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"Uncommon Convergence: Septic Arthritis of the Knee in Patient with Prior Myomectomy and Cellulitis"

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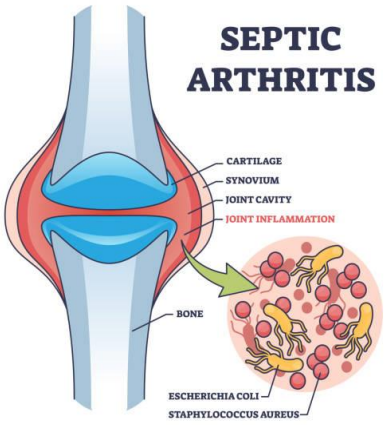
Abstract:

Septic arthritis of the knee is a serious condition that requires prompt diagnosis and treatment to prevent long-term joint damage. The presence of a history of other infections, such as cellulitis, and recent surgical interventions, such as myomectomy, may complicate the clinical presentation. In this case report, we describe a woman who developed septic arthritis of the knee following a history of upper limb cellulitis and myomectomy, with negative microbial cultures.

Keywords: Septic Arthritis, Arthroscopy, MRSA (Methicillin-Resistant Staphylococcus Aureus), Joint Lavage, Cellulitis, Myomectomy, Inj.Teicoplanin

Introduction:



Septic arthritis (SA), also referred to as infectious arthritis, is a condition characterized by inflammation of the joints caused by an infectious agent. While it typically affects a single large joint, such as the knee or hip, it can involve any joint in the body. Bacterial septic arthritis specifically refers to a joint infection resulting from the colonization of the joint cavity by pathogenic bacteria. Acute bacterial arthritis is considered an orthopaedic emergency that requires prompt diagnosis and aggressive treatment to prevent life-threatening complications and irreversible joint damage [1&2].

The clinical presentation of septic arthritis generally includes a combination of symptoms such as joint pain, tenderness upon palpation, swelling, redness (erythema), warmth around the affected area, and a painful or

restricted range of motion [3]. Although bacterial infection is the most common cause, septic arthritis can also result from viral, mycobacterial, or fungal pathogens. Infections around the knee joint can be classified as either superficial, affecting areas external to the joint, or deep, involving the joint itself [4].

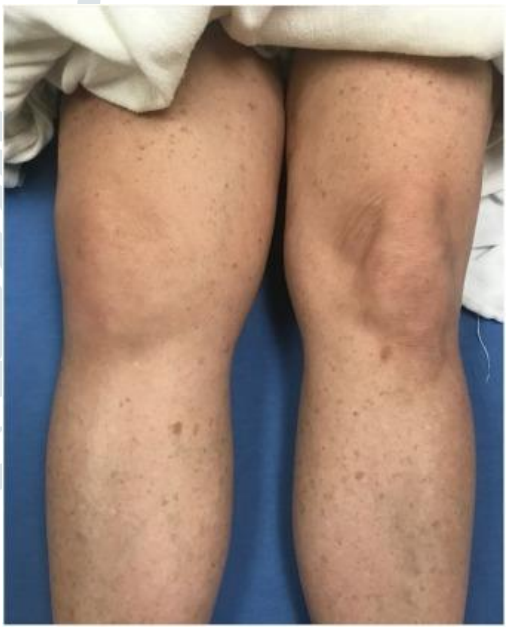
Septic arthritis treatment involves a combination of joint fluid drainage (via arthrotomy, arthroscopy, or repeated needle aspiration) and empiric intravenous (IV) antibiotics, such as vancomycin for suspected MRSA or a third-generation cephalosporin for gram-negative coverage in immunocompromised patients or negative gram stain results. In severe cases, surgical debridement may be necessary, and treatment often requires ongoing drainage and a transition to oral antibiotics based on infection severity and culture results [5&6].

Case Presentation:

A 65-year-old woman presented to the orthopaedic department at Orange Hospital, Tirupati on November 2024 with chief complaints of a 4 day history of progressive right knee pain, swelling, and warmth. The pain, initially mild, worsened over the past 48 hours, leading to difficulty bearing weight.

Past Medical History:

1. She had a significant medical history, including a myomectomy 4 years ago for fibroids
2. Episode of upper limb cellulitis treated with antibiotics 3 weeks prior.



