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Case Report

Escherichia coli mono articular septic arthritis of shoulder joint in an elderly female

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ABSTRACT

Septic arthritis of the shoulder joint is a very rare entity to encounter in clinical practice. *Escherichia coli* (*E. coli*) pathogen isolation is only seen to occur in individuals with multiple comorbidities. We report a similar case of gram-negative *E. coli* urosepsis in a veteran female that transmitted hematogenously to the shoulder joint and how a prompt diagnosis and treatment prevented extension and damage of the joint space.

Keywords: *E. coli*, Septic Arthritis, Shoulder joint

INTRODUCTION

Bacterial invasion of joint space usually develops by hematogenous seeding, direct introduction, or extension from a contiguous focus of infection. Usually, *Staphylococcus aureus* is regarded as the most common culprit to damage the joint spaces but *E. coli* can also be implicated in causation of a poorer prognosis and joint space destruction.[1] This case report of a senile female with multiple comorbidities, adds data to the literature about the microbe *E. coli* as a treatable cause of joint infection and as a significant etiological contributor of septic arthritis related shoulder joint involvement in this population.

CASE REPORT

A 71-year-old female with multiple myeloma not on any drugs, atrial fibrillation post cardioversion, type 2 diabetes mellitus, hypertension and hypothyroidism presented with a 15-day history of right shoulder pain, acute in onset, gradually progressive, with impaired range of movement with no complaints of fever. She also complained of burning micturition, increased frequency, nocturia and urgency in passage of urine for 20 days. On examination she was conscious, oriented to time, place and person, afebrile, normotensive with a pulse rate of 78/min and a respiratory rate of 12/min. She had pallor and bilateral pitting pedal edema. On local examination of shoulder joint, she had tenderness, erythema, warm to touch joint, with a decreased range of motion, with an intact sensation of pain and touch. Elbow, Wrist and Hand Joints examination normal. Distal pulses were palpable. Other systemic examination was within normal limits.

On examining her laboratory parameters, she was found to have anaemia-Hb-8.9 gm/dl, TLC-6.56 thous/ul, Plt-176 thous/ul. Total bilirubin-0.55 mg/dl. Direct bilirubin-0.35 mg/dl. Total protein-5.61 gm/dL, serum albumin-2.21 gm/dL. SGOT 45.00 IU/L, SGPT 56.00 IU/L, alkaline phosphate-120.00 IU/L, GGT-72.00 IU/L. Blood urea nitrogen-49.67 mg/dL, creatinine- 2.24 mg/dL, sodium-132.00 meq/L and potassium-5.03 meq/L. Urine routine microscopy was sent which revealed - +2 glucose and numerous WBC. Blood cultures were sterile. Urine cultures revealed *E coli.*

MRI shoulder joint was done which showed a collection in the intermuscular plane and another collection both within

and around the subscapularis muscle extending into the right shoulder joint and its associated bursa causing its distension. A full thickness tear with retraction of the conjoint and teres minor tendon with the retracted tendon edge at the glenoid margin level.

The patient was initially started on intravenous antibiotic cefoperazone and sulbactum 1.5 gm twice daily. In view of MRI report revealing a USG guided aspiration of fluid collection from intermuscular plane at scapular region was done. Fluid was sent for routine testing. Routine culture and sensitivity of the fluid revealed *E coli* sensitive to amikacin, cefepime, cefoperazone+sulbactum, ertapenem, fosfomycin, gentamicin, imipenem, meropenem, piperacillin+tazobactum. Urine cultures also revealed the same sensitivity pattern. Patient was discharged on intravenous antibiotics and was advised to take routine injections for a period of 4 weeks. The patient did well on follow up.

