



# COVID-19 Patient Presenting as Complete Heart Block - A Case Report

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## Abstract

COVID-19 is the clinical manifestation of infection with Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), first reported from China in 2019 which has now affected more than 6 million individuals across the world with more than 0.4 million deaths. We present a mid aged female who arrived to the hospital after syncope with GTCS.

## Case Report

A 46-yrs-old female presented to Emergency department with sudden onset of Syncope associated with Stokes Adams Syndrome. Upon arrival, the patient was drowsy and following verbal commands. She had history of fever and cough 1 week back lasting for 2 days for which she took symptomatic treatment locally. She has no chest pain, shortness of breath or palpitations. She neither had history of recent travel outside of the state or internationally, nor had a contact with persons of such history. She has no past history of similar episodes. On examination, heart rate was 30 bpm, BP 100/60 mmHg, SpO<sub>2</sub> - 92%. ECG showed Complete Heart Block with RBBB morphology (Figure 1). She was administered Inj. Atropine 0.6 mg as IV bolus dose after which no heart rate response noted. While performing Echocardiography, she had a cardiac arrest and Immediate CPR was initiated as per ACLS protocol.

She was intubated and airway secured and supported with bag and mask ventilation. CPR was continued. After 5 cycles of CPR, ROSC achieved. Bedside 2D Echo in Emergency department showed Normal sized cardiac chambers and normal Valves with No Regional Wall Motion Abnormality with Normal EF (60%) (Figure 2 and Figure 3). Subsequently patient was adequately sedated and was on to Transcutaneous Pacing with heart rate set at 80 bpm, there after patient had a pacing rhythm but BP did not improve accordingly. An ABG was done which was grossly within normal limits except a slight increase in Lactates. As a routine COVID-19 screening protocol before TPI (temporary pacemaker implantation) placement a bedside chest X-ray (Figure 4) was done which was suggestive of bilateral ARDS.

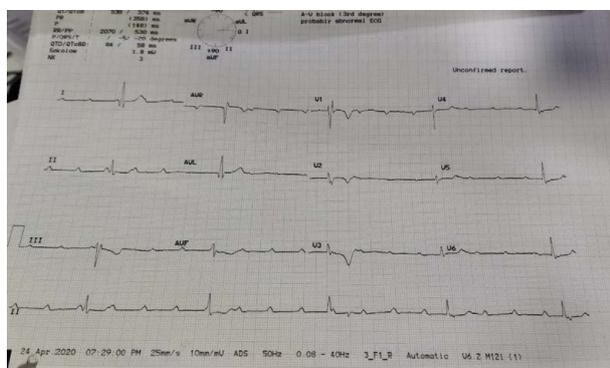


Figure 1: ECG - Complete Heart Block with RBBB morphology, HR 30 b/min.



Figure 2: Four chamber Echo in Systole with no RWMA.

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On the basis of Clinical presentation, patient coming from a COVID positive prevalence zone in the city, miscorrelating Chest x-ray with Echo and ECG findings in the present COVID-19 pandemic situation and a high suspicion of variable presentation of COVID-19 patients and as ours being Non-COVID hospital, the patient

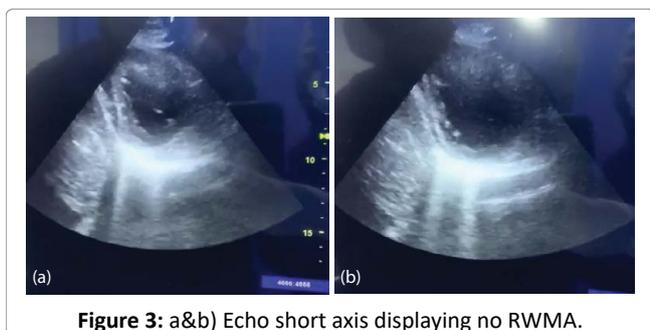


Figure 3: a&b) Echo short axis displaying no RWMA.

