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A Giant Aortic Aneurysm misdiagnosed as Left Sided Massive Pleural Effusion

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Abstract
Introduction: *An aneurysm is a localized dilatation of an artery, a vein, or the heart. Aneurysm of descending thoracic aorta usually asymptomatic and diagnosed by chance. Here we report the case of a 30-year-old man who presented to our hospital with breathlessness, cough, chest pain, whose initial chest imaging mimicked a left sided massive pleural effusion. The final diagnosis is giant aortic aneurysm with mural thrombosis. Diagnostic thoracocentesis, before computed tomography, in resource-poor settings, may have resulted in an adverse outcome in our case.*
Case Presentation: *A 68-year-old man was referred to us for further evaluation of a suspected left sided massive pleural effusion. His presenting symptoms are breathlessness, cough, chest pain for 2 months. His chest x-ray showed left sided massive pleural effusion. However CT scan thorax with contrast & aortogram showed giant aortic aneurysm with mural thrombus which was confirmed by echo report.*
Conclusion: *Thoraco-abdominal aortic aneurysm can mimic left sided pleural effusion which is reported in literature. We illustrate the importance of a high degree of suspicion of cardiovascular pathology in order to avoid an adverse outcome following diagnostic thoracentesis.*
Keywords: *Aortic Aneurysm, Left massive pleural effusion, mural thrombus.*

Introduction

Aneurysm of descending thoracic aorta, in majority of cases is diagnosed either by chance in routine chest imaging for some other reasons or rarely due to its symptomatic presentation like chest pain and other mediastinal compression symptoms.[1] Aortic aneurysm can be classified as fusiform or saccular, depending on their morphology. Thoracic aortic aneurysm (TAA) are less common than abdominal aneurysms and 80% of them are fusiform.[2] We present a case of giant extensive aortic aneurysm with peripheral thrombus and minimal right pleural effusion in an middle-aged male, mimicking a left sided massive pleural effusion.

Case Report

Thirty year old male, non-diabetic ,non-hypertensive, non-smoker, alcoholic, addicted to tobacco & farmer by occupation attended to our emergency with a grade III mMRC dyspnea, cough, chest pain for 2 months. Shortness of breath was progressive in nature. History of cough with moderate expectoration and not associated with haemoptysis. Chest pain was anteriorly diffuse radiating to back of left shoulder and associated with chest palpitation. Fever which was low grade with chills but no rigor. There was no history of orthopnea, paroxysmal dyspnoea, pedal or periorbital swelling.

Similar history of illness for 4yrs for which he was admitted in a Private hospital with diagnosis of left sided pleural effusion with thickened pleura and 5ml haemorragic fluid was aspirated but as his condition was deteriorating he was referred to our hospital with a provisional diagnosis of left sided massive pleural effusion.

At the time of admission, on examination the patient was tachypneic (Respiratory rate-32/min), pulse rate was 98/min, all peripheral pulses were equally palpable, blood pressure was 110/70mm of Hg in supine position at left arm and saturation of oxygen was 84% with room air. There was moderate pallor without any clubbing, cyanosis, jaundice or engorged neck vein. Examination of his respiratory system revealed normal upper respiratory tract, there was decreased movement in the left side hemithorax with diminished intercostal in drawing on the left side. Trachea shifted to right side, the vocal fremitus on the left side was diminished. Apical impulse visible over right side. Apex beat could be localized on right side 5th intercostal space medial 1.5cm to midclavicular line. There was visible engorged veins bilaterally over chest. Epigastric pulsation was present. There was stony dull percussion note on the left side from below 2nd intercostal space on the midclavicular line, 4th intercostal space on the midaxillary line. There was dull percussion note on the right side from below 3rd intercostal space on the midclavicularline. There was diminished breath sound left mammary, infraaxillary, interscapular, infrascapular area. There was no physical signs suggesting of connective tissues disorder (eg. Marfan's and Ehlers-Danlos syndrome).

Examination of other system did not reveal any abnormality. His haemoglobin was 9.7gm/dl, TLC-18700(N-75.6 L-19 M-5.4). The lipid profile was normal (Sr cholesterol- 178mg/dl, Sr triglycerides-123mg/dl, LDL cholesterol-107mg/dl, HDL-46mg/dl). On Chest X ray PA view Left sided massive pleural effusion (Fig. 1).

