

## Case Report

# Colchicine for pericarditis due to COVID-19: a case report

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## ABSTRACT

The pericardium is a fibroelastic sac made up of visceral and parietal layers separated by a (potential) space, the pericardial cavity. The most troublesome complication of acute pericarditis is the development of recurrent episodes of pericardial inflammation, occurring in 15% to 32% of cases. Therapeutic modalities are nonspecific and include non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids. Here we present a case of a patient presenting with pericarditis due to COVID-19. He was successfully treated with colchicine. To our knowledge acute pericarditis due to severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) might be an under diagnosed condition in this pandemic. We want to share our findings, given the urgent need for different diagnostic and therapeutic strategies in order to better manage COVID-19 patients, and diminish the SARS-CoV-2 complications.

**Keywords:** COVID-19, Pericarditis, Colchicine

## INTRODUCTION

Acute pericarditis refers to inflammation of the pericardial sac. In healthy individuals, the pericardial cavity contains 15 to 50 ml of an ultrafiltrate of plasma. The term myopericarditis or perimyocarditis, is used for cases of acute pericarditis that also demonstrate myocardial inflammation; myopericarditis is used for cases with prevalent pericarditis and normal ventricular function; perimyocarditis is used for cases with prevalent myocarditis and/or if ventricular function is reduced.<sup>1</sup> The most troublesome complication of acute pericarditis is the development of recurrent episodes of pericardial inflammation, occurring in 15% to 32% of cases. Recurrent pericarditis is, in most cases, idiopathic. The pathophysiological process may involve the immune system: high titers of anti-myocardial antibodies have been found in post-open heart surgery patients with acute pericarditis. Therapeutic modalities are nonspecific and

include non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids. Relapses may also occur during reduction of drug doses (incessant pericarditis) or at varying intervals after discontinuation of treatment (recurrent pericarditis). The optimal method for preventing recurrences has not been established. Because treatment is often difficult and recurrences may occur over a period of many years.<sup>2-11</sup>

The etiology of acute pericarditis is highly variable, when no cause is identified, it is usually assumed to be viral or immunomodulated. In these patients, colchicine has demonstrated to reduce symptoms, decreasing the leukocyte motility and phagocytosis observed in inflammatory responses, and is generally well tolerated. Poor prognostic factors include the presence of a large pericardial effusion, tamponade, myopericarditis, high C-reactive protein (CRP) or lack of response to colchicine. Therefore, when acute pericarditis is suspected, it is mandatory to obtain an electrocardiography (ECG), a

blood test with inflammatory and myocardial injury parameters and a transthoracic echocardiography.

There is growing literature regarding the affection of the cardiovascular system in COVID-19 infection. Cardiac injury (troponin I elevation, ECG and ECG abnormalities) across different studies, which is around 7.2% of the patients, whereas arrhythmia was found in 16.7%.

In another study, 83 patients with severe and critical COVID-19 infection underwent a computed tomographic (CT) scan, chest pain was reported in 6% of the patients and pericardial effusion was found in 4.8%, which suggest that acute pericarditis could be an under diagnosed pathology, and therefore, not correctly managed and treated. Continued observations of the cardiovascular complications of the disease are needed.

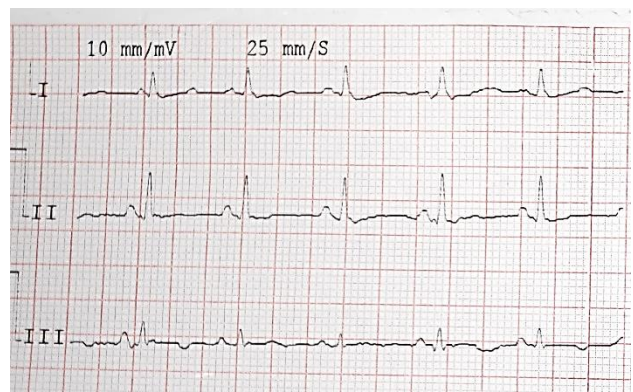
Point of care ultrasonography (POCUS) is a fast, cost-effective and safe tool performed by the physician in charge of the patient, which allows diagnosing and monitoring non-specific symptoms in order to rule out urgent conditions. As resources become scarce, the findings in this report raise the question as to whether home POCUS, could be effectively established a means of extending hospital capacity in borderline patients as a novel care path, and in these patients diagnosed with acute pericarditis, colchicine could be a potential therapy worth to be initiated.

To our knowledge acute pericarditis due to severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) might be an under diagnosed condition in this pandemic. We want to share our findings, given the urgent need for different diagnostic and therapeutic strategies in order to better manage COVID-19 patients, and diminish the SARS-CoV-2 complications.<sup>12-17</sup>

