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Case Report

An Unusual Case Limping-Arthroscopic Toilette on Septic Joint

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Abstract

Septic arthritis of the ankle is a rare disease in pediatric population. We present a case of septic arthritis of the ankle starting with limping as initial symptom, with no specific presentation and no trauma history, focal tenderness over ankle joint is the most helpful clinical sign. A small joint effusion may be present. Treatment of septic arthritis is always an emergency and the delay in diagnosis may lead to progression of disease and complications. Arthroscopic procedure may give secure joint toilette, allowing less invasive spectrum.

Case

A 7-year-old girl presented with a 2-day history of left ankle pain and swelling that started with limping. On the first day of symptoms, she was evaluated in other institutions Emergency Department (ED) presenting pain during walking without trauma history. Radiographic examination was normal and she was discharged home on Ibuprofen 10 ml/8 hours.

On day two the pain and swelling became worse, and she was unable to walk, her mother brought her to our ED for further evaluation. On review of symptoms, there was no fever, trauma, recent upper respiratory tract infection, gastrointestinal symptoms, or other joint pain or swelling.

Physical examination on arrival to the ED revealed a pleasant, well-appearing child. Vital signs were as follows: temperature, 37.4°C; heart rate, 100; respiratory rate, 24; and blood pressure, 100/70 Table 1.

Examination of the heart, lungs, and abdomen was unremarkable. The left ankle seemed mildly swollen with effusion. There was no physical evidence of trauma. The ankle was slightly warm to touch; little tibial compartment erythema was noted. There was tenderness over the medial joint. Passive range of motion was full, although the patient had some hesitation on movement. Distal pulses were normal. Examination of all other joints was normal. The patient walked with an antalgic gait.

The initial work-up included a White Blood Cell (WBC) count of 10,300 cells/mm^3 with a differential of 54% neutrophils, 35% lymphocytes, 10% monocytes, and 1% eosinophils. The hemoglobin was 13.8 g/dL, and platelet count was 247,000 cells/mm^3. The initial Erythrocyte Sedimentation Rate (ESR) was normal at 11 mm/h and C-Reactive Protein (CRP) was elevated at 2.2 mg/dL. Plain films of the left ankle with no bone anormality and only soft tissue edema. Sonography shown no ligament disruption or celulitis, with increase of joint space and capsular edema.

Orthopedic surgeon was consulted, and the patient underwent a synovial fluid aspiration of the ankle under conscious sedation in the ED, and 2cc of thick bloody fluid was obtained. Gram stain and culture of the synovial fluid was negative for any organisms.

The initial differential diagnosis under consideration included transient synovitis, tendinous or ligamentary distension, and septic arthritis of the ankle. Given the results of the initial work-up, the suspicion for infection was low. The patient was admitted for further observation and work-up.

During hospital admission, a basic rheumatologic work-up was negative. On the second day after admission the inflammatory markers were ESR of 78 mm/hour and CRP of 16.2 mg/dL Table 2.

Orthopedic surgery was reconsulted, and a Magnetic Resonance Imaging (MRI) was recommended. The MRI revealed a small joint effusion with enhancing synovium without osteomyelitic focus. The patient continued to have worsening ankle pain, swelling, decreased range of motion, and developed fever (38.4 °C). Orthopedic service decided to perform an arthroscopic toilette, and take new samples for culture and pathology.

On day three a new arthoscopic toilette was performed, and after 12 hours the clinical presentations present a remission, with decrease of local temperature, pain and fever. 2 joint fluid

Table 1: Vital signs on arrival.

	Normal	Patient
Heart Rate	70-100	100
Respiratory Frecuence	15-20	24
Axilar Temperature	36-37 centigrades	37.4 centigrades

samples culture were negative for any bacterial infection, the patient likely had a primary arthritis that resolve with arthroscopic toilette and empiric antibiotic. The peripheral blood cultures remained negative throughout the hospitalization. Only in culture from the second arthroscopy a *staphilus aureus* was identified.

