

# Myopericarditis as an Extra-Intestinal Manifestation of Crohn's Disease: A Case Report

Surya Chennupati <sup>1</sup>, Rohan Prasad <sup>1\*</sup>, Tyler Kemnic <sup>1</sup>, Abdullah Al-abcha <sup>1</sup>, Manel Boumegouas <sup>2</sup>, Shilpa Kavuturu <sup>1</sup>

<sup>1</sup>Department of Internal Medicine, Michigan State University, Lansing, MI

<sup>2</sup>Department of Cardiology, Michigan State University, Lansing, MI

\*Corresponding Author: Rohan Prasad, Department of Internal Medicine, Michigan State University, Lansing, MI

Received Date: November 30, 2021; Accepted Date: December 31, 2021; Published Date: January 07, 2022

Citation: Surya Chennupati, Rohan Prasad, Tyler Kemnic, Abdullah Al-abcha, Manel Boumegouas., et al (2022). Myopericarditis as an Extra-Intestinal Manifestation of Crohn's Disease: A Case Report. *J. Clinical Cardiology and Cardiovascular Interventions*, 5(1); DOI:10.31579/2641-0419/241

Copyright: © 2022 Rohan Prasad, This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Abstract

**Introduction:** Myopericarditis is an uncommon manifestation of Crohn's disease. Interestingly enough, it can present in a patient without any acute bowel symptoms.

**Case Presentation:** A 21-year-old male with a medical history of Crohn's disease and eosinophilic esophagitis presented to the hospital with chest pain and fever. Blood work revealed elevated troponin, C-reactive protein, and sedimentation rate levels. Electrocardiogram (EKG) showed diffuse ST elevation in all leads. Transthoracic echocardiogram (TTE) demonstrated a small pericardial effusion without valvular abnormalities. The patient was diagnosed with myopericarditis. Extensive etiological workup was negative, in the absence of other explanations, it was attributed to his Crohn's disease. The patient was started on colchicine and ibuprofen. Out-patient follow-up revealed resolution of symptoms.

**Conclusion:** This case reports the rare occurrence of myopericarditis and Crohn's disease. Inflammatory bowel disease as a cause of myopericarditis has been reported in some cases within the literature; however, there is no definitive mechanism known.

**Keywords:** myopericarditis; crohn's disease; extra-intestinal

## Abbreviations

**EKG:** electrocardiogram

**IBD :** inflammatory bowel disease

**TTE :** Transthoracic echocardiogram

## Introduction

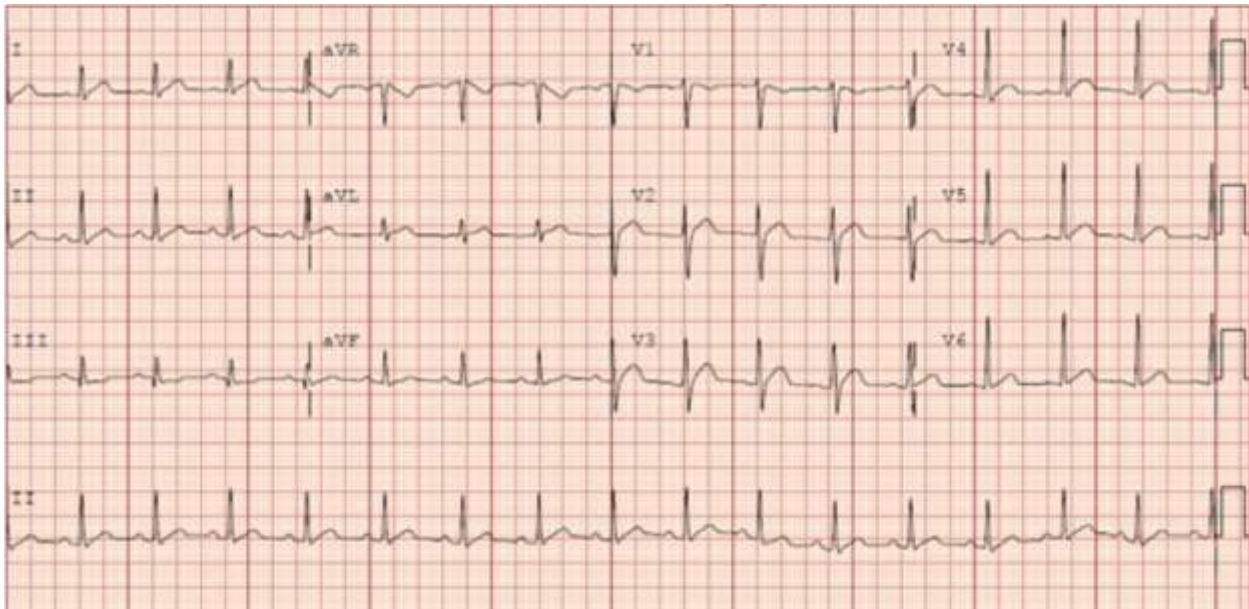
Myopericarditis is defined as inflammation of the pericardium with myocardial involvement.[1] Viral infections are considered the most common etiology of the disease.[2] While uncommon, myopericarditis has been associated as an extra-intestinal manifestation of Crohn's disease.[3,4,5] Myopericarditis can present without acute bowel manifestations of Crohn's disease.[6] This case report was prepared following the CARE guidelines [7].

