

Title: Streptococcal Myositis or Septic Arthritis in A Young Child: A Diagnostic Challenge

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Abstract

Background: Septic arthritis is an orthopaedic emergency that can lead to significant morbidity and mortality if treatment is delayed. Myositis can present in a similar way to septic arthritis, particularly in a young child, but is treated differently. Clinicians must take both into account when assessing patients.

Case Description: A five-year-old girl presented with a swollen, sore knee on a background of minor trauma. Examination findings revealed severe sepsis, tonsillitis and a florid rash suspicious of scarlet fever. An orthopaedic opinion was requested for the possibility of septic arthritis of the knee. Due to swelling of the thigh, a provisional diagnosis of myositis secondary to Group A Streptococcal throat infection was made and confirmed by MRI scan of the lower leg. The patient was transferred to an intensive care unit for monitoring and antibiotic therapy.

Literature Review: There are reports of myositis being mistakenly diagnosed as septic arthritis of the knee leading to iatrogenic septic arthritis as a result of needle aspiration.

Clinical Relevance: This highlights the diagnostic challenge posed in the case of a young, septic child who presents with a swollen, painful limb. Repeated clinical examination and the judicious use of magnetic resonance scanning assists in this situation.

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Introduction

Septic bacterial arthritis is an orthopaedic emergency, requiring aggressive management. It is characterised by joint pain, swelling and weakness. Untreated, the condition has significant mortality and morbidity [1]. Delayed treatment leads to increased likelihood of systemic and local sequelae; cartilage can be destroyed within days [2]. Treatment is by urgent and aggressive joint washout, debridement and extended antibiotic therapy.

Myositis is inflammation of skeletal musculature and can present in a similar way to septic arthritis. It is caused by infection, among other aetiologies, and is managed conservatively with supportive measures and antibiotics. History taking and clinical examination of a significantly distressed child is very challenging.

Here we report on a young child who presented with severe sepsis, acute tonsillitis and a painful, swollen knee and thigh.

She was subsequently diagnosed with myositis secondary to group A β -haemolytic streptococcal (GAS) infection. This report highlights the need to consider other differential diagnosis when assessing a septic child with a suspected septic arthritis presentation.

Case report

A five-year-old girl presented with a swollen and painful left knee and thigh, pyrexia andodynophagia. There was a history of minor knee trauma 4 days prior to presentation. She had been unable to weight bear for 24 hours before presenting and was reluctant to move her knee. She had tonsillitis with a rash suspicious of scarlet fever.

Assessment showed a septicaemic picture with a temperature of 39.9°C and a tachycardia. Her white cell count was 17.6 x 10⁶/L, C-reactive protein 443mg/L and creatine kinase 1722 U/L. A throat swab isolated GAS and she had a raised anti-streptolysin O titre. The paediatric team made a diagnosis of severe sepsis secondary

to scarlet fever/tonsillitis. An orthopaedic opinion was requested for suspected knee sepsis.

The patient was resuscitated in a paediatric high dependency unit. A clinical diagnosis of knee sepsis was considered but due to swelling in the thigh, a differential diagnosis of acute myositis secondary to GAS throat sepsis was raised. An urgent MRI scan showed diffuse muscle signal change consistent with significant myositis of the left quadriceps, adductors and right gluteal musculature. The patient was transferred to a tertiary paediatric intensive care unit for supportive measures, intensive monitoring and antibiotic therapy. She did not require respiratory or inotropic support.

The patient progressed well and was transferred back to the original unit 5 days later. She made a full recovery and, following 3 months of community physiotherapy, was discharged from orthopaedics with no residual lower limb deficit.

Discussion

Septic arthritis and myositis, in children, are rare yet devastating. Clinical presentation of both diagnoses can be identical yet their management is completely different. Surgical intervention is often required for septic arthritis compared with supportive treatment for acute myositis. This presents a diagnostic challenge to clinicians and a high index of suspicions should be exercised if facing a similar dilemma. In our case, an urgent MRI scan confirmed the suspected acute myositis as the cause of patient's lower limb symptoms and, subsequently, she was treated appropriately.

