Case Report

Septic sternoclavicular arthritis, osteomyelitis and mediastinitis

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Received 21 November 2015; revised 16 March 2016; accepted 14 April 2016
Available online 23 June 2016

Abstract

Background: Septic arthritis in the sternoclavicular joint (SCJ) is uncommon. Early diagnosis is difficult because of its insidious onset and lack of a radiological reference standard. In addition to joint destruction and dysfunction, delayed diagnosis and treatment may result in additional expansion of infection, sepsis, and mortality.

Case Report: We present a previously healthy 38-year-old man who presented after 10 days of fever and painful swelling on the upper chest. Septic sternoclavicular arthritis and mediastinitis were diagnosed and treated by parenteral antibiotics and staged surgery. The range of motion in the right shoulder completely returned; however, mild weakness of the right shoulder remained.

Conclusion: In patients presenting with upper chest, neck, or shoulder pain, physicians should include SCJ arthritis as a differential diagnosis. Multiple imaging examinations are often needed to reach a diagnosis. In septic SCJ arthritis, early institution of appropriate antibiotics is important, and surgical interventions are often needed to eradicate the infection.

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Keywords: mediastinitis; septic arthritis; sternoclavicular joint

1. Introduction

Septic arthritis is a serious but uncommon disease with an incidence of 5.7 cases per 100,000 person-years.1 In addition to damage and dysfunction of the involved joint, it can result in mortality from septic shock, especially in patients infected with Staphylococcus aureus.2 The sternoclavicular joint (SCJ) is a small, non-weight-bearing synovial joint. Septic arthritis at the SCJ is rare, accounting for 0.5–2.0% of septic arthritis cases in the general population; however, the incidence may be as high as 17–22% among intravenous drug users.3 Without prompt diagnosis and treatment, patients may have complications, such as abscess, osteomyelitis, expanding infection to the neck, breast, pleural cavities, spine, and mediastinum, leading to septic shock or death.3–6 Here, we report a case of a young, immunocompetent patient with septic sternoclavicular arthritis extending to the superior mediastinum.

2. Case Report

A previously healthy 38-year-old male plasterer presented to our emergency department after 10 days of progressive painful swelling on the upper chest accompanied by fever. He visited a general practitioner 1 day prior to admission. Pus-like fluid was obtained by aspirating the hump on his upper chest. On arrival at our emergency department, his consciousness was clear. Other vital signs included respiration of 20 breaths/min, pulse of 109 beats/min, blood pressure of 128/87 mmHg, and temperature of 38.1°C. On examination, there was an indurated, tender,
erythematous, warm, and swollen mass over his right SCJ. Other body parts were unremarkable. He denied any history of traumatic chest injury before this event. Blood tests revealed leukocytosis of 21,360/μL; hemoglobin of 12.1 g/dL; and aspartate aminotransferase/alanine aminotransferase of 44/57 IU/L, but the other values were within normal limits. Chest radiography of the patient revealed focal, poorly defined opacity (Figure 1). Computed tomography revealed subtle bone erosion and abscess at and around the right SCJ with retrosternal extension into the superior mediastinum (Figure 2). Two blood cultures were obtained, and treatment with intravenous piperacillin/tazobactam and vancomycin was immediately started.

An open incision and drainage was performed shortly after admission. Necrotic tissues and ~100 mL of pus were evacuated around the loosened SCJ and contiguous mediastinum. Staphylococcus aureus was isolated from both pus and blood. Although the bacterium was resistant to penicillin, it was susceptible to oxacillin and other antimicrobial agents. Acid-fast staining and Mycobacterium cultures of the pus were negative. A second surgical operation was performed 1 week later to resect the necrotic SCJ and the first costosternal joints. A right pectoralis major myocutaneous flap was elevated and rotated to cover the defect. Chronic inflammation with osteomyelitis was diagnosed in a histopathological study. After 14 days of hospitalization, he was discharged with oral sulfamethoxazole/trimethoprim. The motion range of the right shoulder completely returned after 2 weeks of rehabilitation; however, mild weakness of the right shoulder remained.

3. Discussion

SCJ septic arthritis is rare. Patients usually present with a more insidious onset than septic arthritis at other sites. Ross and Shamsuddin3 reported a case series of SCJ septic arthritis that had a medium duration of 14 days from symptom onset to hospital arrival. Most patients (78%) presented with chest pain localized to the involved SCJ. One-fifth (24%) of patients also complained of ipsilateral shoulder pain, and fever was present in 65% of patients. However, atypical presentations, such as neck pain, abscess or tumor in the neck, dysphagia, and breast abscess, have been reported.12-9 S. aureus is the most common cause of SCJ septic arthritis.3 Other infectious causes, including Pseudomonas aeruginosa, Brucella melitensis, Escherichia coli, Streptococcus, Mycobacterium tuberculosis, anaerobes, Neisseria gonorrhoeae, and Candida albicans, have been reported.3

The common risk factors of SCJ septic arthritis include intravenous drug use; an indwelling subclavian venous catheter; trauma and immunocompromised status from diabetes mellitus, cirrhosis, end-stage renal diseases, and malignancies. However, an increasing number of cases have been reported in patients who lack predisposing risk factors.10 Because of the insidious onset and lack of a radiological reference standard, early diagnosis of SCJ septic arthritis is difficult and a multimodal approach is often needed.6 Soft tissue swelling may be evident on radiography. Changes in osteomyelitis, including demineralization, destruction, and sequestrum of bone, are usually evident on radiography within 10-12 days of this complication.11 However, up to 85% of initial plain radiographs are reportedly normal.3 Cortical irregularity, joint effusion, synovial thickening, and hyperemia can be revealed by ultrasound; however, it can be difficult to differentiate between infection and inflammation in cases that lack abscess formation.6,12 Advanced imaging examinations, including computed tomography and magnetic resonance imaging can reveal joint fluid accumulation, capsule distension, cortical erosion, osseous destruction, swelling of the surrounding soft tissue, and/or delineated abscess formation. Magnetic resonance imaging offers better visualization of edema in the joint cavity, subchondral bone, bone marrow, and surrounding soft tissue. However, there is an overlap in the imaging abnormalities for infection and degeneration. The imaging findings that were significantly associated with infection included joint distension that was ≥ 10 mm, joint capsule distension extending > 5 mm over the clavicle and sternum, and bone marrow edema.3 Ultrasound-guided aspirations is helpful for evaluating patients who have ambiguous diagnoses.

All patients with septic sternoclavicular arthritis need parenteral antibiotics. Empiric antibiotics that cover S. aureus should first be used with subsequent adjustment according to the results of microbial tests and the clinical response. Vancomycin should be added for patients with confirmed or suspected infection with methicillin-resistant S. aureus. Although medical treatment may be sufficient in some early-stage patients, surgery is often needed. Surgical operation may involve simple incision and drainage.13,14 For a radical intervention,
debridement, arthroplasty and flap reconstruction are usually necessary. In complicated SCJ septic arthritis, staged surgery with debridement, resection arthroplasty, open wound care, and wound closure with a pectoralis major advancement flap have a lower incidence of complications than single-stage resection and muscle advancement flap.14,15

In patients presenting with upper chest, neck, or shoulder pain, physicians should include SCJ arthritis as a differential diagnosis. If there is local tenderness, erythematous skin or swelling, multiple imaging examinations are often needed to reach an accurate diagnosis. Early institution of appropriate antibiotics is important, and surgical interventions are often needed to eradicate the infection.

References