## Case Narrative

A 21-year-old male with a medical history of Crohn's disease and eosinophilic esophagitis presented to the emergency department with

chest pain, fever, and difficulty breathing. His Crohn's disease has been controlled with vedolizumab and azathioprine for two years prior to presentation. He had no significant past surgical, social, or family history. His chest pain was sharp, located beneath the bilateral lower ribcage, worsened with deep breaths, and improved by leaning forward. His symptoms started one day prior to presentation. On presentation, his vital signs showed a temperature of 103 Fahrenheit, heart rate of 103 bpm, but otherwise normal. Cardiopulmonary auscultation revealed an S3 gallop without a pericardial friction rub.

On admission, laboratory work-up revealed a troponin level of 0.13 ng/mL that trended to 17.74 ng/mL, C-reactive protein of 3.3 mg/dL that trended to 5.8mg/dL, and sedimentation rate of 11 that trended to 18 mm/h. The patient had a normal white blood cells count and brain natriuretic peptide. The polymerase chain reaction was negative when the nasopharyngeal specimen was tested for influenza A, influenza B, group A streptococcus, and group C/G streptococcus. Viral serology was negative for Coxsackie A virus, Coxsackie B virus, Adenovirus, Echovirus, Cytomegalovirus, and Epstein Barr virus. Electrocardiogram (EKG) showed diffuse ST elevation in the anterolateral leads (Figure 1).



**Figure 1:** Electrocardiogram on presentation showing diffuse ST elevation in anterolateral leads

Computed tomography angiogram of the chest showed no evidence of pulmonary embolism, thoracic aortic disease, pneumothorax, mediastinal

lymphadenopathy, or pulmonary infiltrates. Transthoracic echocardiogram (TTE) showed an ejection fraction of 55% with a small pericardial effusion (Figure 2).



**Figure 2:** Transthoracic echocardiography demonstrating a small pericardial effusion

The patient was diagnosed with myopericarditis. After consulting with the patient's gastroenterologist, it was decided that the benefits of a fourteen-day non-steroidal anti-inflammatory with Crohn's disease outweighed the risks. The patient was then discharged on colchicine (0.6 mg twice daily) alongside ibuprofen (600 mg thrice daily) and was instructed to return if

his symptoms worsened or did not resolve. Repeat TTE and pericardial/endomyocardial biopsy were discussed with the patient, but due to the resolution of symptoms with medical management, the patient declined further investigations. During follow-up appointments with his primary care physician, the patient did not report a recurrence of these symptoms (Table 1).

Table 1: Timeline			
Relevant Past Medical History and Interventions A 21-year-old male with a medical history of Crohn's disease and eosinophilic esophagitis.			
Date	Summaries from Initial and Follow-up Visits	Diagnostic Testing	Treatment
6/24/2017	The patient presented to the emergency department with chest pain, fever, and difficulty breathing.	<p>-103 F, 103 bpm -S3 gallop without pericardial friction rub</p> <p>-1st troponin 0.13 ng/mL (reference range 0.00-0.03) -1st C-reactive protein 3.3 mg/dL (reference range 0.0-1.0) -sedimentation rate of 18 mm/h (reference range 0-15) -Lactic 1.0 mmol/L (reference range 0.2-1.8) -WBC 6.5 10<sup>3</sup>/uL (reference range 4.0-12.0) -Potassium 3.4 meq/L (reference range 3.5-4.9) -D-Dimer 0.53 mg {FEU}/L (reference range 0.00-0.50) -B-natriuretic peptide 34 pg/mL (reference range 0-100)</p> <p>Chest x-ray: No acute process was noted Electrocardiogram: Diffuse ST elevation in anterolateral leads -Computed tomography angiogram of the chest: no evidence of pulmonary embolism, thoracic aortic disease, pneumothorax, mediastinal lymphadenopathy, or pulmonary infiltrates.</p> <p>-Negative polymerase chain reaction for influenza A, influenza B, group A streptococcus, and group C/G streptococcus -Negative viral serology for Coxsackie A virus, Coxsackie B virus, Adenovirus, Echovirus, Cytomegalovirus, and Epstein Barr virus</p>	<p>-Started colchicine -Started colchicine (0.6 mg twice daily) -Started ibuprofen (600 mg thrice daily) for 14 days</p>
6/25/2017		<p>-2nd troponin 1.09 ng/mL (reference range 0.00-0.03) -3rd troponin 17.74 ng/mL (reference range 0.00-0.03) -2nd CRP 5.8 mg/dL (reference range 0.0-1.0)</p> <p>-Transthoracic echocardiogram: ejection fraction of 55% with a small pericardial effusion</p>	-Discharged home on colchicine and ibuprofen

