Silent Chest, Loud Shoulder: Acute Myopericarditis Presenting as Isolated Right Scapular Pain.

Abstract

Acute myocarditis has a highly variable presentation; its infarct-like phenotype, with chest pain, ST-segment changes, and troponin elevation, is well recognized, but atypical, non-chest-pain presentations are rarely described. We report a 41-year-old man admitted for isolated, intense right scapular pain radiating to the right arm, occurring in a febrile context two weeks after a flu-like illness, without chest pain at any stage. Electrocardiography showed lateral ST-segment elevation with reciprocal inferior changes, and high-sensitivity troponin I was markedly elevated (27,016 ng/L) alongside severe inflammation (CRP 195.5 mg/L). Echocardiography showed regional hypokinesia with preserved ejection fraction. Coronary angiography was normal, and pulmonary embolism and intra-abdominal pathology were excluded. Cardiac magnetic resonance demonstrated findings compatible with acute diffuse myocarditis and a small pericardial effusion, establishing acute myopericarditis as the final diagnosis. The patient improved with aspirin and colchicine. This case illustrates that isolated scapular pain, plausibly referred via the phrenic nerve, can be the sole presenting feature of myopericarditis mimicking an ST-elevation myocardial infarction, and underscores the role of cardiac MRI in diagnostic reclassification when coronary angiography is unremarkable.

Keywords: myocarditis; myopericarditis; scapular pain; troponin; cardiac magnetic resonance; case report

Learning Objective

Acute myocarditis may present without chest pain, mimicking an isolated musculoskeletal complaint. This case highlights isolated right scapular pain — plausibly referred via the phrenic nerve — as an under-recognized presenting feature of acute myopericarditis with ST-segment elevation and marked troponin release. Clinicians

should consider myocarditis in patients with atypical pain and biomarker evidence of myocardial injury once coronary disease is excluded, and use cardiac MRI for diagnostic reclassification.

Introduction

Acute myocarditis has a highly variable presentation, and its infarct-like phenotype — chest pain, ST-segment elevation, and troponin release with non-obstructive coronary arteries — is well described. Atypical, non-chest-pain-dominant presentations are rare and under-reported. We describe a 41-year-old man whose acute myopericarditis was revealed by isolated right scapular pain, without chest pain at any stage, mimicking an ST-elevation myocardial infarction. This report adheres to the CARE guidelines for case reporting [4].

Case Presentation

A 41-year-old man with no cardiovascular history and occasional tobacco use presented with three days of intense right scapular pain radiating to the right arm, associated with sweating and a documented temperature of 39°C at onset. He denied chest pain, dyspnea, palpitations, or syncope. A flu-like illness with pharyngitis had occurred two weeks earlier. He had first sought care at an outside facility and received symptomatic treatment before presenting to our institution when symptoms persisted.

On examination he was hemodynamically stable and afebrile, with an unremarkable cardiovascular, pulmonary, and abdominal examination. The electrocardiogram showed sinus rhythm at 75 bpm, with a normal QRS axis and normal conduction intervals. Diffuse, predominantly concave ST-segment elevation involving multiple leads, without reciprocal ST-segment depression or pathological Q waves. The absence of a territorial distribution and reciprocal changes favors acute myocarditis/myopericarditis over an acute coronary syndrome (figure 1)

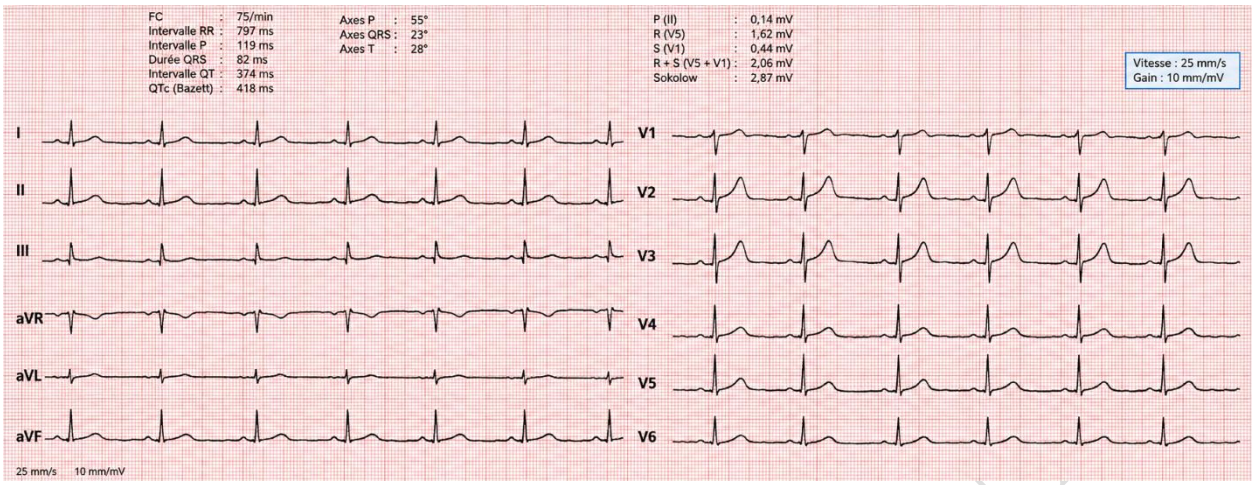

Figure 1: 12-lead ECG showing diffuse concave ST-segment elevation

High-sensitivity troponin I was markedly elevated (27,016 ng/L; assay reference 2–34 ng/L), with severe inflammation (C-reactive protein [CRP] 195.5 mg/L; procalcitonin 0.10 ng/mL). White blood cell count was 11,400/mm³, and liver enzymes were mildly elevated (AST 130, ALT 47 IU/L) with normal lipase. Echocardiography showed hypokinesia of the basal-to-mid anterolateral wall with preserved left ventricular ejection fraction (LVEF 55%) and a small pericardial effusion.

