

CASE REPORT

A Case Of Atypical Presentation of Thoracic Osteomyelitis & Paraspinal Abscess

Utkarsh Acharya

ABSTRACT: Here presented is a case involving a 44-year-old man with a chief complaint of sharp lateral right-sided rib pain with notable radiation to the anterior portion of the thorax and minor radiation around the lateral back. The etiology of the pain and radiculopathy, which was initially attributed to a right-sided rib fracture, was later accurately credited to a paraspinal abscess discovered on a lateral X-ray of the thoracic spine. Subsequently, studies including Magnetic Resonance Imaging (MRI), Computed Tomography (CT), and bone scan all confirmed the diagnosis of a paraspinal abscess between the right lobe and its neighboring T9 and T10 vertebrae. The mass was biopsied and methicillin sensitive *Staphylococcus aureus* was isolated. Appropriate surgical and medical intervention was possible due to the early diagnosis of the abscess.

INTRODUCTION

Diagnosis of a paraspinal abscess is a rare and clinically significant finding. Previous case reports of paraspinal abscess have indicated back pain as a common symptom in those affected, with 50% of patients exhibiting pyrexia during the initial presentation (1). Here we present a case of a paraspinal abscess exhibiting sharp lateral right-sided rib pain in an afebrile patient. This report is designed to discuss the pertinent features of the case and its implications in the future diagnosis of paraspinal abscess, a condition that could lead to catastrophic events if not detected early.

CASE

A 44-year-old Caucasian male with a noncontributory previous medical history of peptic ulcer disease and asthma presented to his primary care provider with complaints of sharp lateral right-sided rib pain with radiation to the anteriolateral portion of the thorax and minor radiation around the lateral portion of the back. The patient denied any known trauma to the costal regions previous to the onset of symptoms. Symptom

review elicited a history of pain with deep inspiration suggesting possible pleuritic involvement. The patient's symptoms started ten days prior to presentation with a gradual worsening of the pain. He concurrently reported muscle spasms for which he was taking muscle relaxants. Initial consultation with an acute care clinician yielded a diagnosis of rib fracture based on clinical findings, which was empirically treated with narcotics and non-steroidal anti-inflammatory for pain management. However, this regimen resulted in little improvement and further work up was pursued.

Pertinent physical examination of the patient demonstrated an alert, oriented and well-nourished male in no acute distress. The patient was afebrile and normotensive. Cardiac and lung examinations were unremarkable. Musculoskeletal examination exhibited pain with palpation of the right lateral ribcage. No pain was produced upon palpation along the paraspinal muscles and no muscle spasms were noted or palpated. Neurological examination was normal.

Laboratory results were obtained: WBC: $15.1 \times 10^9/\mu\text{L}$ [Differentials: neutrophils: 85%, lymphocytes: 12.0 %], RBC: 4.45 M/ μL , Hb: 13.9 g/dL, Hct: 39.7%, PLT: 394 K/ μL .

Anterior-posterior and lateral views of the chest via X-ray were found to be negative for any evidence of cardiopulmonary disease. Radiographic imaging of the right costal cage was ordered to assess for possible rib fracture. However, findings revealed no displaced

*To whom correspondence should be addressed:

Utkarsh Acharya
St Vincent Mercy Medical Center
2213 Cherry Street
Toledo, OH, USA, 43608
Telephone: 937-554-5477
Email: utkarsh.h.acharya.1@ohio.edu



Figure 1. CT exhibiting paraspinal mass associated with destruction of portions of the T9 and T10 vertebral bodies with involvement of the pleura and medial aspect the right lung.

right-sided rib fractures, pneumothorax, or pleural effusion. An X-ray of the thoracic spine was conducted and showed normal spinal column free of any acute bony thoracic spine abnormality. However, an impressive opacity superimposed over the lower thoracic spine was noted. A subsequent non-contrast MRI of the thoracic spine found this opacity to be a paraspinal mass extending into the medial right lower lobe of the lung, measuring 5 x 4 x 2 cm, adjacent to the T9 and T10 vertebrae.

At this stage, the differential diagnosis included neoplastic, inflammatory, and infectious processes. The possible existence and metastasis of a neoplasm warranted further work up. CT and bone scan studies were conducted as part of a neoplastic work up and to look for nodes suggesting inflammatory, infectious or malignant process.

