Acromioclavicular Septic Arthritis: A Case Report of a Novel Pathogen

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Abstract

In immunocompetent patients, septic arthritis of the acromioclavicular (AC) joint is a rare entity. It can be difficult to discern from glenohumeral septic arthritis and AC joint impingement syndrome. The usual symptoms are fever, erythema, swelling, palpable pain over the AC joint, and pain with shoulder motion. The most commonly reported causative organism is a *Staphylococcus* or *Streptococcus* species. *Haemophilus parainfluenzae* is a rare cause of septic arthritis in any joint. Although limited to case reports in the literature, most *H parainfluenzae* skeletal infections occur after surgical intervention. To our knowledge, this is the first case report of AC septic arthritis with *H parainfluenzae*.

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Case Report

A healthy right-hand–dominant woman in her mid-60s presented to the emergency department with a 3-day history of acutely increasing left shoulder pain to the point of immobility. She denied fever, chills, and all other systemic symptoms as well as recent illnesses, trauma to the shoulder, past surgical procedures, and recent hospitalizations. One month earlier, however, she had spent 14 days visiting her husband when he was a patient in the surgical ward of the hospital. She also denied any significant family history. Medications included telmisartan for hypertension and aspirin 81 mg daily. Past medical history included a complaint of shoulder pain when visiting her family practitioner 1 week earlier, being diagnosed with acromioclavicular (AC) arthritis, and planning to undergo physical therapy with possible steroid injection at the next visit.

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On physical examination, vital signs, including a temperature of 98.4°F, were normal. There was significant tenderness to palpation over the left AC joint with mild swelling and erythema on inspection. Active and passive range of motion (ROM) of the shoulder was limited to 45° in abduction and forward flexion secondary to pain at the AC joint. Internal and external rotation also yielded localized pain over the AC joint. Cross-body adduction elicited severe pain at the AC joint. Initial laboratory results were C-reactive protein level, 70.10 nmol/L; erythrocyte sedimentation rate, 90 mm/h; and

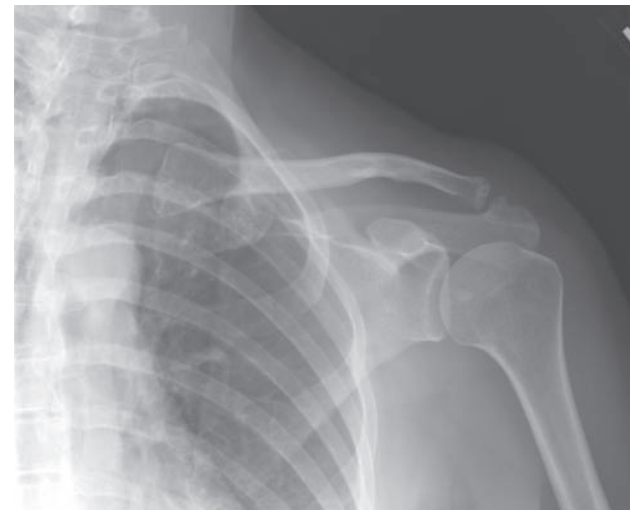

Figure 1. Anteroposterior radiograph shows no significant joint widening or bony erosion.

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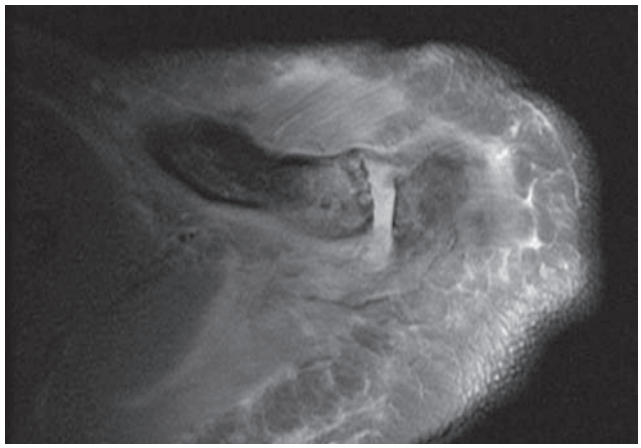

Figure 2. Axial magnetic resonance imaging shows increased signal uptake in acromioclavicular joint and surrounding soft tissue with bony edema of distal clavicle and acromion.

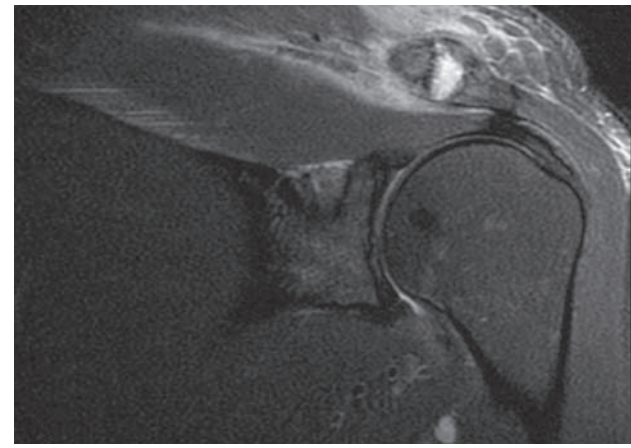

Figure 3. Coronal magnetic resonance imaging shows increased signal uptake in acromioclavicular joint and surrounding soft tissue with bony edema of distal clavicle and acromion.

