

Sternocostoclavicular Osteoarthritis with Infectious Myositis Mimicking a Meningeal Syndrome: Diagnostic and Therapeutic Challenges - A Case Report

Mohamed Alioui^{1*}, Abdellatif Chlouchi¹, Reda Touab¹, Moad Allam², Khalil Abou Elalaa¹, Hicham Balkhi¹

¹Department of Anesthesia IUC, Mohammed V Military Teaching Hospital, Mohammed V University- Rabat, Morocco

²Department of Anesthesia IUC, Avicenna Military Teaching Hospital, Cadi Ayyad University- Marrakech, Morocco

DOI: <https://doi.org/10.36347/sjmcr.2025.v13i11.048>

| Received: 24.09.2025 | Accepted: 20.11.2025 | Published: 26.11.2025

*Corresponding author: Mohamed Alioui

Department of Anesthesia IUC, Mohammed V Military Teaching Hospital, Mohammed V University- Rabat, Morocco

Abstract

Case Report

Bacterial meningitis remains a major cause of intensive care admissions, yet its presentation may be misleading when associated with concomitant metabolic or infectious disorders. We report the case of a 60-year-old woman with no prior medical history, admitted for inaugural diabetic ketoacidosis associated with a febrile meningeal syndrome. Cerebrospinal fluid (CSF) analysis supported a diagnosis of bacterial meningitis, prompting urgent antibiotic therapy combined with intensive management of the metabolic derangement. Although initial evolution was favorable, persistent fever and neck stiffness prompted cervicothoracic imaging, which revealed stern costoclavicular osteoarthritis complicated by a deep abscess and infectious myositis of the sternocleidomastoid muscle. This case underscores the importance of systematic reassessment in patients with incomplete clinical response to antibiotic therapy and highlights how rare infectious localizations may mimic or complicate a meningeal syndrome, particularly in the setting of severe metabolic disturbances.

Keywords: Bacterial meningitis; Diabetic ketoacidosis; Stern costoclavicular osteoarthritis; Infectious myositis; Meningeal syndrome; Hematogenous spread; Intensive care.

Copyright © 2025 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Bacterial meningitis is a medical emergency and a frequent reason for admission to intensive care units due to its high morbidity and mortality. Its association with acute diabetic decompensation, particularly diabetic ketoacidosis (DKA), complicates both the clinical presentation and management. We report the case of a patient admitted for inaugural DKA associated with a meningeal syndrome mimicked by sternocostoclavicular osteoarthritis and infectious myositis of the sternocleidomastoid muscle.

CASE REPRESENTATION

A 60-year-old woman, mother of four, with no known medical history, was admitted to the emergency department for several days of febrile asthenia associated with somnolence and headache.

Upon admission, she was confused (Glasgow Coma Scale 14/15) with neck stiffness, while Kernig and

Brudzinski signs were negative. No purpura or obvious infectious focus was noted.

Vital signs were: BP 171/93 mmHg, HR 122 bpm, SpO₂ 98%, RR 18/min, temperature 39.1 °C, capillary glucose 3.9 g/L. Urine dipstick showed 3+ ketones, with negative leukocytes and nitrites. Cardiopulmonary and cardiovascular examinations were unremarkable. The abdominal examination was normal.

Based on clinical and biological findings, the diagnosis of inaugural DKA complicated by meningitis was retained.

Brain CT scan was normal.

Additional investigations

CBC: Hb 11.7 g/dL, WBC 19,900/mm³ (neutrophils 10,960/mm³)

CRP: 241 mg/L

Electrolytes: Na⁺ 122 mmol/L, K⁺ 2.82 mmol/L

Renal function: Urea 0.16 g/L, creatinine 7.76 mg/L

Citation: Mohamed Alioui, Abdellatif Chlouchi, Reda Touab, Moad Allam, Khalil Abou Elalaa, Hicham Balkhi. Sternocostoclavicular Osteoarthritis with Infectious Myositis Mimicking a Meningeal Syndrome: Diagnostic and Therapeutic Challenges - A Case Report. Sch J Med Case Rep, 2025 Nov 13(11): 2862-2865.

Lumbar puncture

Appearance: xanthochromic

Protein: 2.51 g/L

Glucose: 0.79 g/L (concomitant blood sugar 2.08 g/L)

Cytology: 82 WBC/mm³ (20% neutrophils), 120

RBC/mm³

Direct exam: bacilli sensitive to ciprofloxacin

Initial Management in Intensive Care:

Monitoring: ECG, SpO₂, non-invasive BP, peripheral temperature, hourly then spaced glucose monitoring, hourly urine output.