Contrast CT of the pelvis and abdomen were unremarkable for lymphadenopathy or metastasis. Non-contrast CT of the chest did not show mediastinal adenopathy but confirmed a soft tissue mass associated with osseous destruction of portions of the T9 and T10 vertebral bodies with involvement of the pleura and medial aspect of the right lung (Figure 1) suggesting an infectious or neoplastic process. As a result, a bone scan was performed showing increased activity within the lower thoracic spine at the levels of T9 and T10 without involvement of the rest of the skeleton (Figure 2). As metastatic disease was still a potential diagnosis, the patient was referred for a biopsy.

Needle biopsy and aspiration isolated methicillin-sensitive *Staphylococcus aureus* (MSSA) and the patient was referred for decompression and drainage

and a full recovery was evidenced shortly thereafter.

DISCUSSION

Osteomyelitis and paraspinal abscesses of the spine is a rare condition, reported as 1 in 100,000 – 250,000 of the general population in developing countries (1). Epidemiological data on the overall prevalence of osteomyelitis in North America among the general population is lacking as the condition is infrequently reported in adults. Paraspinal abscesses mostly occur in the setting of invasive procedures (2). This includes transcutaneous infection of deep tissue by needles or catheters, bone surgery, blunt trauma, and hematogenous spread from distant sites (2). Hematogenous osteomyelitis and subsequent paraspinal abscess formation is most commonly caused by gram-positive organisms irrespective of the geographical setting (1). While gram-negative organisms may also inflict similar symptoms, *Staphylococcus aureus* remains the most common cause (3,4). Back pain, pyrexia (50% of patients), and muscular weakness are the most common presenting symptoms of paraspinal abscess (5) but were not prominent symptoms in this case. Sun et al. reported that local paraspinal tenderness should be considered a sign of infection (2). Clinical features may extend over several weeks or several months. However, neurological deficits, paralysis, and even death (1) may ensue if the source of the anomaly is not identified. Prior to the avail of imaging technology, Heusner et al. first described in detail the clinical progression of spontaneous abscess formation (6). The first phase includes back pain associated with tenderness, pyrexia, leucocytosis and an increased erythrocyte sedimentation rate (ESR). The involvement of radicular pain accompanied by fever defines phase II. Phases III and IV are defined by neurological deficit, altered sensation, motor function, bowel and urinary dysfunction, and ultimately, paralysis.

X-rays typically become abnormal after 3 to 4 weeks, showing bone destruction, soft tissue swelling, periosteal elevation, loss of vertebral body height or narrowing of adjacent infected intervertebral disk space, and destruction of the end plates above and below the disk. MRI has been found to be an optimal tool in identifying paraspinal abscess formation but has limited potential in being able to distinguish between infectious and neoplastic etiology in the presence of abnormal findings (7, 8). Bone biopsy with needle or surgical excision and aspiration of debridement of abscesses provide tissue for culture and antibiotic sensitivity testing.

Empiric antibiotic therapy is often justified in the setting of pending biopsy results. Antibiotic selection should be substantially dependent on biopsy cultures

