Cardiology in the Young

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Successful treatment of two cases of acute myocarditis with colchicine

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Brief Report

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Abstract

Colchicine is an FDA-approved medicine that has been used for many years to prevent and treat gout flares as well as familial mediterranean fever. It is also used off-label to treat pericarditis, calcium pyrophosphate illness, and Behçet's syndrome. There are additional studies on the use of colchicine, which is accepted as the standard treatment for pericarditis in adults, post-pericardiotomy syndrome, post-operative and post-ablation atrial fibrillation, coronary artery disorders, prior to percutaneous coronary procedures, and myocarditis. Colchicine appears to be a promising oral cardiovascular treatment targeting the inflammatory axis, owing to its low cost and moderate side-effect profile. Our aim is to emphasise that colchicine treatment, which has a strong and effective anti-inflammatory effect profile, should be kept in mind in addition to conventional treatment in childhood myocarditis.

Case I

Eleven-year-old patient was admitted to our centre with complaints of palpitations and chest pain. No pathological changes were found on electrocardiography. Echocardiography revealed normal left ventricular function and no pericardial effusion. Ambulatory ECG monitoring showed <1% isolated uniform, effort-suppressed ventricular extrasystoles and one episode of non-sustained ventricular tachycardia. It was learnt that his mother had a diagnosis of COVID infection 4 months ago, and the patient had upper respiratory tract infection 1 week ago. Troponin-T: 139 ng/L (0–14) was detected in laboratory tests. Myocarditis was considered with the current history, clinical, physical examination, and laboratory findings, and the patient was admitted to the paediatric cardiology department and non-steroidal anti-inflammatory therapy (ibuprofen) and propranolol treatment was started. Cardiac MRI was performed and revealed T2A hyperintense areas of pathologic contrast enhancement in the left ventricle's anterolateral and inferolateral walls (myocarditis) (Fig 1). Based on the current paediatric literature data, ibuprofen was ceased and colchicine (0.5 mg/dose, two doses) treatment was started. The patient's chest pain improved rapidly after colchicine treatment was started. Troponin T levels declined in the follow-up. Gastrointestinal side effects (nausea, vomiting, diarrhoea) were not observed. The patient was discharged on the eighth day of hospitalisation with the recommendation of bed rest to continue colchicine treatment as an outpatient. Colchicine treatment was discontinued after 4 months. No pathological signal change or contrast enhancement was observed on control cardiac MRI at the fifth month after treatment.

Case II

A 12-year-old female patient was admitted to our hospital with the complaint of chest pain. The troponin-T value was found to be 54 ng/L. Echocardiography revealed normal myocardial function and no pericardial effusion. Electrocardiography revealed a four-beat episode of non-sustained ventricular tachycardia. Considering the current data, the patient was diagnosed with myocarditis. Ibuprofen was established as a non-steroidal anti-inflammatory drug and propranolol was added for ventricular tachycardia episodes. Cardiac MRI was planned and examination revealed contrast agent uptake and oedema in the inferolateral midapical segment of the left ventricular myocardium and was interpreted in favour of myocarditis. Colchicine (0.5 mg/dose, two doses) were started in accordance with MRI results. The patient who had no additional complaints under the current treatment was discharged on the 5th day of hospitalisation with the recommendation of bed rest to continue colchicine treatment as an outpatient. Colchicine treatment was ceased after 4 months. No pathological signal change or contrast enhancement was observed on control cardiac MRI taken at the 4 months after treatment.

Discussion

Inflammation is a major contributor to the development of cardiovascular illnesses, and anti-inflammatory medications may improve outcomes of these diseases. Colchicine has long been

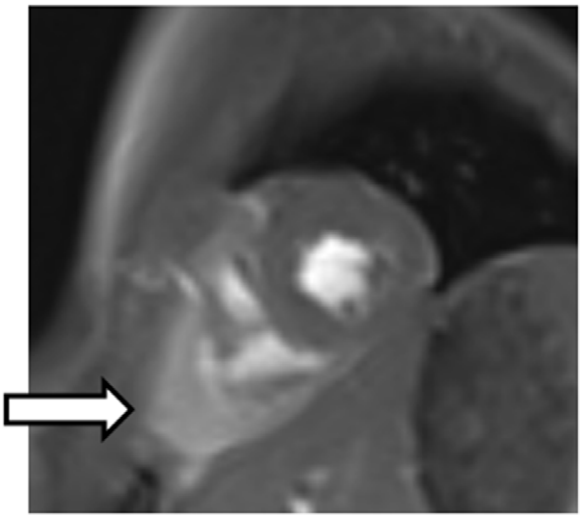

Figure 1. T2A hyperintense areas of pathologic contrast enhancement in the anterolateral and inferolateral walls of left ventricle in the evaluation by Cardiac MRI.

used as a safe and well-tolerated treatment for conditions including gout and familial Mediterranean fever. However, the widely accessible treatment includes various anti-inflammatory properties that have been shown to be useful in a wide range of cardiovascular disorders.[1] Colchicine, which is accepted as the standard treatment for pericarditis in adults, post-pericardiotomy syndrome, post-operative and post-ablation atrial fibrillation, coronary artery disorders, prior to percutaneous coronary procedures, and myocarditis are the less utilised indications.[2]

Colchicine is occasionally used to treat myocarditis; however, results from research on adults and children show that it is also effective in treating the condition. In an animal experiment conducted by Pappritz et al. in 2022, it was observed that initiation of colchicine treatment in the early period of viral infection was associated with a decrease in splenic NLRP3 inflammasome activity, less immune cell infiltration in the myocardium, and consequently higher left ventricular function.[3] In an oral presentation by Morgernstern et al. at the Nineteenth Cardiovascular Magnetic Resonance Society meeting, in a study involving 48 myocarditis patients with pre- and post-treatment MRI data, 27 patients received colchicine treatment and 17 (63%) had complete recovery of myocarditis findings on MRI, while 8 (38%) of 21 patients who did not receive colchicine treatment had recovery of myocarditis findings on MRI.[4]

After the use of the m-RNA immunisation for COVID-19, reports on the use of colchicine in paediatric myocarditis have become increasingly common in the literature. In a study conducted by Truong et al. in 2022 on myocarditis cases after the administration of Covid-19 m-RNA vaccines, colchicine treatment was given in 11 of 139 patients. Colchicine was used due to pericardial involvement and suspicion of myopericarditis.[5] In another study evaluating myocarditis cases after Covid-19 vaccination, colchicine and ibuprofen were used together in six patients. four patients were evaluated as myocarditis, two patients as myopericarditis and no involvement was detected on cardiac MRI in any patient after 3 months of treatment.[6]

Conclusion

More than 50% of cases of myocarditis are idiopathic, and it is considered that immunological responses following viral infection cause it to emerge. Colchicine, an anti-inflammatory medicine that has been in use for long time and has been used to treat a variety of inflammatory conditions such familial Mediterranean fever, Behçet's disease, gout, and pericarditis, can also be prioritised for treating myocarditis in children.

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Conflict of interest. None.

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