IV rehydration: two peripheral venous lines placed, fluid resuscitation according to standard protocol (1 L/1 h, then 1 L/2 h, 1 L/6 h, then adjusted), using isotonic saline.

Insulin therapy: continuous IV regular insulin (0.1 U/kg/h), adjusted according to glucose levels. Rate reduced to 0.05 U/kg/h between 2 and 2.5 g/L, stopped below 1.2 g/L with transition to 5% dextrose. Long-acting insulin (glargine) introduced at 48 hours.

Correction of hypokalemia: potassium supplementation parallel to rehydration.

Antibiotics: ceftriaxone 3 g/12 h plus ciprofloxacin 400 mg/8 h, adjusted to susceptibility testing.

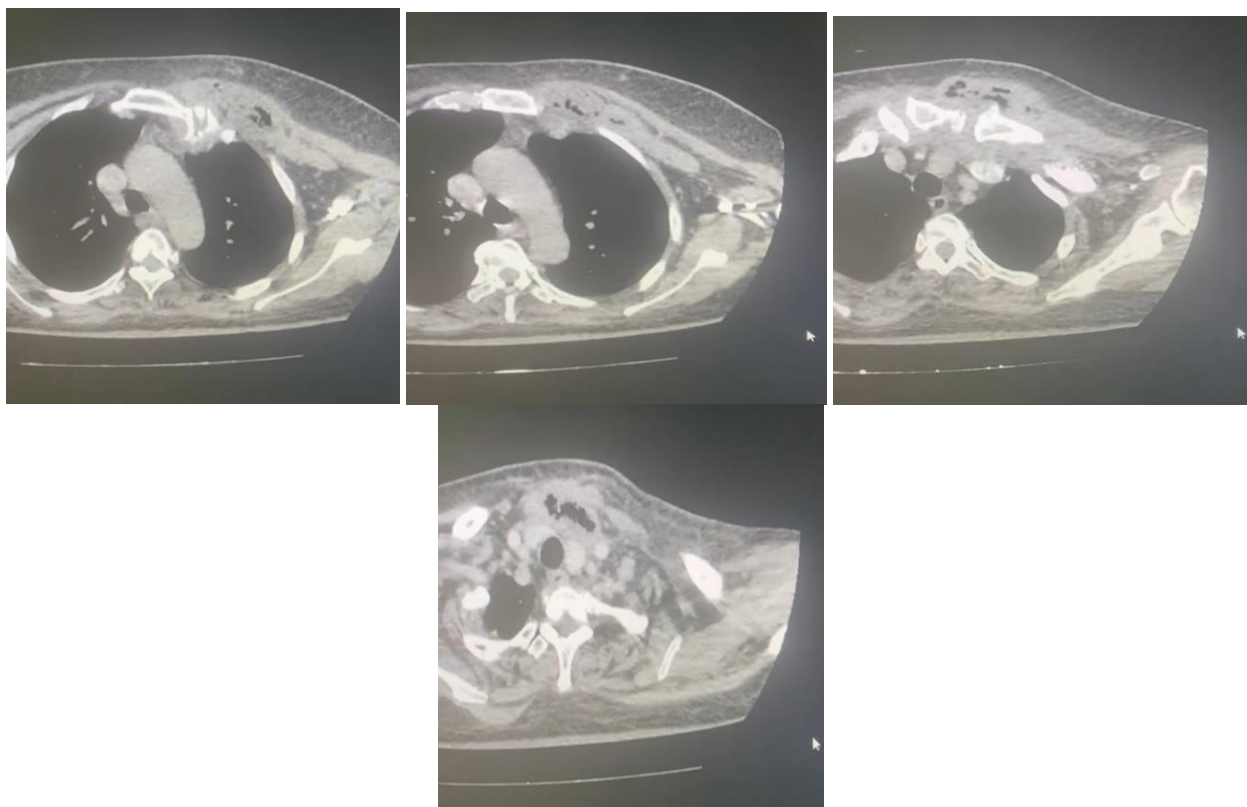
Adjunctive treatments:

- Prophylactic LMWH (enoxaparin 0.4 mL/day)
- Omeprazole 40 mg/day
- Paracetamol 1 g/8 h

Clinical Course: Initial evolution was marked by metabolic improvement of DKA within the first 48 hours.

However, despite six days of antibiotic therapy, febrile episodes and meningeal stiffness persisted. Biological tests showed: WBC 7,330/mm³ (neutrophils 4,010/mm³), CRP 100.3 mg/L.

Cervicothoracic CT scan revealed left sternocostoclavicular osteoarthritis complicated by an extensive abscess and myositis of ipsilateral sternocleidomastoid muscle.

