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Case Report

A Case Report on Costochondritis: Clinical Insights and Management Strategies

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ABSTRACT

Costochondritis is a self-limiting inflammatory condition affecting the costochondral and chondrosternal joints, often presenting with localised chest pain. This case report discusses a 50-year-old male with a history of type II diabetes who presented with chest pain, cough, weight loss, and generalised fatigue. The clinical assessment, including physical examination, laboratory tests, and imaging, led to a diagnosis of costochondritis. The patient's symptoms were distinguished from other serious conditions like myocardial infarction and pneumonia through tenderness on palpation of the costosternal joints, a normal chest X-ray, and ECG findings. Laboratory results showed mild inflammation, liver and renal function abnormalities, likely due to medication use. Treatment focused on pain relief, anti-inflammatory therapy, and symptom management, including antibiotics, analgesics, and muscle relaxants. The patient's condition improved, and he was discharged with a comprehensive medication regimen. This case highlights the importance of considering costochondritis in the differential diagnosis of chest pain and emphasises the need for a tailored treatment approach, as well as regular follow-up to prevent complications.

Keywords: Costochondral joints, Inflammatory conditions, Chest pain.

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INTRODUCTION

Inflammation of the costochondral connections of the ribs or chondrosternal joints, typically at numerous levels and without oedema or induration, is the hallmark of costochondritis, a self-limiting disorder. Palpating the afflicted cartilage segments reproduces the pain, which may spread to the chest wall (Proulx and Zryd, 2009). Its repeatability when palpating the afflicted joints helps distinguish it from nonmusculoskeletal sources of chest wall pain (Waggoner and Needleman, 2024). It primarily affects individuals between the ages of 40 and 50, with a small female preponderance (Mott and Jones, 2021). Most of the time, unlike Tietze syndrome, costochondritis does not cause local swelling. This syndrome might persist anywhere from a few weeks to several months or repeat, although it is thought to be self-limiting and usually goes away after a year (Zaruba and Wilson, 2017). Patients do not have any accompanying symptoms, such as fever, rash, coughing, or shortness of breath, but instead appear with upper chest wall pain that is increased by movement. When it comes to chest wall or back pain, costochondritis might mimic myocardial infarction, pneumonia, Herpes zoster, and systemic illnesses (Schumann and Sood, 2024).

CASE DESCRIPTION

A 50-year-old male presented with chest pain of 5 days' duration, associated with cough with whitish expectoration, intermittent fever, weight loss, and generalized fatigue. The chest pain was localized to the anterior chest wall and worsened with deep inspiration, coughing, and physical activity. There was no history of radiation of pain, palpitations, syncope, or shortness of breath suggestive of acute coronary syndrome. The patient was a known case of type II diabetes mellitus for 2 years and was on tablet metformin 500 mg twice daily. There was no history of trauma, recent surgery, or known pulmonary tuberculosis. On examination, the patient was febrile and tachycardic (Table 1). Palpation of the chest revealed localized tenderness over the costosternal joints, reproducing the patient's pain. Respiratory and cardiovascular system examinations were otherwise unremarkable. Initial differential diagnoses included acute coronary syndrome, pneumonia, tuberculosis, and costochondritis, considering the presenting symptoms of chest pain, fever, and weight loss. Electrocardiogram and cardiac biomarkers (troponin I) were within normal limits, effectively ruling out myocardial infarction. Chest X-ray did not show any pulmonary infiltrates, cavitary lesions, or pleural abnormalities, making pneumonia and active pulmonary tuberculosis unlikely. Laboratory investigations revealed leukocytosis with

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Table 1: Baseline data.

Sl. No.	Parameters	Day 1	Day 2	Day 3	Reference Value
1.	Blood Pressure	140/110	130/80	120/80	120/80 mmHg
2.	Temperature	97.5	98	101	98.6 F
3.	Pulse Rate	109	115	121	60-100 bpm
4.	Respiratory Rate	20	20	22	12-20 b/m
5.	SpO2	94%	98%	98%	95-100%

This table summarizes the patient's vital signs, including blood pressure, body temperature, pulse rate, respiratory rate, and oxygen saturation (SpO_2), recorded over three consecutive days of hospitalization and compared with standard reference values.

Table 2: Laboratory Investigations.

Sl. No.	Parameters	Day 1	Day 2	Reference value
Complete Blood Count				
1.	WBC	26600	25000	4000-11000 cells/micro litre
Differential Count				
2.	Polymorph	88	90	40-60%
3.	Lymphocytes	6	6	20-30%
Renal Function Test (RFT)				
4.	Urea	57	40	15-45
5.	Sodium	132	137	135-145meq/L
6.	Potassium	3.0	3.7	3.5-5.5 meq/L
Arterial Blood Gas (ABG)				
7.	PO2	63.4	80	75-100 mmHg
Liver Function Test (LFT)				
8.	Total Bilirubin	5.8	-	Less 1
9.	Direct Bilirubin	4.8	-	< 0.3 mg/dL
10.	Indirect Bilirubin	1.0	-	2.2-2.8 mg/dL
11.	Albumin	3.3	-	3.4-5.4 g/dL
Cardiac Biomarkers				
12.	Troponin I	0.012	-	< 0.04 ng/mL

This table presents the patient's hematological, renal, hepatic, arterial blood gas, and cardiac biomarker parameters obtained during hospitalization, along with corresponding reference ranges.

Table 3: Treatment given.