Given the STEMI-pattern electrocardiogram and troponin rise, urgent coronary angiography was performed and showed no significant coronary artery disease. Computed tomography pulmonary and abdomino-pelvic angiography excluded pulmonary embolism, deep infection, and intra-abdominal pathology. Blood cultures, hepatitis B/C serology, and urinalysis were unremarkable. Continuous rhythm monitoring throughout hospitalization showed no arrhythmia.

Cardiac magnetic resonance (CMR) on day 4 demonstrated findings compatible with acute diffuse myocarditis, preserved LVEF (59%), and a small circumferential pericardial effusion, supporting a final diagnosis of acute infarct-like myocarditis with minor pericardial involvement (myopericarditis), presenting atypically as isolated right scapular pain.

Serial troponin and CRP values are shown in Table 1; both showed an overall improving trend. He was treated with tapering high-dose aspirin, colchicine for three months, and a proton-pump inhibitor. His clinical course was

favorable, and he was discharged with cardiology follow-up, including repeat echocardiography, planned at one month (Table 2).

Table1.Serialhigh-sensitivitytroponinIandC-reactiveprotein(CRP)valuesduring hospitalization, showing an overall improving trend for both markers.

Date	hs-TroponinI(ng/L)	CRP(mg/L)
18/07	27,016	195.5
19/07	26,088	—
19/07	17,177	—
20/07	—	179.5
21/07	7,773	181.2
27/07	1,247	50.1

Table2.Timelineofkeyclinicaleventsfromsymptomonsettodischarge.

Date	*Event*
Day−14	Flu-likeillnesswithpharyngitis
Day0	Onsetofrightscapularpain,fever39°C
Day3	EDadmission;STEMI-patternECG;hs-TnI27,016ng/L
Day4	Normalcoronaryangiography;CTPA/abdomennormal
Day7	CMR:acutediffusemyocarditis,smallpericardialeffusion
Day12	Dischargeonaspirintaper,colchicine,PPI

Discussion

This case illustrates two teaching points. First, acute myocarditis can present without chest pain, and referred musculoskeletal-type pain may be its only initial manifestation. Pericardial afferents travel via the phrenic nerve (C3–C5), which shares spinal segments with the supraclavicular and suprascapular nerves innervating the shoulder and scapular region; irritation of the pericardium can therefore produce referred scapular pain through this shared pathway [1]. The Brighton Collaboration case definition for myocarditis and pericarditis formally lists shoulder and back pain among recognized chest-pain variants of myopericarditis [2]. In our patient, the small pericardial effusion on CMR offers a plausible substrate for this referral, though a causal link cannot be proven retrospectively, since a classic pleuritic or positional pain pattern was absent. A comparable right shoulder-plus-interscapular pain pattern has been reported with a left atrial myxoma [3], confirming this referral pattern is not confined to classic pericarditis, but within the limits of a non-exhaustive search, no previously published case describes isolated right scapular pain, without chest pain at any stage, as the sole presenting symptom of myocarditis.

Second, troponin elevation and ST-segment changes are not specific for coronary ischemia. In a CMR cohort of patients with a provisional diagnosis of acute coronary syndrome, elevated troponin, and no culprit coronary lesion, myocarditis was ultimately diagnosed in 81% of cases [5]. A similar febrile, diffusely ST-elevated presentation with marked troponin release has been described in a young patient ultimately diagnosed with myocarditis after a working diagnosis of myocardial infarction with non-obstructive coronary arteries (MINOCA) [6]; the 2019 AHA statement classifies myocarditis as a MINOCA mimicker rather than true ischaemic MINOCA [7]. Once obstructive coronary disease is excluded, myocarditis should be considered even when the initial pattern strongly resembles STEMI; this should not, however, delay urgent coronary angiography when STEMI criteria are met.

CMR was the key investigation that reclassified this patient's presentation. Updated Lake Louise criteria combine T2-based markers of myocardial edema with T1-based markers of injury and provide the strongest non-invasive evidence for myocarditis [8]; the typical subepicardial or mid-wall late gadolinium enhancement pattern differs from the subendocardial/transmural pattern of infarction [9]. The 2025 ESC guidelines for myocarditis and pericarditis give CMR a central diagnostic role and introduce the umbrella term inflammatory myopericardial syndrome to capture the frequent overlap between myocardial and pericardial inflammation seen in cases such as this one, and

recommend aspirin/colchicine for the pericardial component with structured follow-up including repeat CMR within six months [10].

This report is limited by the absence of endomyocardial biopsy, incomplete documentation of quantitative CMR mapping parameters, and short-term follow-up; the specific infectious trigger also could not be identified.

Conclusion

Isolated right scapular pain can be the sole presenting feature of acute myopericarditis mimicking an ST-elevation myocardial infarction. Atypical pain localization should not exclude a cardiac cause when objective evidence of myocardial injury is present, and cardiac MRI remains essential for diagnostic reclassification once coronary angiography excludes obstructive disease.

Patient Consent

Written informed consent for publication of the clinical details was obtained from the patient.

Acknowledgments

None.

Conflict of Interest

The authors declare no conflict of interest.

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