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Case Presentation

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Septic Arthritis Presenting as Atraumatic Haemarthrosis in a Healthy Paediatric Patient: A Case Report and Review of Literature

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Abstract

Haemarthrosis is a condition whereby bleeding occurs into a joint space, while septic arthritis is a bacterial infection of the joint that can lead to rapid joint destruction if not treatment promptly. Although the clinical presentations of these two conditions overlap, they represent distinct entities that require different treatment approaches. The coexistence of haemarthrosis and septic arthritis is exceedingly rare, particularly in the paediatric population. However, given the high level of morbidity and mortality associated with septic arthritis, timely diagnosis and management are critical. This case report presents a 14 year old patient diagnosed with septic arthritis of right hip joint, initially presenting as a haemarthrosis, without any history of trauma or other recognised risk factors for haemarthrosis.

Introduction

Septic arthritis is a bacterial infection of the joint space requiring prompt recognition and intervention. Its incidence ranges from 6-10 cases per 100,000 persons annually, predominantly affecting young children and the elderly [1-5]. Septic arthritis is considered a medical emergency with a poor prognosis if treatment is delayed, as it can lead to irreversible joint damage, with some studies indicating that can be the outcome for nearly 50% of affected individuals [2,6]. Thus, early diagnosis and appropriate management are essential to improving patient outcomes. Haemarthrosis is defined as bleeding into a joint space [7]. Causes of haemarthrosis can be categorized as traumatic and non-traumatic, with the latter most commonly associated with haemophilia [8]. While the exact prevalence of haemarthrosis is unknown, reports

indicated that approximately 50% of individuals with haemophilia will experience at least one episode of haemarthrosis during their lifetime [7]. While it is possible for septic arthritis and haemarthrosis to coexist, such cases are rare [9]. Even more uncommon is the occurrence of septic arthritis alongside haemarthrosis in the absence of trauma or other risk factures, such as haemophilia. Hereby we present a case of septic arthritis presenting as haemarthrosis in a paediatric patient without a history of trauma or underlying bleeding disorders.

Case Presentation

A healthy 14 year old boy presented to our hospital with a 3-day history of right hip pain and an inability to weight bear. There was no history of trauma, although the patient had experienced a viral illness one week prior to presentation. His immunisations were up to date, and he had a medical history of vitamin B12 and iron deficiencies. On examination, his hip was held in a flexed and externally rotated position, with significant pain on attempted range of motion. There were no cutaneous manifestations, and his knee and ankle were non-tender and not irritable with range of motion. The patient was afebrile on admission and was otherwise systemically well. Laboratory studies revealed an elevated white blood cell count of 14.5 x10^9/L, an Erythrocyte Sedimentation Rate (ESR) of 90 mm/hr, and a C reactive protein (CRP) level of 134 mg/L. An X-ray of his right showed no evidence of fracture or osteomyelitis, while ultrasound imaging demonstrated a non-specific moderate effusion in the right hip joint. Given his recent viral illness, the initial diagnosis was transient synovitis, and the patient was treated conservatively with analgesia, NSAIDs, and observation. After 48 hours of treatment, the patient showed clinical improvement, with reduced pain, improved range of motion, and the ability to weight bear. He was discharged home with a follow up appointment scheduled for one week. Two days later the patient re-presented to the emergency department with persistent right hip pain, despite analgesia and NSAIDs. His mother reported a temperature of 38.0°C at home, however the patient remained systemically stable. Repeat laboratory results showed a white blood cell count of 10.6 x10^9/L and a CRP level of 228 mg/L. He was admitted and underwent Magnetic Resonance Imaging (MRI) of his right hip which revealed a moderate effusion with synovial enhancement and signal hyperintensity within the femoral neck, raising concern for septic arthritis.