white blood cell count, $10.4\times(10)^9$/L. Radiographs of the left glenohumeral joint and AC joint showed mild degenerative changes without acute fractures or bone lesions (Figure 1). Magnetic resonance imaging (MRI) showed fluid collection within the AC joint with associated bone marrow edema at the distal clavicle and significant edema in the adjacent soft tissues. There was no fluid in the glenohumeral joint (Figures 2, 3). Aspirate from the AC joint was cloudy with a white blood cell count of $2.02\times(10)^9$/L, and initial gram stain that was negative. Aspirates were sent for aerobic and anaerobic cultures. With MRI and physical examination not suggesting glenohumeral pathology, aspiration was limited to the AC joint. With the information obtained, we felt that the risk for cross-contamination of the glenohumeral joint outweighed the potential benefit of aspiration.

With there being a clinical suspicion of AC septic arthritis, the patient was taken to the operating room for irrigation and débridement. The open procedure was used to prevent spread into the subacromial space. Incision through the capsule of the AC joint yielded frank purulence. Fluid and synovial tissue were sent for culture and sensitivity. The joint was copiously irrigated with 9 L of normal saline. Distal clavicle resection was considered, but, under direct visualization, the infection appeared to be isolated within the joint, so there would be no benefit to disrupting the natural barrier. A Penrose drain was placed, and the skin was approximated with 3-0 nylon sutures. The patient's arm was placed in a sling for comfort and was initially started on intravenous vancomycin. On postoperative day 1, symptoms improved, and there was a return to near full active ROM. On postoperative day 2, surgical cultures grew *Haemophilus parainfluenzae,* which was sensitive to levofloxacin. The patient was discharged on levofloxacin 750 mg for 14 days. After this course of antibiotics, the patient had complete resolution of symptoms and return to full nonpainful ROM and no tenderness to palpation over the joint.

Discussion

Septic arthritis of the AC joint is rare. Our extensive search of the literature revealed only isolated case reports of this entity. In 1985, Blankstein and colleagues[1] published one of the earliest known reports of pyogenous infection of the AC joint. Although more commonly associated with immunocompromise by conditions such as AIDS,[2] multiple myeloma,[3] and chronic steroid use,[4] it has also been reported in immunocompetent hosts without a history of trauma to the joint.[3] In these cases, the most common presentation was acute-onset shoulder pain with maximal tenderness over the AC joint and limited painful ROM.[1-5] Offending agents reported in AC joint infection include *Streptococcus viridans, Streptococcus pneumoniae, Staphylococcus aureus,* and group B streptococci.[2,3] Early-stage radiographs of the joint may reveal normal anatomy, but later radiographic changes could include widening, erosion, and destruction limited to the AC joint.[1] In cases such as our patient's, MRI was beneficial in detecting early inflammatory changes of the AC joint associated with infection. Widman and colleagues[6] suggested that ultrasound could be used in early detection of a septic AC joint by recording distention of the joint space. This means of detection, however, would require a diagnostic sonographic level of expertise not available in many institutions.

H parainfluenzae is an extremely rare cause of septic arthritis in the native joint of an immunocompetent patient. In a 2007 article, Khor and colleagues[7] reported 2 cases of

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skeletal infection and summarized the 10 *H parainfluenzae* cases that had been reported between 1965 and 2005. Seven of the 12 cases had septic arthritis in the absence of osteomyelitis. Four of the 12 patients had undergone total joint arthroplasty, and 1 was infected with the human immunodeficiency virus. Of the 12 patients, 9 had predisposing factors (4 underwent a dental procedure, 2 underwent a nasopharyngeal procedure, 2 underwent a gastrointestinal procedure, and 1 had otitis media).[7] To our knowledge, only 2 cases of *H parainfluenzae* septic arthritis have been reported in patients without risk factors, and neither case involved the AC joint.[7] Given the strong association of predisposing incidence with confirmed infection, one can assume that a common method of joint inoculation is by hematologic spread.

To our knowledge, our patient's case represents the first reported instance of septic AC joint arthritis attributed to *H parainfluenzae*. This entity should be differentiated from other causes of acute-onset shoulder pain as quickly as possible to minimize long-term destruction of the joint surfaces. In patients with rapidly progressing pain that localizes to the AC joint, one should maintain a high index of suspicion for an infectious etiology. In such cases, we recommend a complete battery of laboratory tests, adequate radiographic investigation, joint aspiration, and rapid treatment.

Authors' Disclosure Statement

The authors report no actual or potential conflict of interest in relation to this article.

The opinions or assertions expressed here are those of the authors and do not necessarily reflect those of the US Army, Navy, Air Force, or the Department of Defense.

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This paper will be judged for the Resident Writer's Award.