionally, patient was diagnosed acute abdominal pain and treatment was initiated with IV fluids and IV analgesics. Abdominal radiograph and ultrasound

abdomen was not informative. There were no gallstones. Hence, CT Thoraco - Abdominal Aortogram was advised which revealed intramural hyperdensity with intimal calcifications displaced towards the aortic lumen, predominantly involving the descending thoracic aorta suggestive of intramural haematoma. Maximum diameter of the affected aortic lumen was 33 mm at the proximal descending thoracic aorta, with a shaggy appearance of the lumen at the anterior aspect of the mid and distal descending thoracic aorta. (D7-D12) with average thickness of 5.5 mm and maximum thickness of 8 mm . A diagnosis of AAS, a subclassification of type B variety causing acute abdominal pain was made.

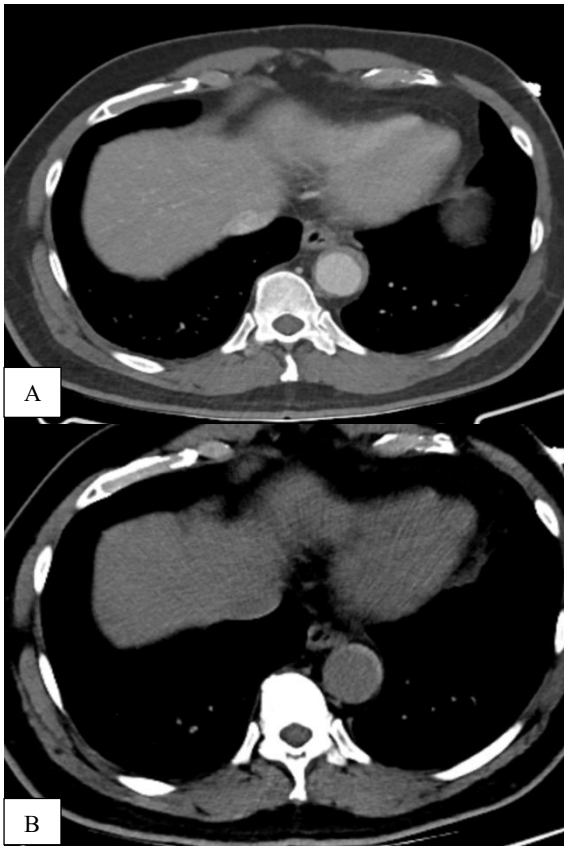

Figure 1 (A and B): Pre and post contrast axial image showing IMH.

Cardiology and cardiovascular surgery consultation was sought and decided to continue conservative care; surgery was deferred. The patient was administered dual antiplatelets, antihypertensives and managed conservatively. There was considerable improvement with resolution of all symptoms in 4-5 days. During follow-up of six months the patient remained stable. Serial aortograms were done, showing no progression of disease.

DISCUSSION

Acute Aortic Syndrome (AAS) encompasses 3 main acute aortic conditions that can cause catastrophic symptoms : Aortic dissection (AD) (complete or incomplete), intramural hematoma (IMH) and penetrating aortic ulcer (PAU) (Figure 2,3).[2]

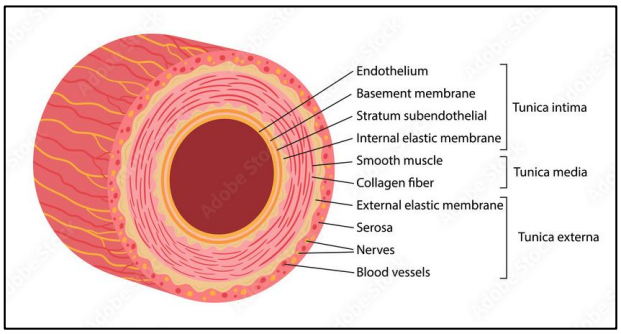

Figure 2: Normal aorta wall.

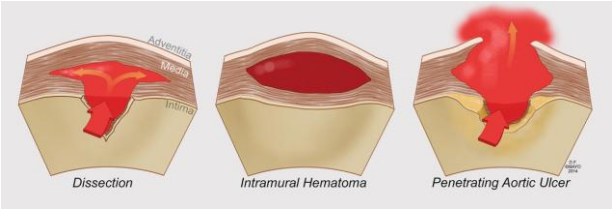

Figure 3: Acute Aortic Syndrome.[3]

Aortic dissection (AD) is a catastrophic AAS characterised by a tear in the intimal layer of aorta, leading to separation of the aortic wall layers. Blood enters between the intima and media propagating the dissection of aorta either proximally or distally resulting in compromised blood flow to vital organs (Figure 4).