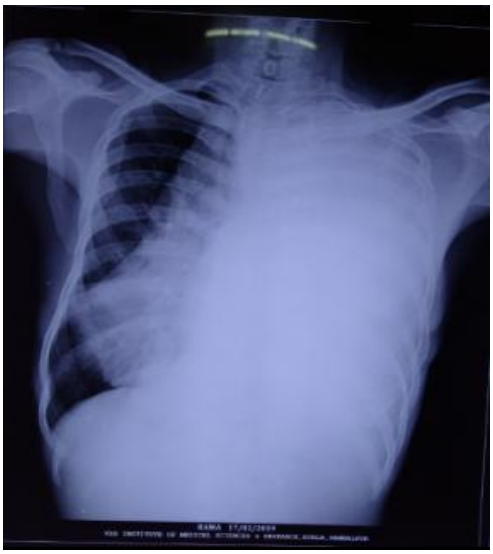


Figure 1-Chest radiograph showing a left opaque hemithorax and mediastinal shift to the right

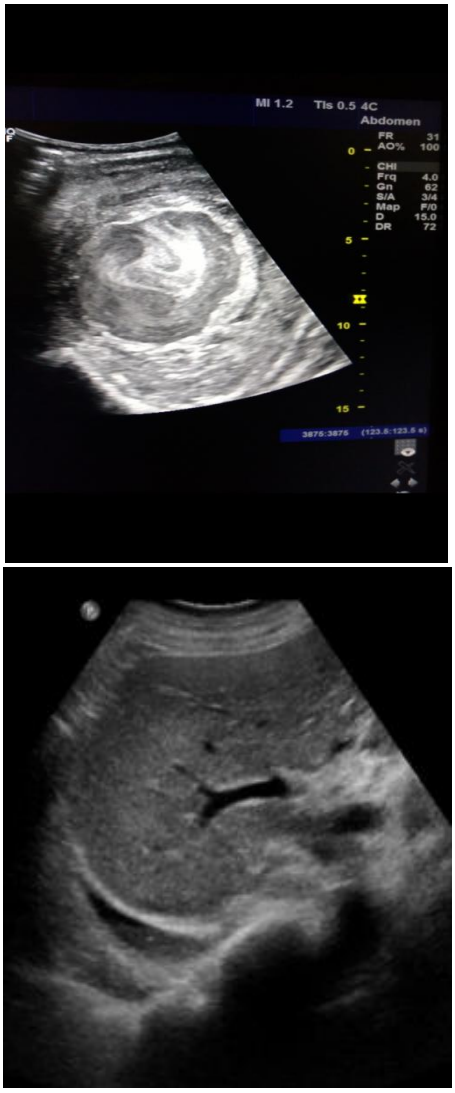
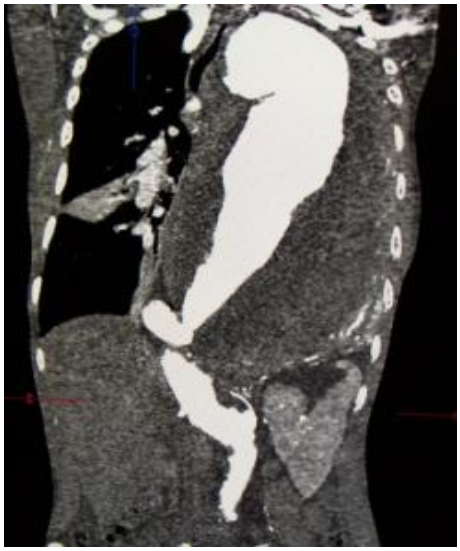


Figure 2- Ultrasonography thorax showing (left) aortic arch and descending aortic aneurysm with mural thrombos (right) rt sided minimal pleural effusion

The patient was put on O_2 and rate adjusted to keep spO_2 around 95%. Thoracocentesis was done but no fluid was aspirated. On chest ultrasound revealed aortic arch and descending aorta aneurysm (Fig.2) with minimal right pleural effusion and mild ascites.



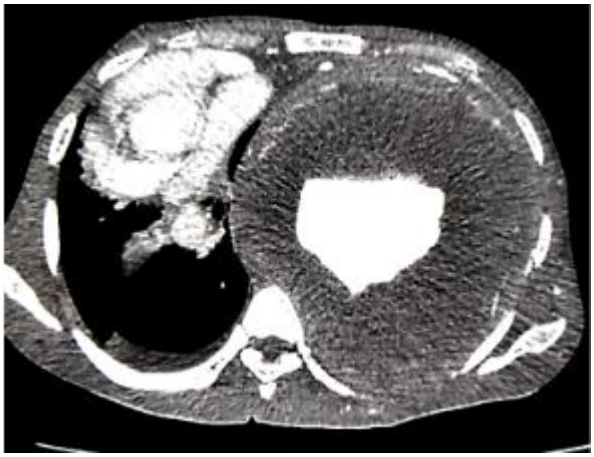


Figure 3-CT Thorax with contrast (left) on coronal view and (right) on axial view showing a giant thoracoabdominal aortic aneurysm with mural thrombus

On CT Thoax with contrast & Aortogram shows fusiform aneurysm which measures 15×13 cm over a length of 21cm.It begins at the arch of aorta and ends in L1 vertebral level just above proximal renal artery. There is mural thrombus of size 29×12mm noted in abdominal aorta. Luminal diameter of descending aorta is 7.6×6.9cm and abdominal aorta is 4.5×3.7cm. Mural calcification is noted surrounding the thrombus.