## Discussion

The term myopericarditis indicates a primary pericarditic syndrome with myocardial involvement.[2] It is precipitated by multiple etiologies including infections, malignancy, and autoimmune diseases. Viral infections are the most common etiology.[2] The differential diagnosis of myopericarditis is broad. Viral etiologies were excluded by negative viral serologies. Bacterial pericarditis is very rare in developed nations. Neoplastic etiologies were unlikely due to the patient's age, clinical presentation, lack of risk factors, and lack of other signs or symptoms associated with malignancies. Autoimmune etiology was high on the differential due to the patient's age and his history of Crohn's disease. The presence of two or more out of the following features are needed for the diagnosis of acute pericarditis: chest pain, pericardial friction rub, EKG changes of diffuse ST elevation or PR depression, and pericardial effusion.[8] The clinical diagnosis of myopericarditis requires establishing the diagnosis of pericarditis at first, in addition to elevation

of cardiac markers and the absence of new-onset focal or global left ventricular wall motion abnormalities.[8]

Extra-intestinal manifestations of inflammatory bowel disease (IBD) are common and can present before or after the diagnosis of IBD.[9] Joints, eyes, and skin are the most commonly involved organs.[9] Cardiac involvement is rare in IBD, but can include pericarditis, myopericarditis, arrhythmias, and conduction disorders.[10] Pericarditis is the common cardiac complication of IBD.[11] The relative risk of myopericarditis in Crohn's is 8.3%.[12] Myopericarditis has been linked to IBD and specifically Crohn's disease in multiple case reports (Table 2). There are two proposed mechanisms to explain the relationship between myopericarditis and Crohn's disease. The first is an autoimmune-mediated inflammatory response against autoantigens and the second mechanism is related to the toxicity of 5-aminosalicylic acid and its derivatives.[13,14]

Cases	Age/ Sex	Cardiac Physical Exam	EKG	Troponin	Echocardiogram	Cardiac MRI	Treatment
Becker et al[15]	38/M	No gallops or rubs, 2/6 late systolic murmur heard throughout precordium	T wave inversions in leads I, II, AVL and V2-V6	Not done	Pericardial effusion	No	Steroids for 10 days
Hyttiinen et al[16]	37/F	No pericardial rub	ST elevation in anterior leads	Not done	Pericardial effusion	No	Steroids
Kumar et al[17]	37/M	Loud S1 and S2, grade II pansystolic murmur heard at apex, radiation to the axilla	ST elevation in leads I and aVL	1.82 to 7.21 (<0.4ng/ml)	Not done	Yes	Colchicine and Steroid taper for 10 days
Sikkens et al[18]	46/M	Exam not reported	Normal Sinus Rhythm	Not done	Unremarkable	No	Cardiac arrest and death before treatment

Myopericarditis without significant myocardial damage is treated similarly to acute pericarditis. For viral or idiopathic pericarditis, non-steroidal anti-inflammatory drugs are the treatment of choice, specifically ibuprofen at 1200-1800 mg daily for days to weeks. Colchicine has been shown to be helpful for acute and recurrent pericarditis as it can decrease the recurrence rate by 50%. Corticosteroids, initially used in the past, are now avoided due to the increased risk of future recurrences. Additionally, intravenous immunoglobulins are not used because of insufficient data to support their use.[2] A case report from 1981 illustrates how corticosteroids were the backbone of the treatment for myopericarditis.[15] A recurrent myopericarditis in 2003, however, was not able to be controlled despite treatment consisting of prednisone, azathioprine, and sulphasalazine.[16] Finally, a 2019 case of acute myopericarditis presented during a Crohn's flare-up, the treatment used was colchicine with an increase of the patient's home steroid dose, which resulted in symptomatic relief.[17] Based on current recommendations, we treated our patient with ibuprofen and colchicine.

## Conclusion

This case reports the rare occurrence of myopericarditis and Crohn's disease. Patients with IBD have been reported to present with myopericarditis; however, the definitive mechanism is unknown. Our patient was diagnosed with myopericarditis after a thorough investigation and diagnostic work-up. After discussing risks versus benefits, the patient was started on colchicine and ibuprofen, which saw a resolution in symptoms in two weeks. In conclusion, a wide differential should be made for patients who present with myopericarditis.

## Conflict of Interest

The authors have no conflicts of interest to disclose.

## Funding

No funding was sought in writing this case report.