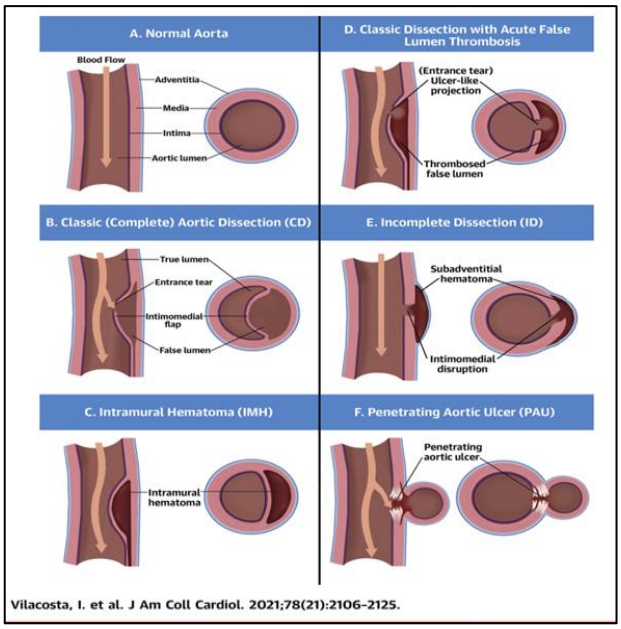

Figure 4: Acute aortic syndrome components.[1]

It carries a high mortality with many patients dying before reaching emergency care. Patients with chronic aortic dissection, defined as dissection present for more than 2

weeks, have a slightly better prognosis.[4] The classic presentation of AAD involves sudden, severe tearing chest pain or upper abdominal pain, but many aortic dissections are missed out even in the emergency department.[5-7] There are several classifications of AD, prominent being Stanford and DeBakey (Figure 5).

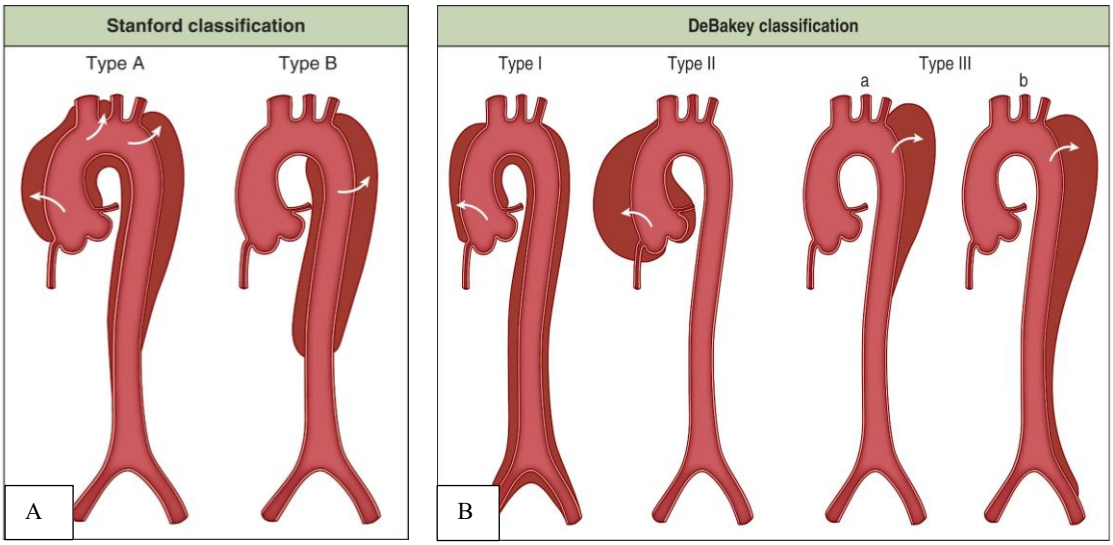

Figure 5: (A) Stanford classification and (B) DeBakey classification.

Stanford system

The Stanford classification system for aortic dissection is divided into two types based on the anatomical involvement of the aorta. Stanford Type A dissection involves the ascending aorta, regardless of the site of origin, and may extend to other parts of the aorta. Stanford Type B dissection involves the descending aorta without involvement of the ascending aorta. This classification is important because it helps guide clinical management and treatment decisions.

DeBakey system

The DeBakey classification system categorizes aortic dissection into three types based on the site of origin and extent of involvement. Type I dissection involves the ascending aorta, aortic arch, and descending aorta. Type II dissection is confined only to the ascending aorta. Type III dissection originates in the descending aorta and extends distally; it is further subdivided into Type IIIA, which remains above the diaphragm, and Type IIIB, which extends below the diaphragm. This classification assists in understanding the extent of disease and planning appropriate management.

