Mural Ascending Aortic Thrombus In A Patient With Recent COVID 19 Infection

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Introduction

In COVID-19 patients, coagulation abnormalities and thrombosis are frequently found despite prophylactic anticoagulation. (1) While most individuals infected with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) only experience mild to moderate symptoms, some (<2%) suffer from more a critical or fatal course of infection. The main thrombotic complications are deep vein thrombosis, microvascular thrombosis and pulmonary embolism. (1) The incidence of venous thromboembolism during COVID-19 infection is reported to be as high as 25%. Arterial vascular events are seen in up to 4% of cases . (2) COVID-19 has been recently linked to large vessel stroke in young adults.

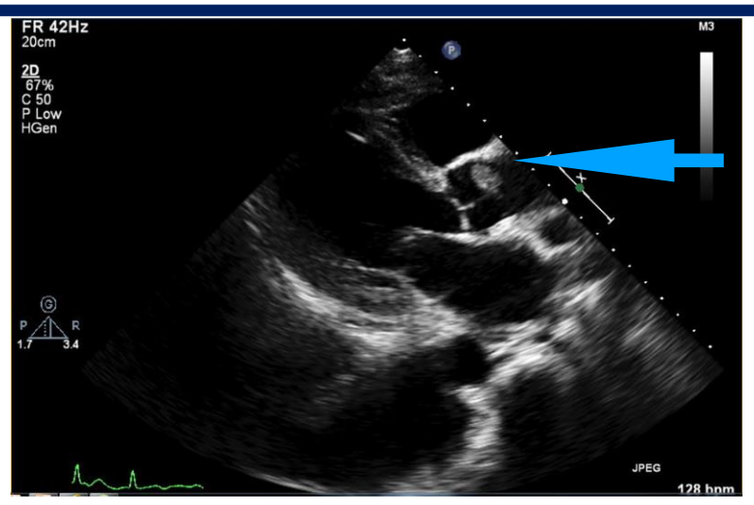
Case Presentation

A 49 year old male with past medical history of type II diabetes mellitus and COVID 19 presented with nausea, vomiting, polyuria and polydipsia was found to have diabetic keto-acidosis, new onset atrial flutter, Non ST segment Elevation Myocardial Infarction and new onset superior cerebellar ischemic stroke. On trans-thoracic echocardiography, left ventricular ejection fraction was 20-25% with severe hypokinesis of the basal, mid inferior and lateral walls of the heart. A thrombus like appearing 1.9 cm x 1.2 cm well-circumscribed mass, attached to the greater curvature of the ascending aorta, superior to the right coronary cusp of the aortic valve was also noted.

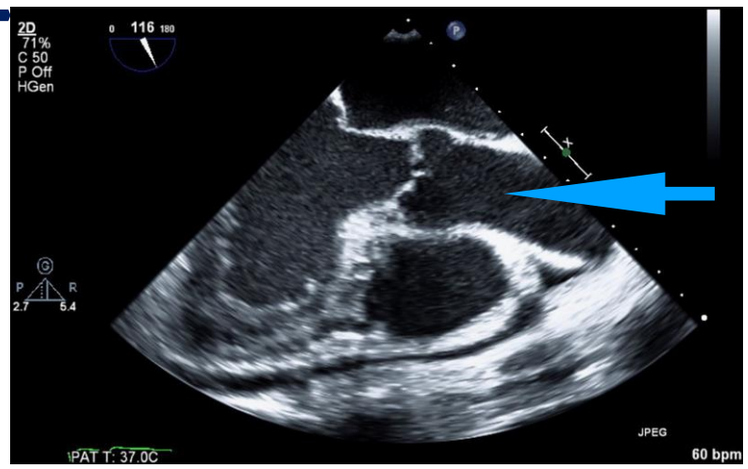
He was started on treatment with acute coronary syndrome protocol and goal directed therapy for heart failure. He was put on therapeutic enoxaparin and dual anti platelet therapy. CT angiography and trans-esophageal echocardiography done 3 days later showed absence of the aortic mass, but total occlusion of the mid right coronary artery.

The patient did not develop any new neuro-vascular complications during his hospital stay and was discharged on 20 mg rivaroxaben.

Cardiac Catheterization 1.5 months later showed 100% occlusion of the mid right coronary artery with collaterals from the left anterior descending to distal right coronary artery. Also, 50% stenosis of the obtuse marginal and 40% stenosis of the mid left anterior descending artery was noted. The patient denied any anginal symptoms at this time and was continued on anticoagulation with rivaroxaben.



TTE showing Aortic thrombus



TEE showing no Aortic thrombus

In COVID 19 patients presenting with cryogenic arterial embolisation, the possibility of aortic thrombus and treatment with therapeutic anticoagulation should be considered

Discussion

The patient had an aortic thrombi with likely embolisms to the brain. Occlusion of the right coronary artery could be secondary to an acute on chronic thrombus versus embolism from the aorta.

COVID-19 is associated with a hyper coagulable state and endothelial inflammation. D-dimer >1000 ng/mL have been associated with increased mortality (3).

Although venous thrombosis is well document in literature, many cases of arterial thrombosis are now being reported with patients presenting with stroke and myocardial infarctions. (5)

Initially it was believed that medium and small sized arteries were involved but now large sized artery involvement is also being recognized. (4) Although thrombus in the ascending aorta is rare due to the high pressure and blood flow in this region, many cases of this are being documented. Age >50, male gender, smoking history and obesity are some risk factors known to be associated with aortic thrombus in patients with COVID -19.

These thrombi can cause serious complications by embolizing to the viscera and extremities causing infarcts. In patients presenting with embolic events in the absence of other risk factors, its is reasonable to screen for COVID-19.

Treatment with therapeutic anticoagulation with close monitoring for embolic events is recommended. Prophylaxis with anticoagulation is important to prevent these, but the dose and duration of therapy is still being studied.

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