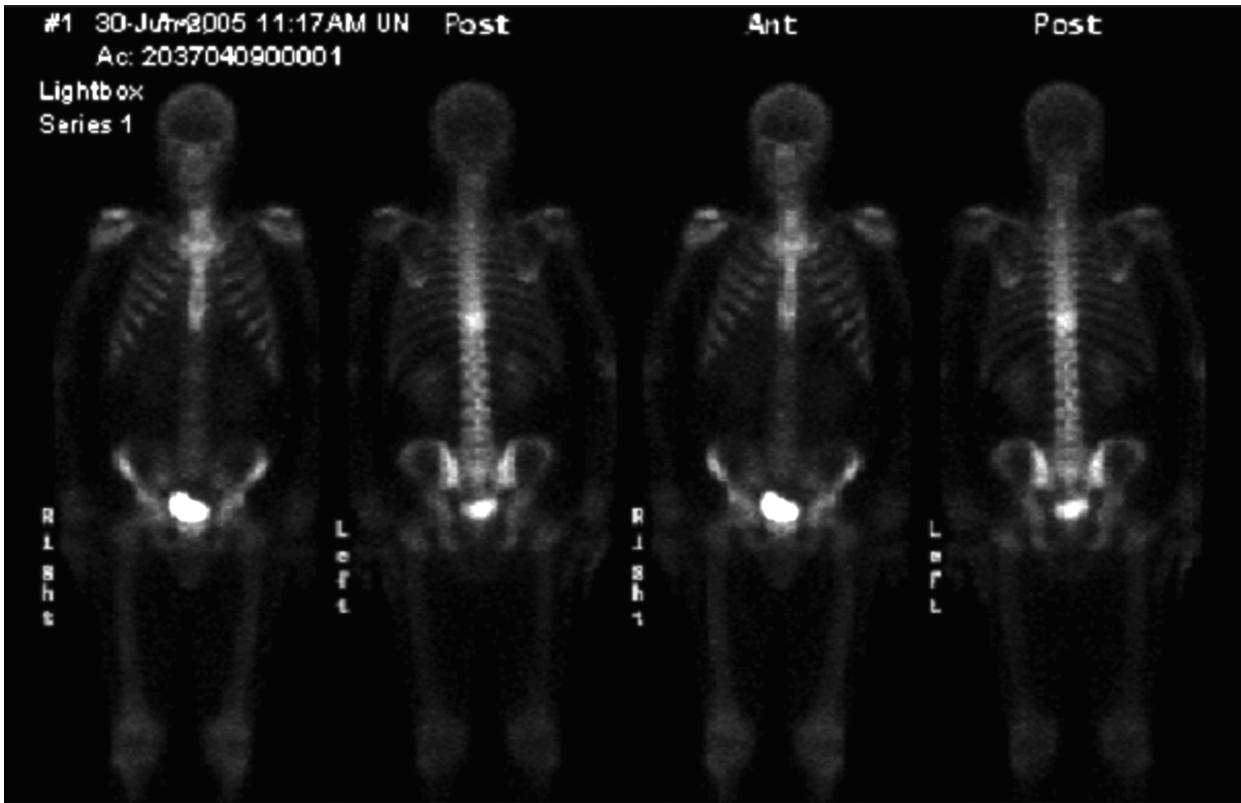


Figure 2. Bone scan exhibiting increased activity within the lower thoracic spine at the levels of T9 and T10

and sensitivity testing. Evidence attesting to standardized antibiotic therapy in the venue of osteomyelitis is limited. For patients expressing MSSA, treatment with intravenous nafcillin, oxacillin, or oral dicloxacillin is recommended. However, first-generation cephalosporins may be a justifiable alternative for patients with penicillin allergies. Vancomycin remains the gold standard antibiotic in cases of methicillin resistant staphylococcal infections. Alternative uses of quinolones in the context of MRSA have also been proposed (9). Parenteral administration is highly recommended for a period of 4 to 8 weeks and surgical intervention is often necessary to absolve large areas of spinal compression. Unfortunately, standardized guidelines in the management of patients with complicated osteomyelitis are lacking.

The relatively subtle presentation of this patient was somewhat deviant from that of reported cases of osteomyelitis. As a result, the diagnosis of a paraspinal abscess was not considered in the differential diagnosis on initial presentation. Physical findings suggestive of paraspinal abscess were relatively inconspicuous, such as the absence of generalized back pain, pyrexia, and paraspinal tenderness. Therefore, empirical treatment was considered before ordering MRI and CT scans of the thorax. This case characterizes the diagnostic

challenge of suspecting a paraspinal abscess in the venue of an uncharacteristic presentation. The report emphasizes the importance of suspecting a paraspinal abscess in patients that exhibit refractory somatic symptoms despite a subtle presentation as unnecessary diagnostic delay could render catastrophic consequences.

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Utkarsh Acharya (D.O. 2009) is a Junior Editor of the McGill Journal of Medicine. He received his B.Sc in Biological Sciences at Wilmington College in Wilmington, Ohio, USA. He is currently a fourth-year medical student at Ohio University College of Osteopathic Medicine in Athens, Ohio with research and career interests in Internal Medicine.