**DISCUSSION**

This observation illustrates the diagnostic and therapeutic complexity of bacterial meningitis associated with inaugural diabetic ketoacidosis. The presence of DKA may mask certain neurological signs and promote rapid infectious progression. The patient's CSF showed cyto-protein dissociation and markedly low glucose

compared with blood levels findings consistent with bacterial meningitis despite an atypical cytological profile. The rapid identification of a bacillus sensitive to ciprofloxacin allowed prompt therapeutic adjustment.

Persistent fever and meningeal signs particularly neck stiffness despite adequate treatment prompted extended imaging, which revealed an extra-

meningeal complication: infectious sternocostoclavicular osteoarthritis, a rare but severe entity often diagnosed late. This localization, which may result from hematogenous spread, requires prolonged management and often drainage.

The association of bacterial meningitis and inaugural diabetic ketoacidosis represents a major diagnostic and therapeutic challenge in intensive care. DKA, as an acute metabolic complication of either type 1 or type 2 diabetes, may be triggered by severe infection, among which meningitis occupies a significant place. In the reported case, the patient had no known history of diabetes, and the hyperglycemia together with ketonuria confirmed the inaugural nature of the metabolic decompensation. The meningeal infection appears to have been the likely precipitating factor for DKA.

Clinically, DKA can impair the level of consciousness, creating a semiological overlap with meningitis and complicating interpretation of initial neurological signs. In this patient, confusion, somnolence, and meningeal stiffness oriented early toward a neuro-infectious condition. The Glasgow score of 14/15 indicates subacute but non-severe neurological involvement, more suggestive of meningitis than of isolated metabolic coma.

Cerebrospinal Fluid Analysis

The CSF profile was notable for xanthochromia, marked hyperproteinorachia, and profoundly reduced glucose relative to blood findings compatible with bacterial meningitis. The inflammatory cell count, relatively moderate (82 WBC/mm³), is atypical for classic bacterial meningitis. This cytological paradox may be explained by several mechanisms:

1. Slow-growing or atypical bacillary infection, consistent with the presence of bacilli on direct examination.
2. An attenuated inflammatory response in elderly or immunologically fragile patients.
3. The effect of metabolic decompensation, which can modulate immune response.

The identification of a bacillus sensitive to ciprofloxacin enabled rapid adjustment of antibiotic

therapy, along with broad coverage (ceftriaxone), in accordance with recommendations for bacterial meningitis of unidentified origin.

Management in Intensive Care

Simultaneous management of meningitis and DKA requires complex coordination:

- Severe hypovolemia and dehydration associated with DKA require aggressive rehydration, although fluid administration must be balanced to avoid cerebral edema, a feared complication in neuro-infectious presentations.
- Continuous intravenous insulin therapy allows progressive correction of hyperglycemia and ketosis but requires strict electrolyte monitoring, particularly potassium, whose levels rapidly drop under insulin.
- Antibiotic therapy must be initiated urgently, independently of metabolic correction, as each hour of delay increases mortality.

Persistence of Symptoms and Diagnostic Reassessment:

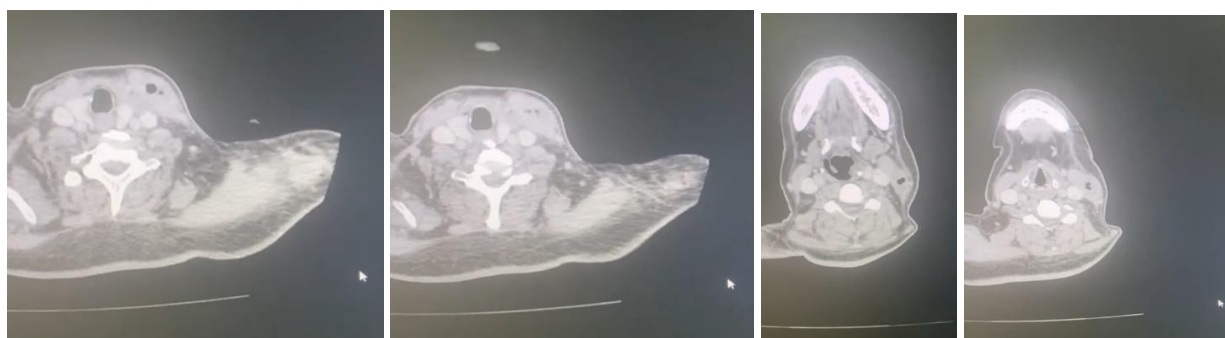
After six days of adapted antibiotic therapy, persistent fever and meningeal stiffness are alarming. Unfavorable evolution under treatment should raise suspicion of:

- antimicrobial resistance or inadequate therapy,
- complicated meningitis (brain abscess, subdural empyema),
- an associated focal infection,
- or hematogenous dissemination.