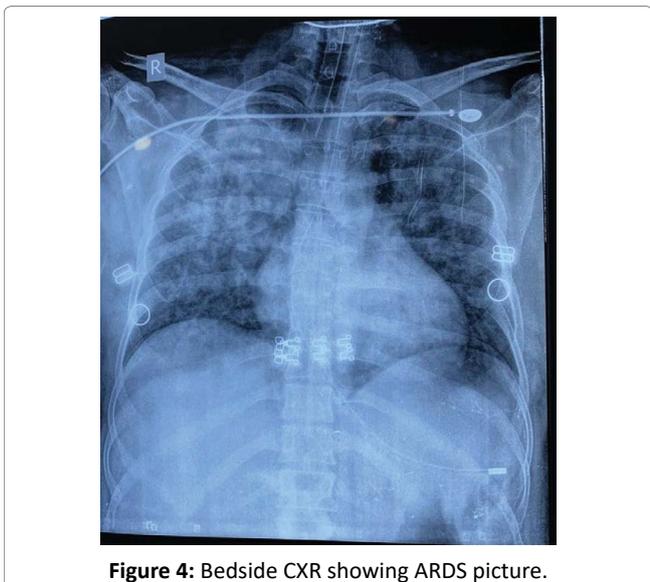


Figure 4: Bedside CXR showing ARDS picture.

was referred to a COVID treating hospital for further management where patient was declared dead and subsequent swabs sent for COVID-19, came positive.

## Discussion

COVID-19 is a novel Corona virus disease first reported from Wuhan, China in 2019 which has now affected more than 3.5 million individuals across the world with more than two hundred thousand deaths. COVID-19 is the clinical manifestation of infection with Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) amidst this global pandemic, maintaining a high index of suspicion, rapid testing capacity, and infection control measures are required to curtail the virus' rapid spread.

A 2020 report by the China Medical Treatment Expert Group for COVID-19 showed the spectrum of clinical and diagnostic features associated with SARS-

CoV-2 infection among Chinese patients. The most common symptoms were fever (in up to 88.7% of patients during hospitalization) and cough (in 67.8% of patients), followed by dry cough, headache, fatigue, or shortness of breath. Complications were mostly related to pneumonia (91.1%) and acute respiratory distress syndrome [1]. However, less is known about the cardiac involvement as a complication of SARS-CoV-2 infection. In another bigger cohort study of 416 patients [2], cardiac injury occurred in 19.7% of patients during hospitalization. As we learn more, it's clear that COVID-19 can be just a great invader which is evident by its different presentations involving multiple systems rather than Respiratory alone. It can be a gastrointestinal disease causing only diarrhea and abdominal pain [3,4]. It can cause symptoms that may be confused with a cold or the flu. Whole-body rashes or redness in just a few spots were some of the dermatological presentations.

In a more severe disease, doctors have also reported people having cardiac arrhythmias, heart failure, renal dysfunction, confusion, headaches, seizures, Guillain-Barre syndrome, and fainting spell [4]. One study by A. N. Kochi, *et al.* found that dysrhythmias were present in 17% of hospitalized and 44% of ICU patients with COVID-19 [5]. Hypotension, cardiac arrhythmias, and even sudden cardiac death (SCD) were described as possible SARS-CoV manifestation [6,7].

Alternatively, SARS-CoV-2 could trigger an exaggerated inflammatory response that can cause myocardial injury, and this could justify the use of corticosteroids to attenuate inflammation [8]. Early findings, including those from autopsy and biopsy reports, show that viral particles can be found not only in the nasal passages and throat, but also in tears, stool, the kidneys, liver, pancreas, and heart.

In a recent study by Goyal, *et al.* [9], examining the clinical characteristics of first 393 consecutive patients with COVID-19 admitted in 2 hospitals in Manhattan, 7.4% of patients had cardiac arrhythmias during hospitalization. Although the type of arrhythmias was not described in these reports, both tachy- and brady-arrhythmias can occur. In another study of 187 COVID-19 patients by Guo, *et al.* the overall incidence of ventricular tachycardia/fibrillation was 5.9% and was notably more common in patients with myocardial injury compared with those without (17.3% vs. 1.4%,  $p < 0.001$ ) [10].

