A 43-year-old man presented to the orthopedic outpatient clinic with a 2-months history of pain and limited range of motion in his left shoulder. His pain was insidious in onset, mild to moderate in intensity, aggravated by activities and associated with moderate rest and night pain. There was no history of direct or indirect trauma to the left shoulder. Patient was diagnosed as frozen shoulder at an outside facility and had been given intraarticular Depomedrol 40 mg injection for the same 40 days ago with no improvement in his symptoms. He had no fever, chills or rigors. He had no weight loss or loss of appetite. He was diabetic and had liver cirrhosis and was on treatment.

What is the most likely diagnosis of this case presentation?

- Muscular pain
- Shoulder Fracture
- Septic Arthritis

Introduction

Patients with septic arthritis usually develop moderate to severe joint pain, warmth, tenderness, effusion, restricted active and passive motion, and sometimes redness. This case report is about an unusual presentation of shoulder septic arthritis in a 43 years old man with no other clinical signs and symptoms of classical septic arthritis.

Medical History

There was no history of direct or indirect trauma to the left shoulder. He was diabetic and had liver cirrhosis and was on treatment.

Examination and Laboratory Investigations

On physical examination, the patient was afebrile, BP was 110/70 mmHg, pulse rate-72beats/min. The skin color and temperature of the left shoulder were normal, but the shoulder was tender to touch over the anterior joint line. Shoulder was very stiff and all shoulder movements were severely restricted. MRI was obtained which showed extra osseous soft tissue enhancements around left shoulder with soft tissue abscess in inter muscular planes of supraspinatous, infraspinatous, subscapularis. glenoid joint effusion with distension of axillary recess. Blood test revealed normal white cell count with normal differential count, CRP-13.4 mg/l (normal<5.0 mg/l). The erythrocyte sedimentation rate was raised, at 88 mm/hour (normal range,0-20 mm/hour). Aspiration of shoulder joint was performed and fluid was sent for aerobic and anaerobic culture, AFB staining, Mycobacterium culture, and Mycobacterium genetic testing.

Synovial biopsy was obtained and sent for histopathological examination. Culture of joint aspirate came back positive for Klebsiella pneumoniae. Susceptibility of the isolate was determined with the disk diffusion method and it was susceptible only to colistin. Mycobacterium culture and genetic test came back as negative. Histopathological examination of the synovial tissue revealed fibrocollagenous and fibrovascular inflamed connective tissue containing proliferated blood vessels and perivascular mixed inflammatory cells and lymphoplasmacytoid cells. Based on preoperative and intraoperative culture report, a definitive diagnosis of polymicrobial septic arthritis of the shoulder was established and patient was treated with combination antimicrobial treatment.
Discussion

Septic arthritis of the shoulder is a rare complication. Most patients present acutely with severe pain, loss of function and systemic symptoms. The patient had muted inflammatory response probably due to immunocompromised state which is not uncommon. Hence, classical features of infection were not there in this patient. Septic arthritis of the shoulder is more common in immunocompromised patients and intravenous drug abusers\(^1\). In this case report, the patient had atypical clinical symptoms and is immunocompromised and his primary source of infection seems to be hematogenous.

In the setting of suspected septic arthritis, diagnosis should be confirmed as soon as possible and treatment should be initiated without much delay. The initial pre-investigation diagnosis was atypical shoulder pain and stiffness of non-specific etiology in an immunocompromised patient and infection was part of the differential diagnosis not the only diagnosis. Esenwein et al highlighted the importance of early intervention to prevent chondral damage, osteomyelitis and also to prevent systemic spread\(^2\). Various authors have highlighted the importance of early diagnosis and management of septic arthritis failing which could lead to osteomyelitis and septic shock\(^3,4\). In this patient, the diagnosis was delayed due to atypical presentation and over reliance on clinical findings at an outside center. Intraoperatively, he was noted to have severe chondral erosion. However, the patient fortunately did not have systemic spread amidst compromised immune status. It is recommended to have early imaging studies in immunocompromised patients presenting with shoulder pain. The practitioners should avoid loosely diagnosing as shoulder pain with associated stiffness as frozen shoulders.

Klinger et al. did a retrospective study on 21 patients who underwent surgical treatment for septic arthritis of the shoulder joint between 2000 and 2007, and he concluded that patients with symptoms for less than 2 weeks did well with arthroscopic approach and early infection can be managed arthroscopically\(^5\). The patient underwent arthroscopic washout followed by parenteral antibiotics with good outcome. The reports show that arthroscopic washout can give good result even after 2 weeks of clinical symptoms if there is no evidence of osteomyelitis. Laboratory investigations and imaging studies like MRI and USG may be useful in establishing the diagnosis but confirmation is usually by joint aspiration\(^6\).

It is recommended that moderate pain of more than 4-week duration with severe stiffness in immunocompromised patient (liver cirrhosis, renal failure, steroid treatment) should be further evaluated with MRI or ultrasound in the setting of normal X-ray and should not be loosely diagnosed as frozen shoulder. Staphylococcus aureus was the most commonly reported organism\(^7,8\). Septic arthritis in cirrhotic patients has been reported by various other authors. Goldenberg in his report emphasized the role of local as well as systemic factors that predispose patients with cirrhosis to gram-negative bacterial joint infections\(^9\). Malnick also reported a case of spontaneous septic arthritis in a cirrhotic patient that was due to \textit{E. coli}\(^10\). This study as well as other studies by Goldenberg and Malnick highlight the importance of including broad spectrum antibiotics with gram negative cover whilst waiting for final culture sensitivity.

Learning

The case highlights the importance of establishing anatomical and pathological diagnosis using MRI in patients with shoulder pain instead of loosely diagnosing them as impingement or frozen shoulder. The case also challenges the practice of routine shoulder Depomedrol steroid injection, in the setting of secondary frozen shoulder, at least in immunocompromised individuals. Primary idiopathic frozen shoulder is a rare condition and secondary frozen shoulder cases are often due to underlying shoulder pathology.

References


Exploratory, Depomedrol, Septic arthritis, Pain, Shoulder, Steroid, Case report, Preventive, Blood test, MRI, CRP, Aspiration, Synovial biopsy, Intra-articular