In this patient, normalization of the blood count and progressive decline in CRP suggested adequate control of meningitis. However, persistence of residual inflammatory syndrome justified extended imaging, which was performed appropriately.

Infectious Sternocostoclavicular Osteoarthritis: A Rare Complication

The discovery of left sternocostoclavicular osteoarthritis complicated by a deep abscess and sternocleidomastoid myositis constitutes a key element explaining the “meningeal” neck stiffness.



This infectious localization is rare (less than 1% of osteoarticular infections) and occurs particularly in:

- diabetic patients,
- intravenous drug users,

- dialysis patients,
- or immunocompromised individuals.

Its mechanism generally involves hematogenous spread, which is consistent with probable bacteremia related to meningitis. Local symptoms may be subtle, explaining delayed diagnosis. Possible complications include:

- mediastinal extension,
- joint destruction,
- persistent septicemia,
- myositis and multiple abscesses.

Cervicothoracic CT scan is the reference examination for diagnosis.

Key Learning Points from the Case

This case highlights several essential points in intensive care medicine:

1. Any severe infection may reveal previously unknown diabetes, notably as DKA.
2. Persistent fever under adequate antibiotics requires complementary imaging, even without focal signs.
3. Sternal osteoarticular infections are rare but severe and must be considered in prolonged infectious syndromes.
4. Simultaneous management of DKA and meningitis requires anticipation of therapeutic interactions, particularly regarding fluids and electrolytes.

CONCLUSION

This observation underscores the importance of comprehensive assessment and ongoing reassessment in patients presenting with meningitis associated with diabetic ketoacidosis. Persistence of fever under antibiotic therapy should systematically prompt investigation for deep infectious complications. Sternocostoclavicular osteoarthritis, although rare, must be considered when symptoms persist, as early diagnosis is crucial to prognosis.

REFERENCES

1. Tasnim S., Shirafkan A., Okereke I. *Diagnosis and management of sternoclavicular joint infections: a literature review. J Thorac Dis.* (Année). DOI: Journal of Thoracic Disease
2. Masmoudi K., Elleuch E., Akrouf R., et al. *Bilateral septic arthritis of the sternoclavicular joint complicating infective endocarditis: a case report. J Med Case Rep.* 2018; 12:205. DOI:10.1186/s13256-018-1709-9. BioMed Central+1
3. Tanaka Y., Kato H., Shirai K., et al. *Sternoclavicular joint septic arthritis with chest wall abscess in a healthy adult: a case report. J Med Case Rep.* 2016; 10:69. DOI:10.1186/s13256-016-0856-0. BioMed Central
4. Angelakis E., Thiberville S.-D., Million M., Raoult D. *Sternoclavicular joint infection caused by Coxiella burnetii: a case report. J Med Case Rep.* 2016; 10:139. DOI:10.1186/s13256-016-0948-x. BioMed Central
5. Silvestre C. R., Cordeiro R., Duarte D., Ferreira H., Cardoso C., Falcão T., Domingos A. *An unusual case of sternoclavicular joint infection and lung abscess in a diabetic patient. Open Journal of Respiratory Diseases.* 2020; 10:43–48. DOI:10.4236/ojrd.2020.102005. SCIRP
6. Gonçalves R. B., Grenho A., Correia J., Reis J. E. *Sternoclavicular joint septic arthritis in a healthy adult: a rare diagnosis with frequent complications. J Bone Joint Infect.* 2021; 6:389–392. DOI:10.5194/jbji-6-389-2021. jbji.copernicus.org
7. Al Ahmari A. M., Alanis I. M. *Sternoclavicular Joint Septic Arthritis and Osteomyelitis: Case Report. Saudi Orthop J.* (2019). journalmsr.com
8. BMC Emergency Medicine. *Sternoclavicular joint septic arthritis following paraspinal muscle abscess and septic lumbar spondylodiscitis in a patient with diabetes.* (Auteur). DOI / URL selon l'article. BioMed Central
9. Youssef D., Bhargava A. *Escherichia coli Bacteremia with Secondary Seeding in the Sternoclavicular Joint: A Case Report and Literature Review. GERMS.* 2019; 9(1):43-46. DOI:10.18683/germs.2019.1156. MDPI
10. Namura T., Senpo K., Morihara T., Kubo T. *Septic Arthritis of the Sternoclavicular Joint: A Case Report. Katakansetsu.* 2010;34(3):969–972. DOI:10.11296/katakansetsu.34.969. JSTAGE