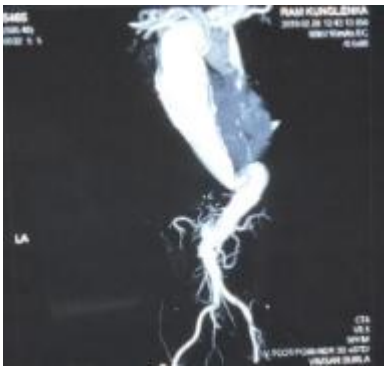


Figure 4- CT Aortogram showing thoracoabdominal aortic aneurysm

Echo: Situssolitus, Arch and descending aortic aneurysm, moderate pulmonary arterial hypertension with tricuspid regurgitation, EF-58.4%, TRGR-39mmHg.

The patient was referred to the cardiothoracic surgical team for further management.

Discussion

By definition, an aneurysm is a localized or diffuse dilation of an artery with a diameter at least 50% greater than the expected size of the artery and includes all three layers of the vessel, intima, media, and adventitia.[3] Abdominal aortic aneurysms are more common than aneurysms of the thoracic aorta. However, our patient had a thoracoabdominal aortic aneurysm. The normal diameter of thoracic aorta is less than 4.0cm for the ascending, and less than 3.0cm for the descending thoracic portions. A diameter exceeding 5cm in descending thoracic aorta is usually considered as aneurysm of descending thoracic aorta. Although, TAA_s are often asymptomatic, they are more symptomatic than abdominal aortic aneurysm. The presenting symptoms depends upon location of aneurysm; they can compress or erode into thoracic structures. The true incidence of TAA is difficult to determine because there are so many asymptomatic cases, but it is constantly increasing due to improved diagnostic methods and the aging population.[4] Clouse et al. estimated that incidence to be 10.4 cases per 100,000 population per year.[5] In 40% of cases, TAA is discovered by chance during a physical examination or on a chest x-ray performed for a different reason. Symptomatic

cases of TAA express chest pain in 37% of cases and dorsal pain in 21%. That pain is induced by compression of the mediastinal organs and chest wall, or by erosion of an adjacent bone (sternum, vertebra).[6,7] Sometimes that pain is severe and involves a previously unaffected area or one that was previously less painful, indicating that rupture is imminent. Other symptoms of TAA are signs of congestive heart failure, thromboembolic complications leading to stroke, ischemia of the extremities, renal or mesenteric infarction. However in present case patient presented to us with a chief complain of chest pain and cough.

The true etiology of aneurysm is probably multifactorial, and the condition occurs in individuals with multiple risk factors. Risk factors include smoking, hypertension, hyperlipidemia, atherosclerosis, bicuspid or unicuspid aortic valves, connective tissue disorder and genetic disorders.[4] Aneurysms are more common in men than in women. In present case there are no evidence of above risk factors and genetic cause couldn't be evaluated in our setup.

The clinical presentation of a TAA is vague or even asymptomatic; therefore imaging plays a crucial role in the morphological assessment and the assessment of operability or accessibility to endovascular treatment by placement of a stent, as well as in post-therapeutic monitoring. The chest x-ray is abnormal in 80% of cases: it may show calcified aneurysmal walls, mediastinal widening, enlargement of the aortic knob, or tracheal deviation.[7] The CT angiogram is the study of choice, useful for determining the site of the aneurysm, its largest diameter, its extent, its relationship with the aortic branches, and possible presence of other aneurysmal localizations. The MRI is the second-line study and provides the same information at the CT angiogram. It is reserved for non-dialyzed renal failure patients, young aortoannularectasia patients, and for monitoring patients who have been diagnosed but have not undergone surgery, due to the need for repeated studies. The transthoracic echocardiogram makes it possible to examine the aortic sinus and the ascending aorta; the other segments are accessible by a transesophageal approach. Surgery and endovascular treatment are the therapeutic options available to patients.

Conclusion

In conclusion, Thoracic aortic aneurysm is a serious condition that is rarely symptomatic. Its discovery due to an opaque hemithorax has never been reported. A CT scan is not available prior to a diagnostic thoracentesis in resource-poor settings though it is not an absolute prerequisite for thoracentesis. We illustrate the importance of the careful interpretation of chest X-rays and the clinical picture to avoid adverse outcome from diagnostic thoracentesis or intercostal tube insertion, in cases of cardiovascular pathology mimicking massive effusion. The different cross-sectional imaging methods, led by CT angiography, provide a thorough morphological assessment, detection of complications, and post-therapeutic follow-up.

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