To the best of our knowledge, this is the first case presenting as CHB (syncope) as a presenting complaint to emergency room. Subsequent evaluation showed COVID-19 with cardiac conduction system involvement (Figure 5). Exact mechanism of cardiac conduction system involvement is not known. Probably direct

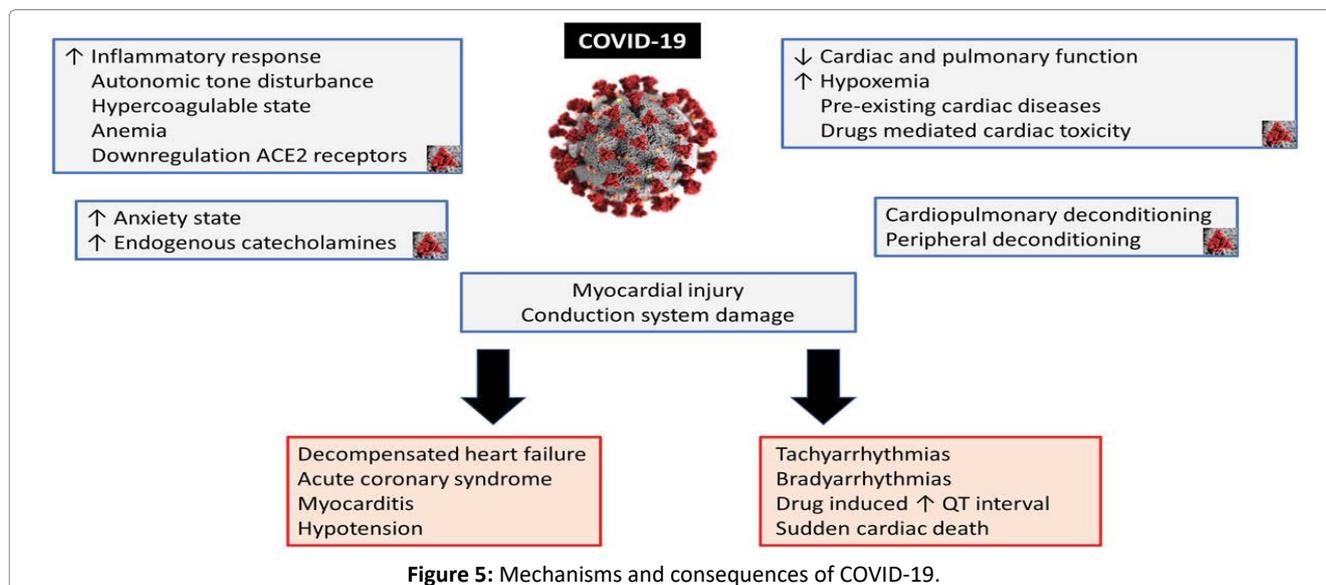


Figure 5: Mechanisms and consequences of COVID-19.

SARS-CoV-2	Huang, <i>et al.</i>	41	Shock (7%)	Elevated in 12.2%	15%
	Wang, <i>et al.</i>	118	Arrhythmia (16.7%)	Mean 6.4 pg/mL	4.3%
			Shock (8.7%)		
			Acute cardiac injury (7.2%)		
	Shi, <i>et al.</i>	416	Chest pain (3.4%)	Elevated in 19.7%	13.7%
			ST-depression on ECG (0.7%)		
	Zhou, <i>et al.</i>	191	HF (23%)	Elevated in 17%	28.2%
			Hypotension (1%)		
			HR > 125 bpm (1%)		
	Guo, <i>et al.</i>	187	VT/VF (5.9%)	Elevated in 27.8%	23%

cardiac toxicity secondary to cytokine storm involving conduction system. One case report from Iran showed the development of transient CHB during hospitalization in a COVID-19 patient [11]. The most common arrhythmia overall in patients with COVID-19 is sinus tachycardia, but the most likely pathologic arrhythmias include atrial fibrillation, atrial flutter, ventricular tachycardia, sinus bradycardia, variable degree of heart block including complete heart block.

## Conclusion

Although the exact mechanism of cardiac injury needs to be further explored, cardiovascular presentations are common conditions among hospitalized patients with COVID-19 in the present global pandemic with variety of cardiovascular presentations such as myocarditis, acute coronary syndromes, arrhythmias including tachy and bradyarrhythmias, decompensated Heart Failure and are associated with higher risk of in-hospital mortality. Our unique case underscores the increasing diversity of cardiovascular presentations in COVID-19 patients and potential for initial mis-diagnosis and delay in implementing proper precautions and management.

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