After obtaining advice from the orthopaedic department at the local paediatric hospital, the patient underwent a sterile joint aspirate and arthroscopic hip joint washout. Intraoperatively, 50 ml of haemorrhagic fluid was aspirated. This was followed by a joint lavage with 0.9% sodium chloride solution. The arthroscopic findings revealed synovitis which was followed by a partial synovectomy, and blood clots, but no cartilage defects or evidence of trauma. Microbiological analysis of the aspirated fluid grew Staphylococcus aureus, confirming the diagnosis of septic arthritis. The patient was treated with intravenous cefazolin, followed by a step-down to oral cephalexin for a total duration of 4 weeks. Following consultation with the general paediatric team, no underlying cause of the haemarthrosis was identified. The patient was discharged three days post-operatively after significant clinical improvement, remaining afebrile, and a reduction in CRP to 25 mg/L. Follow-up visits at one week, six weeks, and one year post-surgery revealed normal clinical examination findings and excellent right hip

radiographic appearance according to Bennett's radiographic assessment criteria [10].

Discussion

The coexistence of haemarthrosis and septic arthritis is uncommon, particularly in paediatric patients without known risk factors such as trauma or bleeding disorders [9]. Haemophilia is the most common non-traumatic cause of haemarthrosis, with the first episode occurring within the first few years of life. Recurrent episodes of haemarthrosis in these patients can lead to haemophilic arthropathy [8]. Other causes of non-traumatic haemarthrosis include inherited coagulation factor deficiency disorders, liver or renal disease, vitamin K deficiency, disseminated intravascular coagulation, and anticoagulation therapy. In most cases, a history of trauma is present, which helps determine the cause of the haemarthrosis. In the absence of trauma, bleeding disorders or other non-traumatic causes should be suspected. Clinical presentation often includes joint pain, swelling, and a reduced range of motion, with irritability being common in the paediatric patients [7]. Initial imaging typically includes plain radiographs, followed by further imaging such as ultrasound, Computed Tomography (CT) and MRI if necessary [7,11]. Arthrocentesis and joint aspirate fluid analysis may be required for definitive diagnosis, particularly if there is suspicion of infection [7,8]. Treatment is aimed at halting the bleeding and addressing the underlying cause, with initial management focusing on analgesia, ice, compression, joint immobilisation and elevation, with the general goal to allow the body to absorb the blood over time [8]. Septic arthritis is a bacterial infection of the joint that can lead to rapid and irreversible joint damage if not promptly identified and treated [1-5]. It is regarded as a medical emergency, with delayed treatment often resulting in a poor prognosis [2,4,6]. The condition is most commonly associated with Staphylococus aureus, with the paediatric population being affected more commonly than adults [1,3-5,9]. Risk factors for septic arthritis in children include neonates, patients with haemophilia, immunocompromised individuals, and those undergoing chemotherapy or taking immunosuppressive medications [1,12,13]. Without timely treatment, septic arthritis can lead to considerable morbidity including osteomyelitis, chronic pain, osteonecrosis, sepsis and even death [1,14]. A definitive diagnosis is confirmed through sterile arthrocentesis, and treatment involves joint lavage and a course of antibiotics [1].

In this case, the patient's presentation of right hip pain could also mimic other conditions such as appendicitis, hernias, renal colic & renal stones. The diagnosis of transient synovitis was initially considered, but the lack of improvement, the development of fever and a rising CRP warranted further investigation. Given the rarity of the coexistence of haemarthrosis and septic arthritis, a high index of clinical suspicion is essential in differentiating these conditions. In patients presenting with prolonged joint pain, antalgic gait and fever, a proactive diagnostic approach, including MRI and arthrocentesis, should be pursued to ensure early diagnosis and timely intervention, thereby optimising patient outcomes [2,15,16].

Conclusion

Although rare, septic arthritis can present as a haemarthrosis in the paediatric population without a clear history of trauma or an underlying bleeding disorder, such as haemophilia. As suggested in other

studies, we recommend that any paediatric patient presenting with prolonged joint pain and an otherwise unexplained fever be considered for MRI and sterile arthrocentesis, particularly if there is poor response to conventional haemarthrosis therapy, or they show any other signs of infection.

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