OPEN ACCESS

Scholars Bulletin

Abbreviated Key Title: Sch Bull
ISSN 2412-9771 (Print) | ISSN 2412-897X (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Subject Category: Family Medicine

Atypical Presentation of Viral Myocarditis with Isolated Fatigue

Marwa Said Eldegwy[1], Badr Mahmoud Hassan Elshamy[2], Isra abbas[3], Nermeen Awad Alkarim Nurredeen Saleh[4*]

[1]Family Medicine Department, Al Mizher Health Center, Dubai, UAE
[2]Family Medicine Department, AlQusais Health Center, Dubai, UAE
[3]Gradualmmedical Education, Dubai, UAE
[4]Family Medicine Department, Umm Suqeim Health Center, Dubai, UAE

DOI: https://doi.org/10.36348/sb.2024.v10i09.001 | **Received:** 27.09.2024 | **Accepted:** 31.10.2024 | **Published:** 04.11.2024

***Corresponding author:** Nermeen Awad Alkarim Nurredeen Saleh
Family Medicine Department, Umm Suqeim Health Center, Dubai, UAE

Abstract

Viral myocarditis is an inflammatory condition of the myocardium, often caused by viral infections. While the typical presentation includes chest pain, shortness of breath, and palpitations, fatigue as the primary symptom is unusual and presents diagnostic challenges. This report presents the case of a 39-year-old healthy male who complained of isolated fatigue and mild chest discomfort after experiencing flu-like symptoms. Initial workup revealed elevated troponin levels with abnormal ECG findings, raising concerns for myocardial involvement. Coronary angiography ruled out obstructive coronary artery disease, confirming the diagnosis of viral myocarditis. The patient responded well to anti-inflammatory and antithrombotic treatment, and no complications were observed during follow-up. This case highlights the importance of considering viral myocarditis in patients with vague symptoms, especially those with recent viral infections, to prevent delayed diagnosis and potential complications. Early identification and treatment are critical to ensure a favorable outcome.

Keywords: Viral Myocarditis, Fatigue, Chest Pain, Troponin, ECG Abnormalities.

INTRODUCTION

Viral myocarditis is often caused by infections such as Coxsackievirus, Influenza, SARS-CoV-2, and Adenovirus, among others. The clinical manifestations of myocarditis vary widely, from mild, self-limited symptoms to life-threatening cardiac complications such as arrhythmias or cardiogenic shock. Typical presentations include chest pain, dyspnea, and palpitations; however, atypical symptoms like fatigue may obscure the diagnosis.

The condition is often underdiagnosed, particularly when symptoms are subtle. In this case, the patient presented primarily with fatigue, posing a diagnostic challenge. Early identification is crucial, as untreated myocarditis can lead to heart failure or sudden cardiac death.

CASE PRESENTATION

History and Symptoms

A 39-year-old male with no significant past medical history presented to the primary healthcare clinic with fatigue and mild chest discomfort. The symptoms began one day prior and were preceded by flu-like symptoms (fever, sore throat). The patient reported no nausea, vomiting, abdominal pain, or shortness of breath.

He had no previous surgeries and was a non-smoker with no history of alcohol or recreational drug use. He regularly engaged in weight training and initially attributed his symptoms to muscle soreness. Family history was positive for ischemic heart disease, as his father had undergone multiple cardiac catheterizations.

Physical Examination

- **Blood Pressure:** 137/80 mmHg
- **Pulse Rate:** 58 bpm (mild bradycardia)
- **Oxygen Saturation:** 98% on room air
- **Temperature:** 36.5°C
- **Respiratory Rate:** 20 breaths/min
- **BMI:** 33.6 kg/m²

The patient was alert, well-appearing, and in no acute distress. Cardiovascular examination revealed normal heart sounds without murmurs or gallops. Lung auscultation was normal, and the neurological examination was unremarkable, with no focal deficits.