Sl. No.	Generic name	Dose	FREQ	ROA	D1	D2	D3
1.	INJ. Amoxycillin+Clavulanate	1.2 g	1-0-1	IV			
2.	INJ. Pantoprazole	40 mg	1-0-1	IV			
3.	INJ. Neurobion Forte	-	1-0-1	IV			
4.	TAB. Paracetamol	1 g	1-1-1	PO			
5.	TAB. Ursodeoxycholic Acid	300 mg	1-0-1	PO			
6.	TAB. Tramadol+Acetaminophen	37.5/325 mg	1-0-1	PO			
7.	TAB. Serratiopeptidase	10 mg	1/2-0-1/2	PO			
8.	SYP. KCL	10 mL	1-0-1	PO		x	x
9.	SYP. Lactulose	10 mL	1-1-1	PO			

This table details the medications prescribed during hospitalization, including drug name, dose, frequency, route of administration, and duration of therapy.

neutrophilia, suggesting an inflammatory response (Table 2). Liver function tests showed elevated total and direct bilirubin with mildly reduced albumin, indicating jaundice, which was considered an associated condition rather than the primary cause of chest pain. Renal function tests showed elevated urea with mild hyponatremia and hypokalemia, likely secondary to acute illness and dehydration. Arterial blood gas analysis revealed mild hypoxemia, which improved with supplemental oxygen.

Based on the reproducibility of pain on palpation, absence of cardiac and pulmonary pathology on investigations, and characteristic clinical presentation, a final diagnosis of costochondritis was made, with associated jaundice and electrolyte imbalance.

DISCUSSION

Chest pain is a common clinical presentation that often necessitates urgent evaluation to exclude life-threatening conditions such as myocardial infarction, pneumonia, pulmonary embolism, and aortic pathology. Costochondritis, although benign and self-limiting, can closely mimic these serious conditions, making diagnosis challenging. In the present case, the patient's chest pain was reproducible on palpation of the costosternal joints and aggravated by movement and respiration, which is characteristic of costochondritis. Normal ECG findings and a negative troponin I assay effectively ruled out acute coronary syndrome. Additionally, a normal chest X-ray excluded pneumonia and pulmonary tuberculosis, despite systemic symptoms such as fever and weight loss. These findings strongly supported a musculoskeletal origin of chest pain. Laboratory investigations showed leukocytosis with neutrophilia, reflecting a nonspecific inflammatory response rather than an active infection. Liver function abnormalities, including elevated bilirubin levels and reduced albumin, suggested jaundice, which was managed symptomatically. These abnormalities were not directly related to costochondritis but likely represented an associated condition or drug-related hepatic stress. Renal function derangements and electrolyte imbalance were attributed to dehydration and acute illness and improved with appropriate supportive management (Table 4).

Table 4: Progress Report Chart.

Day	Observations
1	Epigastric tenderness, chest pain, Constipation
2	Constipation
3	Symptoms Improved, Patient got discharged.

This table outlines the patient's day-wise clinical symptoms and progress observed throughout the hospital stay.

The management of costochondritis is primarily symptomatic. In this patient, pain control was achieved using paracetamol, tramadol-acetaminophen combination, NSAIDs, and muscle relaxants (Table 3). Gastric protection was provided due to polypharmacy, and electrolyte imbalances were corrected. Antibiotics were initiated empirically in view of systemic symptoms and leukocytosis but were not directed at costochondritis itself.

This case highlights the importance of careful clinical examination and targeted investigations to differentiate costochondritis from serious cardiopulmonary conditions. Early recognition prevents unnecessary invasive procedures and ensures appropriate management.

CONCLUSION

In conclusion, this case report illustrates the importance of a thorough clinical assessment in diagnosing costochondritis, a condition that often presents with symptoms mimicking more serious chest-related diseases. The 50-year-old male patient, despite his underlying Type II diabetes, was effectively managed through a comprehensive approach focusing on pain relief, anti-inflammatory treatment, and symptom control. The diagnosis was confirmed through physical examination, laboratory tests, and imaging, which helped distinguish costochondritis from other potential causes of chest pain. The patient's treatment regimen, including IV antibiotics, analgesics, and muscle relaxants, successfully addressed his symptoms, with improvements noted by the time of discharge (Table 5). This case reinforces the need for healthcare providers to consider costochondritis in the differential diagnosis of chest pain and to tailor treatment to the individual needs of the patient. Regular follow-up care is essential to ensure full recovery and to monitor for any recurrence or complications.

Table 5: Discharge Medication.

Sl. No.	Drugs Prescribed	Dose	FREQ	Route	Duration
1.	T. Naproxen	220 mg	1-0-1	PO	7 Days
2.	T. Acetaminophen	500 mg	1-1-1	PO	7 Days
3.	T. Cyclobenzaprine	5 mg	1-1-1	PO	5 Days
4.	C. Omeprazole	20 mg	1-0-0	PO	7 Days
5.	Capsaicin Cream	-	-	Topical	7 Days

This table lists the medications prescribed at discharge, including dosage, frequency, route of administration, and duration of treatment.

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ABBREVIATIONS

TB: Tuberculosis; **ECG:** Electrocardiogram; **RFT:** Renal Function Test; **ABG:** Arterial Blood Gas; **LFT:** Liver Function Test.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTION

Dr. Aswini Suresh conceived the idea, while Angelin Grace T and Ann Jency A collected the data, participated in patient treatment and follow-up, and edited the manuscript. All authors have read and approved the final manuscript.

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