CLINICAL VIGNETTE

A Giant, Mobile, Mural Thrombus of the Aortic Arch

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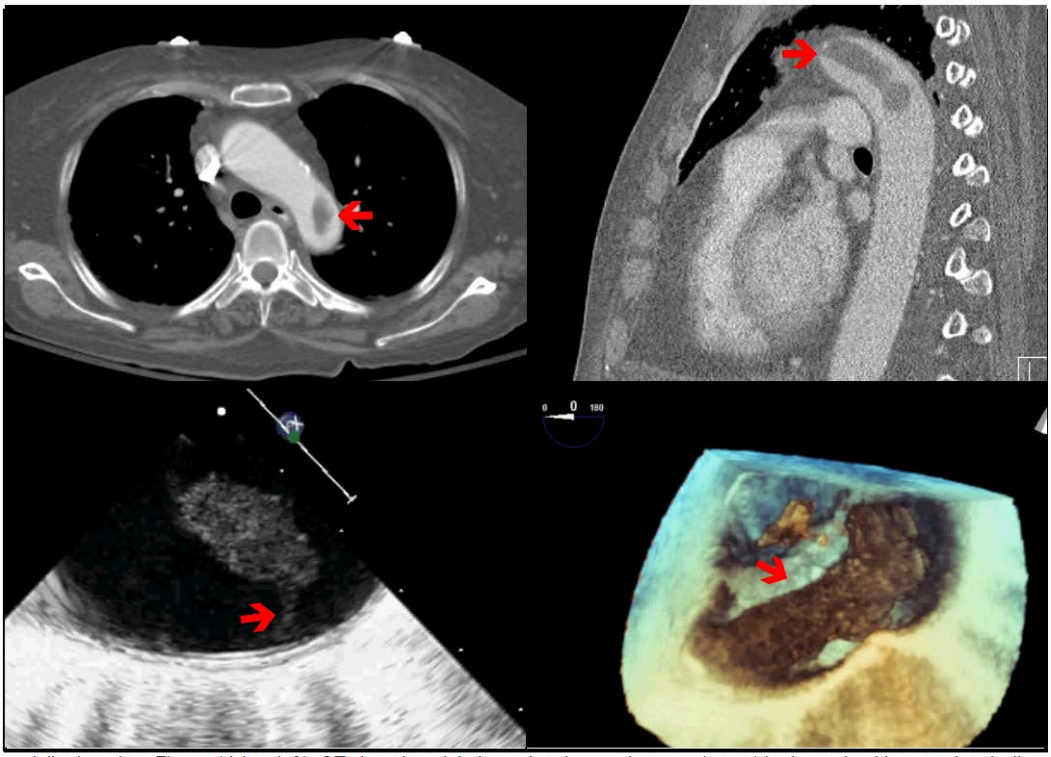
Thoracic aorta mural thrombosis is a rare entity and has not been studied outside of case reports in the literature. The sequelae can be catastrophic, therefore learning from case reports is the best strategy that exists for now. Particularly thrombus not related to atherosclerosis or aneurysm is rare in the literature.

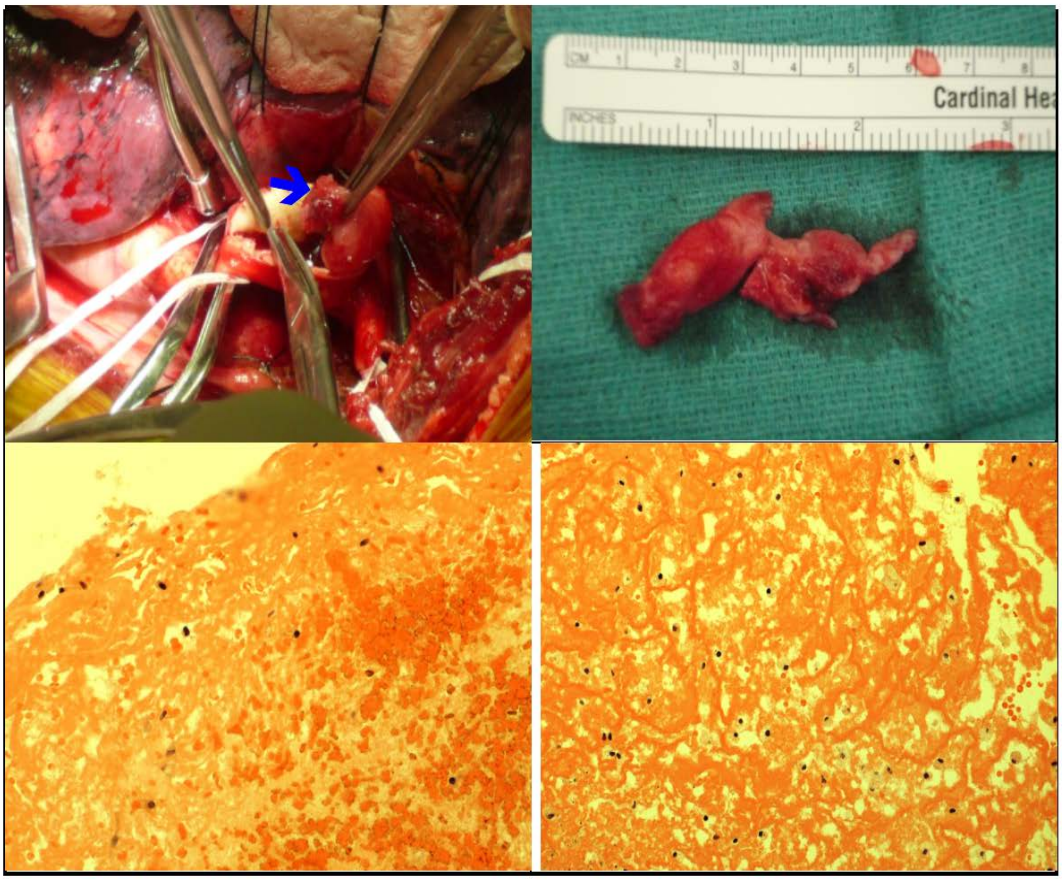
We present a case of a 57-year-old Caucasian female with no past medical history who presented to the Emergency Department with one month of progressive shortness of breath and abdominal pain. Her vital signs and exam were within normal limits however she reported being unable to breath comfortably. She was found to have thrombocytosis to 972,000, with all other lab findings being unremarkable. Her ECG showed sinus rhythm with a rate of 98bpm. A CT angiogram of the chest was obtained which showed a large right lower lobe pulmonary embolus along with a mass in the descending aorta (Figures 1A, 1B). She underwent transesophageal echocardiogram (TEE) which revealed a 5.0 x 1.2cm mobile mass adherent to the wall of the aortic arch between the ostia of the left carotid and subclavian arteries (Figures 1C, 1D). She had brain imaging performed to rule out any embolic phenomena prior to consideration of surgery.