Recommended Investigations in Patients with Suspected Myocarditis Laboratory Investigations

- Full blood count (Eosinophilia may suggest eosinophilic myocarditis)
- Liver function tests
- Renal function and electrolytes
- C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR): Elevated ESR may indicate an inflammatory condition
- Plasma troponin/CK
- Serum brain natriuretic peptide (BNP)

Imaging/Other Investigations

- Chest X-ray
- Electrocardiography (ECG)
- Transthoracic echocardiography (TTE)
- Cardiovascular magnetic resonance imaging (CMR) with gadolinium-based contrast agents

BNP = brain natriuretic peptide; CK = creatine kinase; CMR = cardiovascular
magnetic resonance imaging; CRP = C-reactive protein; ESR = erythrocyte sedimentation rate.

Investigation	Particular instance(s) to consider the investigation (although testing should not necessarily be limited to these specific situations)
Thyroid function tests	Clinical features suggestive of hyperthyroidism
Serum angiotensin converting enzyme level	Suspicion of sarcoidosis
Drug screen	Suspicion of myocarditis secondary to illicit drug use
Plasma and 24-hour urine metanephrines	Fulminant myocarditis/cardiogenic shock (e.g., pheochromocytoma can cause a catecholamine-mediated myocarditis)
Nasopharyngeal swab for respiratory viruses PCR including influenza, SARS-CoV-2, adenoviruses, and enteroviruses	History of a possible recent viral illness
ASO titre and throat swab for bacterial culture	Possible current/recent streptococcal infection
Testing for *Mycoplasma pneumoniae* (by PCR ± serology)	Current/recent atypical pneumonia
Bloodborne virus screen (e.g., HIV, HBV, and HCV serology)	Identifiable risk factors, e.g., injecting drug use and/or abnormal liver function tests
Blood for EBV, CMV, and parvovirus B19 serology	Recent glandular fever-like illness and/or rash
Autoantibodies (ANA initially and then possible further autoantibody screening guided by the clinical picture)	Suspicion and/or family history of an autoimmune/inflammatory condition
Urine analysis with urinary sediment (to look for casts/crystals/cells)	Abnormal renal function and/or suspicion of an inflammatory condition with renal involvement, e.g., lupus nephritis
Borrelia serology	Suspicion of Lyme disease, e.g., recent erythema migrans rash or recent tick bite/recent visit to a forest/grassy area
FDG-PET	When CMR is contraindicated or inconclusive (to detect active myocardial inflammation/potentially identify extra-cardiac features of sarcoidosis/identify sites amenable to biopsy)
Endomyocardial biopsy	Specific cases where deemed by a cardiologist/multi-disciplinary team likely to impact on patient management

Investigations

1. Electrocardiogram (ECG):

T wave inversion in V1, III, and aVF

Incomplete right bundle branch block (RBBB)

2. Laboratory Results:

Summary of laboratory investigations shown in table 1.

Tabe 1: Laboratory Results

Component	Reference Range	10/8/2024	Result 2
WBC Count	3.6 - 11.0 x 10^3/uL	9.5	9.3
RBC Count	4.50 - 5.50 x 10^6/uL	4.78	4.75
Hemoglobin	13.0 - 17.0 g/dL	13.6	13.6
Hematocrit	40.0 - 50.0 %	40.9	40.3
MCV	77.0 - 95.0 fL	85.5	84.7
MCH	27.0 - 32.0 pg	28.5	28.7
MCHC	31.5 - 34.5 g/dL	33.3	33.9
RDW	11.5 - 14.0 %	14.4 (H)	14.5 (H)
Platelet Count	150 - 410 x 10^3/uL	266	257
MPV	7.4 - 10.4 fL	7.5	7.5
Neutrophil Absolute	2.00 - 7.00 x 10^3/uL	4.9	4.8
Lymphocytes Absolute	1.00 - 3.00 x 10^3/uL	3.70 (H)	3.50 (H)
Ferritin	30 - 400 ng/mL	472.0 (H)	—
C-Reactive Protein	<5.0 mg/L	58.0 (H)	—
Sodium	136 - 145 mmol/L	137	139
Potassium	3.3 - 4.8 mmol/L	4	4.4
Chloride	98 - 108 mmol/L	103	104
Bicarbonate (HCO3)	20 - 28 mmol/L	24.3	25.2
Urea	12 - 40 mg/dL	27	30
Creatinine	0.70 - 1.20 mg/dL	0.77	—
eGFR	>60 mL/min/1.73m^2	116.8	—
Troponin T	<14 ng/L	179 (H)	252 (H)
CKMB (Mass)	<6.23 ng/mL	16.0 (H)	—

