

## A RARE CASE OF CHYLOUS JOINT EFFUSION AND SEPTIC ARTHRITIS IN A PAEDIATRIC PATIENT

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### ABSTRACT

Chylous joint effusions have not been reported in paediatric patients till date. Chylous arthritis are infrequent conditions characterized by their macroscopic milky appearance. Their detection warrants a detailed evaluation to look for the possible aetiology as the condition is associated with varied illnesses. Also, to consider is that at onset they may mimic infectious arthritis. The macroscopic appearance of milky versus purulent fluid can be challenging to distinguish between chylous and septic arthritis. A detailed history and microscopic examination of the joint fluid can accurately differentiate both. This case report describes a child who presented with post-traumatic hip joint pain and swelling which was initially thought to be due to septic arthritis but later unfolding to reveal a co-existent chylous joint effusion, the later complicated by the former.

**KEYWORDS :** Chylous arthritis, septic arthritis, Post-traumatic

### INTRODUCTION:

Septic arthritis can lead to a rapid destruction of joints, which results in loss of function and other sequels. Its diagnosis is usually based on both clinical and laboratory findings. An aggressive and empirical therapeutic approach is warranted in most cases, and surgical debridement is often required. Many conditions can mimic septic arthritis, including chylous effusions which are relatively benign, but can warrant a detailed work-up to look for the specific etiology.

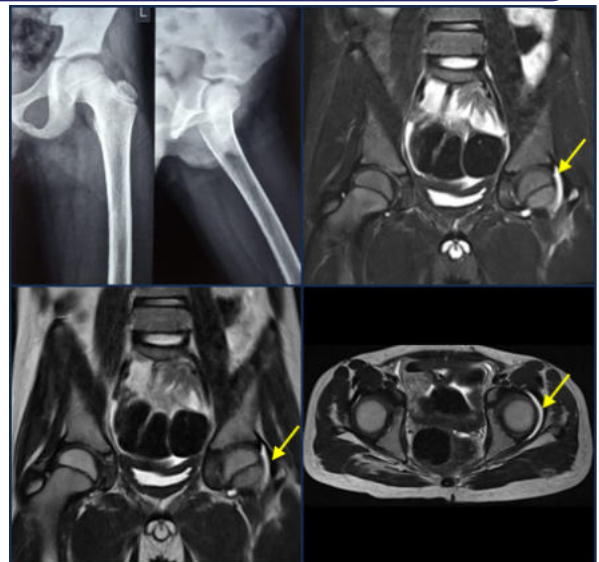
It is often difficult to clinically distinguish between both the entities, especially when the condition is associated with a preceding history of trauma and in the presence of co-existent features of infection. The incidence and prevalence of post-traumatic chylous arthritis is unclear due to the rarity of the condition with few reports in adult patients (1-4) and there is no report in paediatric patient till date. We report a rare case of a 9-year-old boy with chylous arthritis of hip joint with superadded joint infection following trauma and we discuss the differential diagnosis of these atypical synovial effusions.

### Case Report:

A 9-year-old, previously well boy presented to emergency room with complaints of left hip pain and difficulty in walking for 8 days which he related to alleged history of fall 2 weeks ago from a height of about 10 feet. The above symptoms were associated with high grade continuous fever since 3-4days.

On examination, he had painful movements of left hip joint and range of motion was limited. He had severe tachypnoea with shallow breaths, tachycardia with saturations in mid 60s in room air with crepitations and reduced bilateral air entry. Rest of the systemic examination was normal. An empirical diagnosis of septic arthritis with pneumonia was made. Complete blood picture revealed leucocytosis with elevated C-reactive protein of 112. Plain Radiograph of left hip showed haziness of left hip joint space (Figure 1), MRI revealed inflammation of left hip joint and mild fluid collection in intertrochanteric space (Figure 1).

In view of severe desaturation, a possibility of subsegmental septic pulmonary embolism was also considered. Echocardiography and electrocardiogram were normal. CT chest with pulmonary angiography was obtained which showed bi-basal consolidation with no evidence of pulmonary embolism.