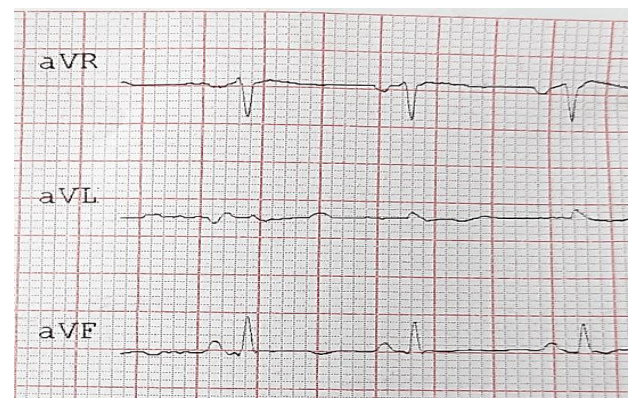
**CASE REPORT**

We present a case of a 67 years old male patient, presenting on the third day of symptom onset with worsening shortness of breath, fever with chills and cough with expectoration. He was a known hypertensive on regular treatment with angiotensin receptor blockers. On admission his pulse rate was 88 per minute, blood pressure was 146 mm Hg systolic and 82 mm Hg diastolic, his oxygen saturation was maintained at 95 percent on a Hudson mask at 6 litres per minute. He was diagnosed with novel COVID-19 infection via reverse transcriptase-polymerase chain reaction (RT-PCR) with a cycle threshold of 23. He was started on anticoagulation, remdesivir, steroids, multivitamins and vitamin C along with ongoing supportive care. On the third day of admission his pulse rate decreased to 56 per minute. It stayed in the range of 54-58 for the next 12 hours. His oxygen requirement had increased and he now needed noninvasive ventilator support. His inflammatory markers (CRP and ferritin) had doubled. The patient complained of chest tightness but no pain was reported. A complete

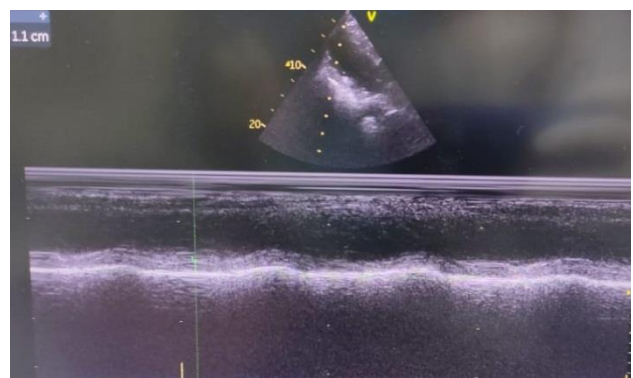
electrolyte profile along with other organ function assessment and a complete haemogram was done and all came within the normal range. His electrocardiogram is shown in Figures 1 and 2 and as shown below it had generalized t wave changes. A cardiac biomarker profile consisting of cardiac troponins, creatine kinase - MB and n terminal brain natriuretic profile also turned out normal. A transthoracic ECG was done which showed a rim of pericardial fluid in the four chamber and short axis views as evident in Figure 3. Other findings on the ECG were within normal limits. With the available evidence the patient was started on tablet colchicine 0.5 mg twice a day.



**Figure 1: ECG showing t wave changes.**



**Figure 2: ECG showing t wave changes.**



**Figure 3: Pre colchicine echocardiographic image showing a pericardial rim of 1.1 centimeters.**

The subsequent course remained uneventful for the next 48 hours. His pulse rate started increasing 40 hours after starting colchicine and his complaint of chest tightness resolved too. By 60 hours his pulse had stabilized at 84 to 90 per minute. The ECG was repeated which showed a reduction in the pericardial rim size from 1.1 centimetres initially to 0.6 centimetres as evident in Figure 4. He was continued on the above mentioned medications for another 4 days and a full course of remdesivir was completed as well. The patient was on a decreasing oxygen support by day 9 and was planned to be shifted out of the intensive care unit (ICU) the next day.



**Figure 4: Post colchicine echocardiographic image showing reduction in the pericardial rim from 1.1 centimeters to 0.6 centimeters.**

## DISCUSSION

Acute pericarditis is usually self-limiting, although it recurs in up to 30% of cases. Most patients recover in 2–4 weeks with supportive measures, which would conventionally include non-steroidal anti-inflammatory drugs (NSAIDs), colchicines and treating the causative disease. Applying this to a patient with COVID-19 requires balancing this conventional approach with an emerging understanding of pharmacotherapy in COVID-19. Colchicine inhibits microtubule, cell adhesion molecule and inflammasome activity and is of use in preventing relapse in pericarditis at first presentation. It is being trialled as a potential therapeutic anticytokine agent in COVID-19 in Italy, with one report of its use being associated with improvement. Conversely the use of NSAIDs in COVID-19 may be harmful, with previously recognised increased risks of stroke and myocardial infarction (MI) with NSAIDs in acute respiratory infections raising concerns.<sup>18-30</sup>

Currently, our understanding of the transmission dynamics and the spectrum of clinical illness of COVID-19 is limited. Cardiac involvement with various ECG presentations is possible and clinicians all across the globe need to be aware of this possibility. This case highlights the importance of recognizing COVID-19 infection with atypical clinical presentations such as pericarditis and non-specific ECG changes and coordination with the healthcare team regarding prompt management and if

needed, early hospitalisation. This case report is helpful in treating patients with this unique clinical presentation. Multiple randomized controlled trials are needed before this can be recommended to all patients.

## CONCLUSION

Pericarditis is a potential presentation of COVID-19. COVID-19 can have an atypical presentation with non-respiratory symptoms. Recognition of an atypical symptom of COVID-19 allows for early isolation and limits the spread.

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