## References

1. Imazio M, Trinchero R. The spectrum of inflammatory myopericardial diseases. *Int J Cardiol.* 2010. doi:10.1016/j.ijcard.2008.12.118
2. Imazio M, Trinchero R. Myopericarditis: Etiology, management, and prognosis. *Int J Cardiol.* 2008. doi:10.1016/j.ijcard.2007.10.053

3. Kumar M, Tandon V, Mosebach CM, Lopetegui Lia N, Miller W. Acute Myopericarditis with Crohn's Disease Flare-up. *Cureus.* 2019. doi:10.7759/cureus.4248
4. Hyttiinen L, Kaipainen-Seppänen O, Halinen M. Recurrent myopericarditis in association with Crohn's disease. *J Intern Med.* 2003. doi:10.1046/j.1365-2796.2003.01082.x
5. Sikkens ECM, Schreuder TCMA, Fronczek J, Mulder CJJ, Bouma G. Lymphocytic myopericarditis in a patient with previously undiagnosed crohn's disease. *Am J Gastroenterol.* 2010. doi:10.1038/ajg.2009.548
6. S BJ, Z DJ, C AM. Pericarditis as the initial manifestation of inflammatory bowel disease. *Chest.* 1994.
7. Riley DS, Barber MS, Kienle GS, Aronson JK, von Schoen-Angerer T, et al. CARE 2013 Explanation and Elaborations: Reporting Guidelines for Case Reports. *JClinEpi* 2017 Sep;89:218-235. doi: 10.1016/j.jclinepi.2017.04.026.
8. Imazio M, Cooper LT. Management of myopericarditis. *Expert Rev Cardiovasc Ther.* 2013. doi:10.1586/erc.12.184
9. Vavricka SR, Schoepfer A, Scharl M, Lakatos PL, Navarini A, Rogler G. Extraintestinal manifestations of inflammatory bowel disease. *Inflamm Bowel Dis.* 2015. doi:10.1097/MIB.0000000000000392
10. Vizzardi E, Sciatti E, Bonadei I, et al. Subclinical cardiac involvement in Crohn's disease and ulcerative colitis: An echocardiographic case-control study. *Panminerva Med.* 2016.
11. Aarestrup J, Jess T, Kobylecki CJ, Nordestgaard BG, Allin KH. Cardiovascular risk profile among patients with inflammatory bowel disease: A population-based study of more than 100 000 individuals. *J Crohn's Colitis.* 2019. doi:10.1093/ecco-jcc/jjy164
12. Sørensen HT, Fonager KM. Myocarditis and inflammatory bowel disease. A 16-year Danish nationwide cohort study. *Dan Med Bull.* 1997 Sep;44(4):442-4. PMID: 9377906
13. Bunu DM, Timofte CE, Ciocoiu M, et al. Cardiovascular manifestations of inflammatory bowel disease: Pathogenesis, diagnosis, and preventive strategies. *Gastroenterol Res Pract.* 2019. doi:10.1155/2019/3012509

14. Caforio ALP, Pankuweit S, Arbustini E, et al. Current state of knowledge on aetiology, diagnosis, management, and therapy of myocarditis: A position statement of the European Society of Cardiology Working Group on Myocardial and Pericardial Diseases. *Eur Heart J*. 2013. doi:10.1093/eurheartj/eh210
15. Becker SA, Wishnitzer R, Botwin S, Eliraz A, Bass DD. Myopericarditis Associated with Inflammatory Bowel Disease. *J Clin Gastroenterol*. 1981;3(3):267-70. doi:10.1097/00004836-198109000-00011.
16. Hyttinen L, Kaipainen-Seppanen O, Halinen M. Recurrent Myopericarditis in Association With Crohn's Disease. *J Intern Med*. 2003;253(3):386-8. doi:10.1046/j.1365-2796.2003.01082.x.
17. Kumar M, Tandon V, Mosebach CM, Lia NL, Miller W. Acute Myopericarditis With Crohn's Disease Flare-up. *Cureus*. 2019;11(3):e4248. Doi:10.7759/cureus.4248.
18. Sikkens ECM, Schreuder TCMA, Fronczek J, Mulder CJJ, Bouma G. Lymphocytic Myopericarditis in a Patient With Previously Undiagnosed Crohn's Disease. *Am J Gastroenterol*. 2010;105(1):236-7. Doi:10.1038/ajg.2009.548.



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here:

**Submit Manuscript**

DOI: [10.31579/2641-0419/241](https://doi.org/10.31579/2641-0419/241)

**Ready to submit your research? Choose Auctores and benefit from:**

- fast, convenient online submission
- rigorous peer review by experienced research in your field
- rapid publication on acceptance
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

At Auctores, research is always in progress.

Learn more <https://auctoresonline.org/journals/clinical-cardiology-and-cardiovascular-interventions>