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**Research Article**

# Bilateral Septic Arthritis of the Knees in an Immunocompetent Elderly Female: A Rare Case Report and Literature Review

**Dr. Suriyan A M[1], Dr. Alan Roy J[2], Dr. Mohan Yeshwanth[3], Dr. M.Md.Saqlain[4], Dr. Bekkem Mani Dinakar Reddy[5], Dr. Nagakiran K V[6], Dr. Ram Vivek[7]**
[1]junior Resident, Department of Orthopaedics, India.
[2]junior Resident, Department of Orthopaedics, Pes Imsr, Kuppam, India.
[3,7]assistant Professor, Department of Orthopaedics, Pes Imsr, Kuppam, India.
[4,5]junior Resident, Department of Orthopaedics, Pes Imsr, Kuppam, India.
[6]professor, Department of Orthopaedics, Pes Imsr, Kuppam, India.
Email: suriyananbu@gmail.com[1], anjacalan@yahoo.com[2], dryesh30r@gmail.com[3], saqlainmmd@gmail.com[4], mdmsdinakar@gmail.com[5], drnagakiran@gmail.com[6], ramvivek.ram007@gmail.com[7]
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**ABSTRACT**
Septic arthritis (SA) is a medical emergency requiring early recognition and prompt intervention to avoid irreversible joint damage and systemic complications. While monoarticular SA is most common, bilateral knee involvement is rare, particularly in immunocompetent individuals. This case report presents a 64-year-old woman with bilateral knee SA in the absence of traditional risk factors and negative synovial fluid cultures. Diagnosis was guided by clinical presentation and elevated inflammatory markers and elevated ASLO. Surgical management via mini-arthrotomy combined with empirical antibiotics led to a full recovery. This report highlights the need for a high index of suspicion in atypical presentations and reviews relevant literature, including the role of the Kocher criteria for SA of knee joint.

**Keywords:** Septic Arthritis, Bilateral Knee, Culture-Negative, Mini-Arthrotomy, Kocher Criteria, Osteoarthritis, Group B Streptococcus.

## INTRODUCTION

An acutely painful and swollen joint is a common clinical scenario that requires rapid differentiation among multiple possible causes. Septic arthritis (SA) is an uncommon but critical diagnosis that necessitates prompt action to avoid long-term disability or mortality. In the adult population, septic arthritis most commonly affects the knee joint, which is involved in approximately 50% of all cases. SA in adults remains a medical emergency due to its potential for rapid joint destruction and systemic complications if not treated promptly [1]. Polyarticular involvement, including bilateral knee SA, is much less common, accounting for 15% of cases, and is associated with higher morbidity and a mortality rate as high as 50% [2]. Bilateral SA can be easily misdiagnosed, especially in immunocompetent patients with no obvious predisposing factors. We present such a case and review literature, including evolving diagnostic strategies such as the Modified Kocher criteria.

### Case Report

A 64-year-old woman presented to the emergency department with bilateral knee pain and swelling progressively worsening over four months. She reported low-grade intermittent fever with chills for one week, resolving temporarily with oral antipyretics. Initially, she was treated by a general practitioner for presumed transient synovitis secondary to viral fever and prescribed oral amoxicillin-clavulanate. Her symptoms worsened, and three days prior to admission, she developed severe pain, restricted mobility, and joint stiffness in both knees. Known hypertensive, on medications for the past 2 years. No past h/o surgery. Other constitutional symptoms were negative. Known beetle nut chewer. On examination, she was febrile (101°F) with Tachycardia (102beats/min). Both knees were diffusely swollen, warm, extremely tender, and immobile due to pain. There were no signs of cellulitis or adjacent soft tissue infection. Systemic evaluation ruled out other sources of infection. Bilateral Knee aspiration was done and sent for culture and analysis.