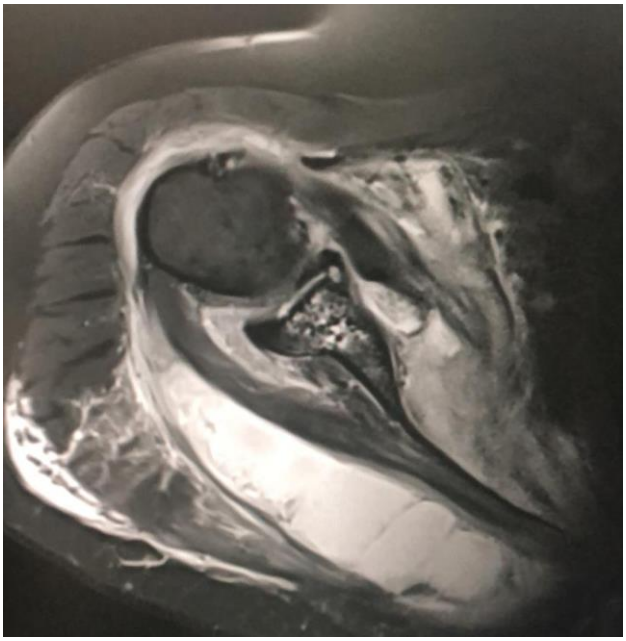

Figure 1: MRI T2W image of the right shoulder joint showing pus collection around subscapularis muscle.

DISCUSSION

Septic arthritis is a joint damaging pathology which can lead to a permanent damage in functional capacity of the joint in a quarter to half of the patients.[1] The most common route of involvement leading to septic arthritis is hematogenous.[2] In our case *E. coli* was isolated from urine which was probably the source of transmission due to similar antibiotic sensitivity of the strains.

Septic arthritis, can be both monoarticular or pauciarticular. *Staphylococcus aureus* is the most frequent pathogen isolated from the joint pus, including patients of diabetes and rheumatoid arthritis. *E. coli* septic arthritis has been rarely reported but is the most isolated gram-negative pathogen from septic joint aspirates.[3] Host factors predisposing to septic arthritis include comorbidities like malignancy, diabetes, cirrhosis, renal uremic syndromes and intravenous drug abusers.[4] Clinical spectrum of the disease can be fever with chills, joint pains while moving the joint both actively and passively. Diagnosis can be obtained by elevated total leucocyte count, erythrocyte sedimentation rate and synovial fluid aspiration and analysis.[5]

Antimicrobial therapy should be started based on sensitivity report, and given till a duration of 4-6 weeks.[6] Antibiotics can only partially treat the infection but source removal in the form of aspiration of joint pus or arthroscopic or open joint drainage and debridement is warranted to salvage and prevent further joint damage.[7] Joint physiotherapy is also something to be advised routinely to the patient, to prevent atrophy, contractures and for attainment of functional capacity of the joint.[8]

On prognosticating the outcome of the patient, it was seen that monoarticular joint involvement has a poor outcome when elderly population is involved with associated comorbidities. The site involvement of joints in case of mono articular involvement is knees followed by hip and least commonly shoulder joint.[9] On comparing with pauciarticular it has a poorer prognosis due to enhanced pathogenic load and is responsible for a mortality of around 30%.[10]

In a case report involving *E. coli* septic arthritis in a uremic patient. It was seen that the transmission was through hematogenous route, as both blood and urine culture were positive. Patient was treated with ampicillin and piperacillin, with arthroscopic drainage of the joint spaces. Patient survived and showed good clinical outcome despite uremia.[11] A similar case of *E. coli* involving the sternoclavicular joint in an 81 year old was also reported, this patient also had a hematogenous spread and was successfully treated with antibiotics and drainage.[12]

Owing to multiple comorbidities as risk factor for septic arthritis a timely intervention by clinicians can impede complications and morbidity progression.

CONCLUSION

The bacterial arthritis outcome is based on antibiotic treatments, associated comorbidities and drainage of the infection. Still many individuals end up having permanent joint infections. These problems can be prevented with newer diagnostic modalities like MRI scans which can help in clenching the diagnosis at an earlier stage whenever the patient presents with specific complaints pertaining to joint involvement.

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