3. Chest X-ray (CXR):

Prominent bronchovascular markings without consolidation or cardiomegaly.

4. Echocardiogram:

- Ejection fraction: 55-60% (normal)
- No regional wall motion abnormalities
- No pericardial effusion
- No valvular abnormalities or thrombus formation
- Hospital Course

The patient was transferred to the emergency department for further evaluation. Repeat ECGs confirmed persistent T wave inversion. His troponin levels rose from 179 ng/L to 252 ng/L, indicating myocardial injury. Cardiac catheterization ruled out obstructive coronary artery disease, confirming the diagnosis of viral myocarditis.

The patient was started on:

- Aspirin 600 mg
- Clopidogrel 300 mg
- Nitroglycerin (sublingual) 0.5 mg
- Paracetamol 1000 mg
- Upon stabilization, he was discharged with the following medications:
- Aspirin: 600 mg TID
- Clopidogrel: 75 mg once daily
- Atorvastatin: 80 mg daily
- Colchicine: 0.6 mg twice daily
- Enoxaparin: 80 mg subcutaneous, daily
- Pantoprazole: 40 mg twice daily
- The patient was instructed to follow up closely with cardiology and return if his symptoms worsened.

Causes of Myocarditis

Infectious Causes

- Viral, Adenoviruses, enteroviruses (including Coxsackieviruses), parvovirus B19, influenza, SARS-CoV-2, HIV-1
- Bacterial, Mycoplasma pneumoniae, spirochetes (e.g., Treponema pallidum, Borrelia burgdorferi), Staphylococcus spp., Streptococcus spp.
- Fungal, Aspergillus spp., Candida spp.
- Protozoal, Plasmodium spp., Toxoplasma spp.
- Helminth, Schistosoma spp., Toxocara spp.
- Rickettsial, Rickettsia rickettsiae, Coxiella burnetiid

Non-Infectious Causes

- Hypersensitivity/Allergic, Antibiotics, anticonvulsants, vaccines

- Systemic Inflammatory Disorders, Sarcoidosis, systemic lupus erythematosus, thyrotoxicosis, diabetes mellitus, inflammatory bowel disease
- Toxic Myocarditis, Amphetamines, cocaine, chemotherapy agents, radiation
- Autoreactive Causes, Giant-cell myocarditis, lymphocytic myocarditis
- Transplant Rejection, Heart transplantation, stem cell transplantation.

DISCUSSION

Viral myocarditis can present with non-specific symptoms like fatigue, making it difficult to diagnose. In this case, the absence of typical cardiac symptoms initially obscured the diagnosis. However, elevated troponin levels and ECG abnormalities directed further investigations.

The decision to perform cardiac catheterization was crucial in ruling out ischemic heart disease and confirming the diagnosis. The treatment involved anti-inflammatory and antithrombotic agents, which contributed to the patient's rapid recovery. Colchicine has gained attention for its potential role in reducing myocardial inflammation.

This case highlights the importance of a thorough evaluation in patients with recent viral illnesses and atypical presentations. It also underscores the role of multimodal investigations—including ECG, biomarkers, and imaging—to establish a definitive diagnosis.