**Investigations**

- **Blood Parameters**
  - CRP: 320.2 mg/L
  - ESR: 82 mm/hr
  - Total leukocyte count: 17,700/mm³
  - Neutrophils: 81.00%
  - Absolute Neutrophil Count: 10.44 x 10^9/L
  - ASLO: 800 IU/mL
  - Sodium: 117.2 mmol/L
  - Chloride: 82.0 mmol/L
  - Serum Procalcitonin: 2.54 ng/dl
  - Serum Uric Acid: 5.3 mg/dL

- **Synovial Fluid Aspiration (bilateral)**
  - Gram stain and culture: Negative
  - No crystals or organisms
  - WBC count elevated, neutrophil predominant

- **Imaging**
  - **X-rays**: Bilateral Grade 4 osteoarthritis with valgus deformities
  - **Ultrasound**: Joint effusions with internal echoes and septations

- **Serology**: Negative for viral or autoimmune aetiology.

**Treatment**

A diagnosis of bilateral septic arthritis was made based on clinical presentation and laboratory parameters, despite negative culture results. Patient underwent sequential mini-arthrotomy with thorough joint lavage and debridement of both knees, and drains were placed bilaterally. Intraoperative tissue and synovial fluid cultures remained negative. Empirical intravenous antibiotics—Amoxicillin-Clavulanate and Clindamycin—were initiated and continued for 10 days. Drains were removed on postoperative day 4. On POD 10 patient was discharged after suture removal with two-week course of oral antibiotics. Patient was followed up once in 4 weeks for 3 months.

**Outcome**

The patient's clinical symptoms progressively improved, accompanied by a gradual decline in inflammatory markers. The patient became afebrile and was able to initiate knee range of motion (ROM) exercises. Oral antibiotics were continued for an additional two weeks following discharge. A complete clinical recovery was observed. Early physiotherapy was initiated, leading to progressive restoration of joint mobility.

**DISCUSSION**

Bilateral knee septic arthritis is an extremely rare and underrecognized Orthopaedic

emergency. Delay in diagnosis can result in joint destruction, sepsis, and mortality. While monoarticular SA typically prompts early intervention, bilateral involvement, especially in the absence of risk factors, may be misdiagnosed as inflammatory arthritis, viral synovitis, or osteoarthritis exacerbation [3].

Group B Streptococcus (GBS) although less common than *Staphylococcus aureus*, is an important pathogen, particularly in elderly females. The patient demonstrated a markedly elevated ASLO titre of 800 IU/mL, suggestive of a recent streptococcal infection. While ASLO is not diagnostic of septic arthritis, elevated titres may support a post-streptococcal immune process or preceding streptococcal infection in the context of culture-negative SA. Manshadi et al. reported a case of bilateral SA due to GBS in an immunocompetent elderly woman, similar in presentation to our case [4].

Chong et al. described bilateral knee SA secondary to hematogenous spread from a sternal wound, highlighting the importance of identifying remote foci of infection [5]. Kolade and Omoseebi presented a middle-aged woman with bilateral SA and no comorbidities, reinforcing the relevance of high suspicion and surgical drainage, even in culture-negative presentations [6].

**Diagnostic Framework: Modified Kocher Criteria**

Originally developed for paediatric septic hips, the Kocher criteria include:

- Fever >38.5°C
- Inability to bear weight
- ESR >40 mm/hr
- WBC >12,000/mm³
- CRP >2.0 mg/dL

Bisht et al. evaluated the use of these modified criteria for septic arthritis of the knee and found that while individual parameters like CRP and inability to bear weight retained diagnostic value, the complete Kocher scoring system lacked accuracy in adults with knee involvement [7]. Although our patient met several Kocher criteria (fever, high WBC, elevated CRP and ESR, inability to bear weight), the clinical context and imaging were crucial in planning management. Li et al. also emphasized that no single lab test is diagnostic, with synovial fluid WBC count >50,000/mm³ being supportive but not definitive [8]. Carpenter et al. recommended a combined clinical and laboratory-based approach, recommending early surgical drainage and empiric antibiotics in high-suspicion cases, particularly when delay may cause irreversible joint damage [9].

## CONCLUSION

This case emphasizes the need for early clinical suspicion and empirical treatment in suspected bilateral septic arthritis, even in immunocompetent patients with negative cultures. While diagnostic scoring systems like the Kocher criteria can guide evaluation, they must be interpreted cautiously in knee SA. Surgical drainage combined with antibiotics remains the cornerstone of management. Prompt recognition, as demonstrated here, can prevent complications and restore joint function fully.

**Declarations**

- **Patient Consent:** Obtained
- **Conflict of Interest:** None
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