Myositis has different aetiologies including autoimmune diseases, infection, electrolyte abnormalities, genetic conditions and medication effects [3]. The condition is more common in males (2:1) and young adults [4], occurs spontaneously and is often preceded by a sore throat leading to the possibility of haematogenous spread from pharyngitis or tonsillitis [5]. This was the suggested method in our case report. Non-steroidal anti-inflammatories are also thought to be an additional risk factor [6],

especially in children with chicken pox. Single or multiple muscle groups in any limb may be involved, with proximal muscles being predominantly affected.

GAS can cause a spectrum of severity of infections within muscles, from myalgia to GAS necrotizing myositis [7]. Laboratory findings typically show leukocytosis and raised muscle enzymes (the latter of which is not raised in pyomyositis). Depending on the severity, treatment may include surgical debridement or amputation, as well as antibiotics.

Assunção et al [8] report two similar cases in adults presenting with knee pain secondary to abscess formation and pyomyositis. Their patients were investigated with knee aspiration and underwent washout of the joint resulting in contamination of the knee joint in one case and delayed diagnosis causing significant morbidity in the other case. The clinical examination in both cases was poorly documented and with hindsight the authors stated a significant thigh swelling was missed in both cases. Our case featured myositis due to GAS compared to pyomyositis likely to be the result of staphylococcus aureus infection.

Kang et al [9] report on a case of streptococcal myositis that is mistaken for a hamstring injury. A 33-year-old labourer presented with medial thigh pain and was discharged with naproxen and advice on hamstring injuries. He returned the next day due to worsening symptoms but by that point his thigh was necrotic and he required a hip disarticulation. This case report was published in 1998, before the widespread availability of MRI scanners, and the patient only received an ultrasound scan prior to his premature discharge. Nevertheless it highlights the devastating nature of the disease.

Early, accurate and repeated clinical examination is integral to eliciting the correct diagnosis in a child with myositis. It also requires sufficient acumen and courage to know when not to aspirate the nearby joint when septic arthritis has yet to be ruled out. The early utilisation of magnetic resonance imaging is essential in these scenarios.

References

- 1 Gupta MN, Sturrock RD, Field M. (2001) A prospective 2-year study of 75 patients with adult-onset septic arthritis. *Rheumatology (Oxford)*. 40: 24-30
- 2 Carpenter CR, Schuur JD, Everett WW et al. (2011) Evidence-based diagnostics: Adult septic arthritis. *Acad Emerg Med*. 18: 781-796
- 3 Crum-Cianflone NF. (2008) Bacterial, fungal, parasitic and viral myositis. *Clin Microbiol Rev*. Jul 21: 473-494
- 4 Adams EM, Gudmundsson S, Yocum DE et al. (1985) Streptococcal myositis. *Arch Intern Med*. 145: 1020-1023
- 5 Jahson L, Berggren L, Björnell-Ostling E et al. (1992) Streptococcal myositis. *Scand J Infect Dis*. 24: 661-665
- 6 Hird B, Byrne K. (1994) Gangrenous streptococcal myositis: case report. *J Trauma-Injury Infect Crit Care*. 36: 589-591
- 7 Kallen PS, Louie JS, Nies KM et al. (1982) Infections, myositis and related syndromes. *Semin Arthritis Rheum*. 11: 421-429
- 8 da Assunção RE, O'Hanlon S, Kuteyi OA et al. (2012) Medial thigh abscess mimicking septic arthritis of the knee: a report of two cases. *J Emerg Med*. 43: e425-e427
- 9 Kang N, Antonopoulos D, Khanna A. (1998) A case of streptococcal myositis (misdiagnosed as a hamstring injury). *J Accid Emerg Med*. 15: 425-426