Physical Examination:

On examination, the patient has high local temperature with an erythematous, swollen, and tender right knee. The joint was immobile with moderate effusion, and she had decreased range of motion due to pain.

Lab Investigations:

Tests	Day 1	Day3	Day 5	NORMAL RANGE
CRP	116mg/dl	-	91.2mg/dl	<6 mg/dl
ESR	109mm/hr	105mm/hr	99mm/hr	0-20mm/hr
WBC	11000	8500	7500	4000-10000

She underwent joint aspiration from right knee and sent for culture to SVIMS. However, cultures for bacteria, fungi, and mycobacterium were negative, and Gram stain showed no organisms.

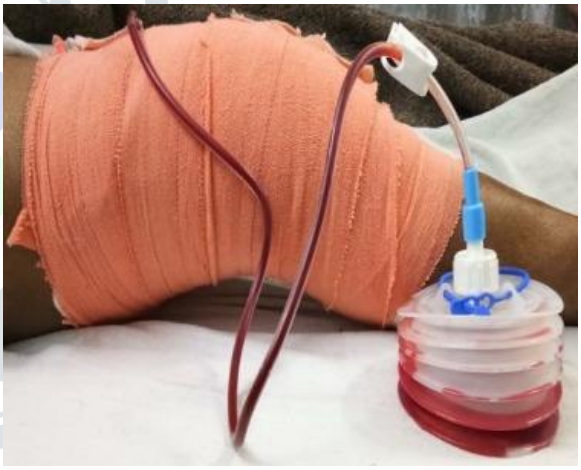
Diagnosis:

The diagnosis of septic arthritis was confirmed based on clinical presentation, synovial fluid analysis, and exclusion of other causes. Despite negative cultures, the persistent symptoms and the inflammatory markers warranted surgical intervention.

Management:

Given the high clinical suspicion of septic arthritis, despite negative cultures, the decision was made to perform diagnostic and therapeutic arthroscopy for joint lavage. During arthroscopy, purulent fluid was observed within the joint, confirming the diagnosis of septic arthritis. Synovial fluid was sent for further analysis, but cultures remained negative, ruling out the most common pathogens, including Staphylococcus aureus, Streptococcus species, and Gram-negative bacteria.

The patient was started on Inj. Teicoplanin 400mg which is an empirical intravenous antibiotic, covering both Gram-positive and Gram-negative organisms for 2 days [7] .After 48 hours of intravenous antibiotics, the knee swelling decreased and the culture sensitivity reports shows that she is sensitive to Inj. Piperacillin+ Tazobactam and levofloxacin. And she was treated with inj. Piptaz 4.5mg TID from day 3 to day 6 She was transitioned to oral antibiotics after 6 days and was discharged on day 7 with follow-up instructions.



Outcomes:

The patient continued to improve clinically, with resolution of knee pain and swelling within 2 weeks. Follow-up arthroscopic evaluation at 3 weeks showed no further effusion or synovitis. The patient regained full range of motion in the knee joint, and her symptoms remained well-controlled during follow-up visits. The patient completed a week course of oral antibiotics, and no recurrence of infection was observed.

Discussion:

This case highlights the challenges of diagnosing septic arthritis in the absence of positive cultures. Culture-negative septic arthritis can occur due to prior antibiotic therapy, the presence of non-culturable organisms, or infection by slow-growing pathogens even when characteristic symptoms, signs and/ or radiologic proof are

present[8]. In this case, the patient's recent history of upper limb cellulitis and myomectomy may have contributed to a predisposed immune status, which could have affected the body's response to the infection.

Arthroscopy in septic arthritis provides both a diagnostic and therapeutic role, as it allows for direct visualization of the joint, removal of purulent fluid, and the opportunity for further synovial fluid analysis. Early intervention with antibiotics and joint drainage, whether surgical or via arthroscopy, is essential for preventing long-term joint damage.

Conclusion:

Septic arthritis of the knee can present with negative cultures, particularly in patients with a complex medical history or prior antibiotic use. Clinical suspicion, along with arthroscopic intervention, remains crucial for the diagnosis and management of such cases. Early treatment with appropriate antibiotics and joint drainage can result in a favourable outcome.

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