**Figure 1:** X Ray showing haziness of left hip joint space. MRI showing subtle oedema in metaphysis, epiphysis and intertrochanteric space along with minimal fluid signal in left hip joint.

He was started on empiric antibiotics along with supportive treatment and he underwent emergent left hip arthrotomy. Around 15 ml pus was aspirated which was sent for examination. After centrifuging the sample, a thick milky layer was obtained as supernatant, and this was positive for chylomicrons. The sample revealed triglycerides of 600mg/dL, 80mg/dL glucose, 3g/dL protein, 18000 leucocytes/mm<sup>3</sup> with 80% neutrophils, 4000 red cells/mm<sup>3</sup>. Gram stain and AFB stain did not show any organisms and culture was negative. Blood culture grew methicillin resistant *Staphylococcus Aureus* and the appropriate antimicrobial therapy was provided including decolonisation of the patient.

After reviewing the laboratory results, a diagnosis of chylous arthritis secondary to trauma with superadded infection and pneumonia was made. Patient improved gradually with antibiotics, analgesics and physiotherapy. His oxygen was eventually weaned off and he was discharged home after 3 weeks of hospital stay.

**DISCUSSION:**

Septic arthritis should be considered in any child presenting with painful and/or inflamed joint (redness, hot, swelling, synovial effusion, and/or purulent drainage) with or without a fever according to the SANJO group (5). Septic arthritis is essentially a clinical and laboratory diagnosis. Clinical features include fever, warm swollen painful joint with limitation of range of movements. Laboratory findings include elevated white blood cells with neutrophil predominance and band cell, elevated C-reactive protein, joint fluid showing leucocytes greater than 50,000 cells/cu mm with neutrophils in excess of 75% (6). Immediate attention along with rapid medical and surgical treatment should be provided as early diagnosis and management is associated with improved outcomes.

A synovial effusion is said to be chylous or chyliform when it contains greater than 800mg/100 ml lipid concentration and presents macroscopically as milky fluid (7). Causes of chylous arthritis include traumatic joint injury, systemic lupus erythematosus, osteoarthritis, rheumatoid arthritis, filariasis, pancreatitis with peripheral fat necrosis. In rheumatoid arthritis and osteoarthritis, chylous effusion occurs due to chronic inflammation of fat rich elements of the joints such as synovium, bursae, tendons (8). In lupus, it is thought to be due to hyperlipidaemia associated with nephrotic syndrome. The obstruction of lymphatic vessels leading to lymphangiectasia and aberrant channel ending in the joint is the principal mechanism for filariasis related chylous arthritis (7). Chylous joint effusion can occur as a complication in pancreatitis associated with systemic fat necrosis. The postulated mechanisms of trauma induced chylous joint effusion are lipid leakage from the marrow cavity which is usually rich in triglycerides, disruption of synovium leading to synovial fat release and intra-articular fat pad necrosis (9).

Septic arthritis often leads to irreversible joint destruction and hence accurate diagnosis and early treatment is critical. Trauma induced chylous arthritis is a benign self-limiting condition, however, the presenting signs and symptoms closely mimic septic arthritis. Also, the macroscopic appearance of the joint aspirate is similar, rendering the distinction between chylous and septic arthritis difficult.

Our child presented with fever and features of left hip arthritis along with symptoms of pneumonia which prompted us to consider infective arthritis as the initial diagnosis. This was supported with elevated CRP, X ray and MRI changes. Joint fluid aspirated during arthrotomy procedure showed purulent fluid favouring septic arthritis as the diagnosis. However, once the separated supernatant appeared milky and tested positive for triglycerides, the diagnosis of chylous effusion became evident. The chylous joint acquired superadded bacterial infection which also disseminated to cause generalised sepsis and pneumonia in this child.

**CONCLUSION:**

Chylous arthritis although undescribed in children can manifest following trauma as is the case in adults. In making the diagnosis, the purulent however milky aspect of synovial fluid may lead to a suspicion of septic arthritis. Microscopy of the fluid is the key to differentiate the nature of the swollen joint.

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