The patient subsequently underwent a left thoracotomy with successful resection of the mass, and the location and size of the mass correlated well with the noninvasive imaging (Figures 2A and 2B). Pathological examination of the mass was consistent with thrombus and fibrin (Figures 2C and 2D). No malignant cells or microorganisms were seen. Hypercoagulable work up was positive for a 2.2 x 2.1 cm heterogeneous lesion within the inferior aspect of the kidney which was concerning for neoplasm.

She was ultimately discharged home on warfarin with Urology follow up to further work-up the renal mass.



Multimodality Imaging. Figure 1A(top left): CT chest in axial plane showing aortic mass (arrow) in the arch with normal arch diameter. 1B(top right): CT chest in sagittal plane showing aortic mass extending into descending aorta. 1C(bottom left): TEE of descending aorta showing site of attachment of mass (arrow). 1D(bottom right): 3D TEE demonstrating size of aortic mass (1.2 x 5cm).



Gross and Pathology Images. Figure 2A (top left): surgical resection of aortic mass (blue arrow). 2B (top right): gross specimen measuring 5.5cm in length. 2C and 2D (bottom row): pathologic specimen at 20x magnification showing the mass is actually a large thrombus which is composed of RBCs and fibrin. There is a paucity of WBCs and the outer layer lacks an epithelial-lined capsule, thus ruling out a tumor or neoplasm.

Discussion

In reviewing the literature, there are no randomized controlled trials on the management of mural aortic thrombi in an otherwise normal aorta. Due to the rarity of the disease, all the information we have is from case reports and case series.

The use of multimodality noninvasive techniques, including 3D TEE and cardiac CT, in this case was helpful is the surgical planning and management of this patient with a successful end result.[1-4]

CT tends to be the primary screening imaging modality used in the literature to evaluate patients who present with a mural aortic mass. MRI is useful to differentiate between thrombus and tumor. Transesophageal echo can be very useful since it can be performed promptly without contrast exposure, however it has a limited view of the arch and may not reveal the exact size and extension of the thrombus.[3,5,6]

Proposed etiologies for forming an aortic mural thrombus has been hematologic disorders such as essential thrombocythemia, hypercoagulable states including malignancy, Crohn's disease, pancreatitis and even one case due to blunt trauma.[7-9] While other cases had no reported cause that could be discovered.

Currently there is no consensus on what is the best treatment approach. Options include aortic thrombectomy, thrombolytic therapy and systemic anticoagulation alone.[2] Majority of the case reports and case series describing this finding support surgical removal due to the potentially catastrophic embolic complications with the other two treatment options. A meta-analysis[10] reported that surgical management was more favorable in normal to minimally diseased aortas.

Some authors have reported that anticoagulation alone can lead to a high failure rate. It has resulted in a higher likelihood of recurrence and complications, particularly limb loss from thromboembolism.[10-12] However one group of authors reviewed a series of 5 cases treated with anticoagulation alone, and they found it to be an effective treatment strategy. They reported no embolic complications.[2]

The medication that is favored for long term anticoagulation in this setting is warfarin. One study recommended INR goal of

2.5-3.5.[2] The optimal length of time for anticoagulation is currently unknown. There is a lot left to be learned regarding the optimal management strategy.

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