CONCLUSION

This case emphasizes the need for healthcare professionals to maintain a high index of suspicion for viral myocarditis, especially in patients presenting with subtle or atypical symptoms like isolated fatigue following a viral illness. Delays in diagnosis can lead to life-threatening complications such as heart failure, arrhythmias, or sudden cardiac death.

A comprehensive diagnostic approach—including ECG, cardiac biomarkers, and imaging—plays a pivotal role in identifying myocardial involvement. In this case, the patient's prompt diagnosis and treatment using anti-inflammatory and antithrombotic agents ensured a favorable outcome.

The growing body of evidence, including the use of colchicine, highlights the evolution in managing myocarditis. This case illustrates the importance of considering viral myocarditis in atypical presentations to optimize outcomes and prevent complications through timely intervention.

REFERENCES

- Dennert, R., Crijns, H. J., & Heymans, S. (2008). Acute viral myocarditis. *European Heart Journal* [Internet]. [cited 2024 Oct 25]; *29*(17), 2073–82. Available from: https://academic.oup.com/eurheartj/article/29/17/2073/577040
- Temi, L., Durkin, S. M., Bhatt, N., & Guttmann, O. (2021). Acute myocarditis: aetiology, diagnosis and management. *Clinical Medicine* [Internet]. [cited 2024 Oct 25]; *21*(5), e505–10. Available from: https://pubmed.ncbi.nlm.nih.gov/34507935/
- Nguyen, J., Benites, C., Karpel, D., Akram, M., & Concepcion, L. (2024). Acute Viral Myocarditis in a Young Adult: A Case Report. *Cureus* [Internet]. [cited 2024 Oct 25]; Available from: https://pubmed.ncbi.nlm.nih.gov/39246964/
- Sozzi, F. B., Gherbesi, E., Faggiano, A., Gnan, E., Maruccio, A., Schiavone, M., ... & Carugo, S. (2022). Viral myocarditis: classification, diagnosis, and clinical implications. *Frontiers in cardiovascular medicine*, *9*, 908663. [cited 2024 Oct 25]; Available from: https://www.frontiersin.org/journals/cardiovascular-medicine/articles/10.3389/fcvm.2022.908663/full
- Brown, J., Rashid, H., Sarva, S. T., Tatapudi, S., Kalathoor, J., Srinivasan, A., ... & Raza, S. (2024). Case Report: Three cases of clinically suspected viral myocarditis with recovery of left ventricular dysfunction. *Frontiers in Cardiovascular Medicine*, *11*, 1345449.
- Pujowaskito, P., Tartila, T. S., Tafriend, N. A., & Jannah, F. D. K. (2021). C74. Post covid-19 cardiomyopathy in an adolescent patient: a case report. *European Heart Journal Supplements* [Internet]. [cited 2024 Oct 25]; *23*(Supplement_F). Available from: https://academic.oup.com/eurheartjsupp/article/23/Supplement_F/suab124.073/6432800?login=false
- Lasica, R., Djukanovic, L., Savic, L., Krljanac, G., Zdravkovic, M., Ristic, M., ... & Ristic, A. (2023). Update on Myocarditis: From Etiology and Clinical Picture to Modern Diagnostics and Methods of Treatment. *Diagnostics*, *13*(19), 3073. [cited 2024 Oct 25]; Available from: https://www.mdpi.com/2075-4418/13/19/3073
- Cooper, Jr. L. T., Keren, A., Sliwa, K., Matsumori, A., & Mensah, G. A. (2014). The Global Burden of Myocarditis: Part 1: A Systematic Literature Review for the Global Burden of Diseases, Injuries, and Risk Factors 2010 Study. *Global Heart* [Internet]. [cited 2024 Oct 25]; *9*(1), 121. Available from: https://www.sciencedirect.com/science/article/pii/S2211816014000192?via%3Dihub