Aortic intramural hematoma (IMH)

It is one of AAS which can present as acute abdominal or chest pain and or back pain. It is characterised by a hematoma of size >5mm within the aortic wall without any visible intimal tears. It can occur spontaneously or post traumatic or due to iatrogenic causes; and may constitute 5-27% of AAS cases.[9] Diagnosis may be overlooked in a number of cases but CT based angiography can clinch the diagnosis. The Stanford classification for intramural hematoma (IMH), similar to that used for aortic dissection, is divided into two types based on the anatomical location of involvement.

Type A intramural hematoma involves the ascending aorta, accounting for approximately 30% of cases, and may also involve the aortic arch in about 10% of cases. Type B intramural hematoma involves the descending thoracic aorta and constitutes approximately 60-70% of cases. This classification is clinically important for determining prognosis and guiding management strategies.

The outcome of IMH is variable and there may be progression to AD.[10] Plain, unenhanced CT images establish the diagnosis of IMH in a majority by characteristic findings of a circular or crescent shaped hyperattenuating wall thickening (5mm) of the aorta.

These could be narrowing of the aortic lumen and medial displacement of intimal calcification. Normal aortic wall thickness is <3mm. IMH appears similar on contrast scans and does not feature enhancement of the thickened wall.

The longitudinal extent of IMH is variable ranging from 1 cm to the entire aorta. IMH and AD differ by the presence of aortic wall thickening without dissection and no intimal flap in IMH; while AD demonstrates contrast filled true and false lumens and intima separating them (Figure 6).

Compared to AD, the outcome of IMH is better; and type B IMH has good outcome compared to Type A IMH. Pericardial effusion is more frequent in IMH, whereas MA perfusion syndrome is seen in AD. Treatment of Type A IMH is usually surgical and Type B is managed conservatively.[11]

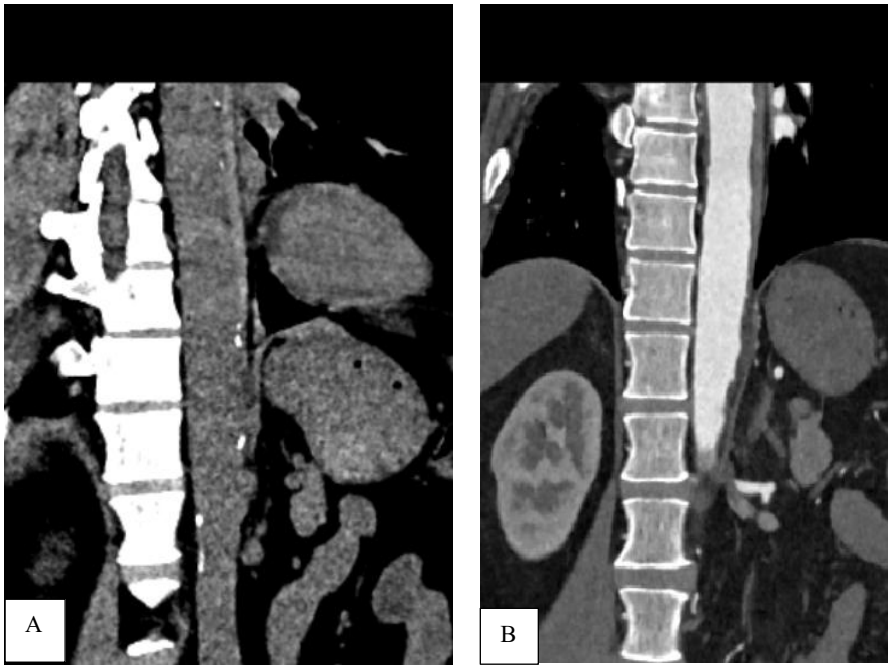

Figure 6 (A and B): Pre and post contrast reconstructed coronal plane image, revealing intramural hyper density and intimal calcification displaced toward aortic lumen suggesting intramural hematoma.

Our patient had Type B IMH involving the descending aorta and extending between D7-D12 Vertebrae measuring 5.5 mm. There was no progression of the lesion and conservative care with control of hypertension resulted in prompt symptomatic improvement. Acute abdominal pain is common in gastroenterology practice but AAS is rarely seen and diagnosed. IMH seen in our patient had Type B configuration with a non-progressive course. It is essential to diagnose this condition which may present with sudden onset of pain in chest and upper abdomen. Prompt suspicion, diagnosis and a team approach with the concerned cardiovascular specialists helps in reducing the morbidity and mortality.[12]

CONCLUSION

AAS comprises AD, IMH and PAU and present as acute abdominal pain. Prompt diagnosis is important and CT scan can be confirmatory. Aortic IMH is characterised by increased wall thickness of aorta with no enhancement on contrast. IMH is classified into Type A and Type B depending on the site of involvement. Type B is usually treated conservatively with better outcomes. Some patients with IMH may worsen and develop aortic dissection.

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