SARS-CoV-2 INFECTION AND CARDIAC CONSEQUENCES: A CASE STUDY EXPLORING THE POSSIBLE LINK BETWEEN COVID-19 AND NEW ONSET ATRIAL FIBRILLATION

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INTRODUCTION

The SARS-CoV-2 (COVID-19) pandemic has impacted the world immensely over the past year. Though the elderly and immunocompromised are at the greatest risk for severe disease and hospitalization, COVID-19 infection can still cause devastating health consequences at any age. The most common long-term consequences are respiratory in nature, however, there have been multiple studies showing new onset cardiac arrythmias associated with COVID-19 infection, particularly atrial fibrillation.

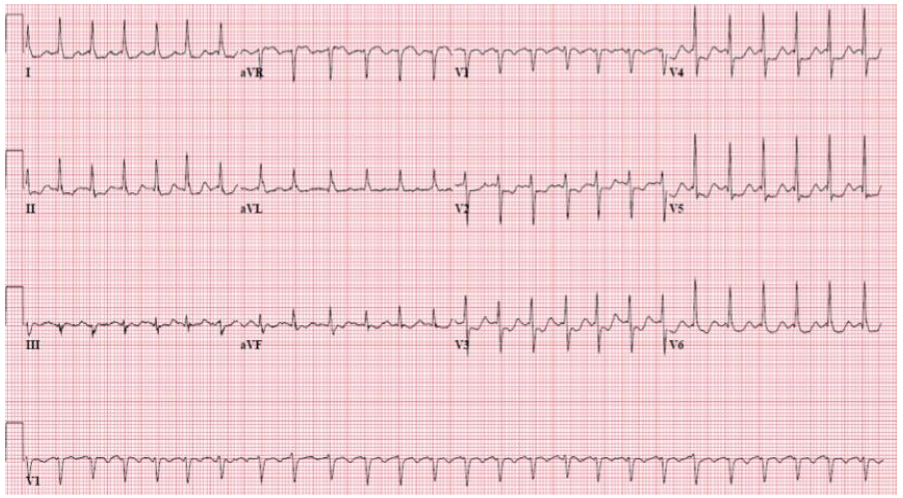
CASE REPORT

An 83-year-old female presented to the emergency department in November 2020 with concern of abdominal pain, nausea, and vomiting that began earlier that morning. She also reported some shortness of breath and fatigue with activity. She had a past medical history of hypertension and COPD.

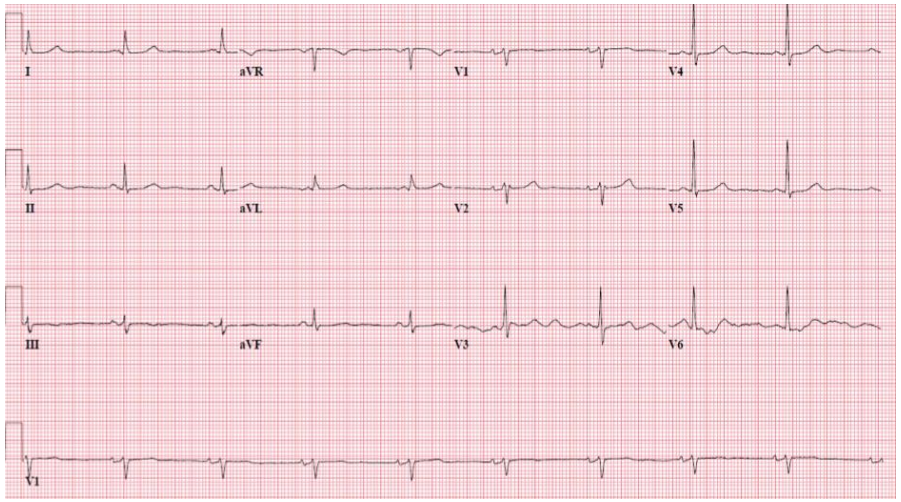
Chest CT scan revealed right upper lobe focal infectious bronchiolitis, and she tested positive for COVID-19 by PCR. She was not hypoxemic. While in the emergency department she was found to be in new onset atrial fibrillation with rapid ventricular rate (AF-RVR) with a heartrate of 150 BPM. She had no previous history of cardiac disease before this admission. Cardiology was consulted and she was initially started on amiodarone and apixaban, but she continued to have difficulty controlling her heartrate with intermittent AF-RVR and was admitted for medication adjustment.

She was not a candidate for Decadron or Remdesivir due to adequate oxygen saturation. She was treated with supportive measures. A TTE was performed which showed normal ejection fraction and mid left ventricular hypertrophy. A troponin level was negative. On hospital day four she was medically cleared for discharge after achieving normal sinus rhythm with combination therapy of metoprolol succinate, amiodarone, and apixaban. She was to follow cardiology as an outpatient.

EKG AT ADMISSION



EKG AT DISCHARGE



DISCUSSION

While multiple research studies show a probable link to an acute COVID-19 infection and associated cardiac complications, the primary mechanism behind this remains unclear. Typically, those who develop new-onset atrial fibrillation are elderly and have at least one risk factor such as hypertension. Some studies suggest a link via the ACE2-related signaling pathways as ACE2 has been previously identified as a functional receptor for coronaviruses. Hypoxemia is another potential explanation for new onset atrial fibrillation, but as this case study shows this is not always the case.

While research is still ongoing to the definitive link between an acute COVID-19 infection and new onset atrial fibrillation, the fact remains that these patients need to be properly worked up and treated for their atrial fibrillation. Medications for rhythm and rate control are paramount as is anticoagulation therapy to decrease the risk of clotting and CVA. Regular follow up with a cardiologist for continued management is also crucial for better long-term outcomes.

CONCLUSION

A thorough cardiac workup is necessary in any patient that presents with a positive COVID-19 infection. Patients with an acute COVID-19 infection are likely to have an increased risk of atrial fibrillation, and other studies show an acute infection being linked with worsening of preexisting atrial fibrillation. If untreated, this may lead to long term consequences such as potential need for long-term anticoagulation and increased risk of CVA.

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