

Intracardiac Thrombus in the Setting of Covid-19

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Abstract

COVID-19 has been found to result in a hypercoagulable state, the pathogenesis of which is currently not completely understood. We present a case of shortness of breath, weakness, and dizziness in a 64 year old male with a known COVID-19 positive diagnosis and evidence of bilateral atypical pneumonia whose emergency department workup at ProMedica Monroe Regional Hospital resulted in the finding of a 2.8 x 1.7 cm left ventricular intracardiac thrombus. Of note, the patient's D-dimer level was not elevated, and in addition his cardiac enzymes were not elevated as well. This patient was started on heparin in the emergency department and transferred to Mercy St Vincent medical center. This case report suggests that in COVID-19 positive patients there may be a need for increased clinical suspicion of thrombotic etiology behind patient symptoms.

Keywords: Intracardiac Thrombus; COVID-19; Hypercoagulability; Emergency Medicine

Abbreviations

COVID-19: Coronavirus disease 2019; CT: Computed Topography; PT: Prothrombin Time; PTT: Partial Thromboplastin Time; CBC: Complete Blood Count; CMP: Comprehensive Metabolic Panel; EKG: Electrocardiogram; INR: International Normalized Ratio

Introduction

In late 2019, the novel coronavirus otherwise known as SARS-Cov-2 or COVID-19 emerged in Wuhan, China, and has since spread globally evolving into a pandemic. As of 11/7/20 there have been an estimated 1.25 million deaths worldwide and cases continue to increase. As information has accumulated regarding the presentations and pathophysiology behind the disease it has become evident that COVID-19 is linked to a hypercoagulable state in infected persons, the pathophysiology behind this not yet being completely understood. In June 2020 [1] there was a published case report of left ventricular thrombus formation in a COVID-19 patient with ST-Elevation myocardial infarction. The patient in this case had no past medical history prior to this event. In November 2020 a similar study was published in the European Heart Journal [2]. We present a case of left ventricular intracardiac thrombus in a 64 year old male COVID-19 positive patient presenting with increased shortness of breath, dizziness, and weakness on 10/27/20.

Case Presentation

On 10/27/20, a 64 year old male with past medical history of deep vein thrombosis 9 years ago after a long motorcycle trip, diabetes, heart palpitations, cervical radiculopathy, and positive test for COVID-19 diagnosis on 10/4/20 presented to the ProMedica Monroe Regional Hospital emergency department with chief complaints of 2 weeks of increased shortness of breath, dizziness, difficulty standing, low grade fever, and non-bloody emesis. The patient's daily medications included metoclopramide 5 mg as needed and tamsulosin 0.4 mg daily. The patient had not yet received his COVID-19 vaccine. The day before presenting to the department he was found by his neighbors to be stumbling on his porch and they recommended he go to the emergency department for evaluation. In addition, he had been seen at a different emergency department on 10/17/20 for the same symptoms however during that visit his workup which did not include CT scan was found to be unremarkable and due to his oxygenation of 93% while ambulating he was discharged home. On his 10/27 visit he admitted to diffuse chest pain described as an "ache" that started the day before, significant shortness of breath and feelings of mucus being stuck in his throat, diffuse abdominal pain accompanying his vomiting but not otherwise, generalized weakness, dizziness, and feelings of instability. Initially his vitals were significant for tachypnea however the remainder of his vitals were within normal limits, of note his oxygenation was 98% on room air, and he did not have a fever in the department. His breath sounds were diminished bilaterally, and he seemed to have an increased work of breathing. His heart sounds were regular in rate and rhythm, no murmurs appreciated on auscultation. Pulses were normal in upper and lower extremities and no signs of hemodynamic compromise. No abdominal tenderness to palpation, neurologic exam was prominent for diminished muscle strength in his lower extremities relative to his upper extremities but sensory exam was intact. On examination of the patient's oral cavity there was no evidence of obstruction or exudate, no peritonsillar abscess, the patient's speech was normal as well. No neck tenderness or swelling. Initial workup included one view chest x ray, EKG, troponin, CBC, CMP, and per Wells criteria a d-dimer. However when the attending physician Dr. Trager evaluated the patient his suspicion for potential pulmonary embolism was high given the patient's increased work of breathing and persistent symptoms despite a negative workup on 10/17 so a CT angiogram and PTT, PT/INR were ordered. As this patient was likely to be admitted, another COVID-19 swab was ordered as well. The patient once again tested positive for COVID-19, in addition his one view chest X-ray showed bilateral infiltrates consistent with atypical pneumonia such as COVID-19. His CBC and CMP were unremarkable, in addition his d-dimer level was not elevated and his initial troponin was normal as well. EKG was unremarkable. PTT and INR both normal, protime slightly elevated at 13.1. However, his CT angiogram was prominent for the finding of 2.8 x 1.7 cm left ventricular intracardiac thrombus in addition to bilateral pneumonia likely atypical related to COVID-19. No pulmonary embolism was found. After this, LDH was ordered as it is a longer lasting cardiac enzyme post MI, however it was found to be normal as well. Cardiology was consulted who recommended the patient be started on 25,000 units/500 mL Heparin infusion in 0.45% NaCl and 7,600 units of Heparin given intramuscularly. Cardiology also recommended that the patient be transferred to a facility with cardiothoracic surgery capabilities. The patient per his wishes was transferred to Mercy St. Vincent Medical Center in Toledo.

Results and Discussion

This case highlights a need for increased clinical suspicion of thrombotic etiology in a patient with COVID-19 positive diagnosis. Given the existing emergency medicine standard of care, a clinician would have been justified in not pursuing a CT angiogram given the patient's normal d-dimer level. However, the literature supporting the Wells score has not been validated in COVID-19 positive patients as the evidence supporting its use preceded the pandemic. The patient in this case had already been seen at a separate facility with a negative workup and discharged, with persistence of his symptoms. Had it not been for the increased suspicion given the patient's failure of discharge and increased work of breathing a CT angiogram may not have been otherwise pursued and the diagnosis would not have been made. There are existing case reports that highlight this diagnosis as well [1,2]. Moving forward these cases all point towards the importance of clinical awareness of hypercoagulability in COVID-19 positive patients and the diagnosis of intracardiac thrombus which may be present in such a patient and the cause of symptoms such as shortness of breath, chest pain, weakness, dizziness, and balance instability.



Figure 1

Conclusion

COVID-19 is a pandemic in process with clinicians learning new information as the days unfold. As knowledge about the increased hypercoagulable state in COVID-19 patients has come to be, so too should clinical suspicion increased in such patients regarding a thrombotic cause behind their symptoms. In the patient for the above case, increased suspicion led to the finding of a left ventricular intracardiac thrombus in the setting of a normal EKG, d-dimer, CBC, CMP and cardiac enzymes. Moving forward, it may be prudent to widen the differential for evaluation of COVID-19 patients in the emergency department to include such thrombotic etiology behind symptoms.

Conflict of Interest

No conflict of interest to report.

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