After diagnosis septic arthritis of the ankle, infectology service was consulted and the patient's infection was treated with intravenous cefazolin 50 mg/kg/day on 8 hours doses during the inpatient stay. The patient's clinical picture improved, with less articular effusion, and fever decrease to normal temperature. Antibiotic therapy continued for a total of 4 weeks. The patient was discharged after a 7-day hospitalization. During outpatient follow up at the pediatrics service the inflammatory markers decrease to normal levels, and antibiotics therapy was successful. At one month follow-up in the orthopedics service, the patient was found to have responded well to the treatment. She had no pain, no tenderness, no gross effusion, and full range of motion of her left ankle. No requiring physical rehabilitation, or other special measures.

Discussion

Septic arthritis remains an important and serious disease of childhood because of its potential to cause permanent sequelae. The incidence of septic arthritis is approximately 5.5 to 12 cases per 100000 [1,2]. According to the literature, S. *aureus* is the most commonly isolated organism in septic arthritis, almost 74% of cases [1,2,6]. The S aureus is a rapidly destructive disease of the joint, depending on the host immune system in dealing the bacteria. [1,2,4-6]. other microorganism are H *influenzae* (in not complete immunized with antecedent of upper respiratory infection and or otitis media [3]), salmonella represented 5% in the series reported by Chun Lung Wang [2], and 1% in 95 cases informed by Welkon [3], always associated to a gastroenteritis. The hip and knee are the most commonly affected [2,3,6]. Ankle joint infection is rare and the differential diagnosis includes tendinitis, traumatic injury, cellulitis.

The early clinical presentation use to be nonspecific [5,6]. In most cases, there is no history of trauma. Symptoms may include fever, joint pain during weight load, focal tenderness over the joint, erythema, swelling, decrease of the joint range of motion [3,5,6].

Serum laboratory studies are not specific for septic arthritis [2,3,5,6] but may be used in conjunction with radiologic studies to support the diagnosis and most importantly to monitor disease resolution once treatment is initiated.

Table 2: Laboratory Results.

	Normal	Patient
ESR	0 – 10 mm/hr	11mm/hr day 1 78 mm/hr day 2
CPR	< 2 mg/dl	2.2 mg/dl day 1 16.2 mg/dl day 2
WBC	5500-15000 cell	10300 cell
Hematocrite	33 – 41 %	36 %
Platelet	150000 - 400000	247000

Positive cultures are difficult to obtain as reported by Caksen with 55% of positive findings similar as Chang, et al. [5] with 30% of 209 patients diagnosed with septic arthritis negative cultures. Negative blood cultures when associated with WCS, ESR and PCR results shown significative lower when compared with patients with positive culture [5,6].

Most studies have shown that the WBC is not a specific indicator for the presence of septic arthritis [7-9,11]. ESR and CRP are both markers of inflammation that are elevated in the presence of tissue damage [8,9]. CRP has the advantage of increasing much faster than ESR and can be doubled in approximately 6 to 8 hours after infection, injury or inflammatory process, with a peak at two days. And be very useful for monitoring the treatment [9-11]. The CRP has been shown to be the better lab independent predictor for septic arthritis in children and found better than the other lab studies [10-12].

Although plain radiographs are generally the first type of imaging obtained, they are not particularly helpful in establishing the diagnosis. Ultrasonography is an important modality for evaluation of musculoskeletal infection in childrens because is rapid, nonionising and very sensitive for fluid collections and joint effusion, offers the possibility for safe, real time and convenient technique performance of needle aspiration and further follow up [13]. Early detection of intraarticular effusion, fluid heterogeneity, synovial thickening may be diagnostic, and differential diagnosis like tendinitis and cellulitis can be achieved due to extraarticular affectation of tendinous sheath of soft tissue edema respectively.

MRI is the best image study for diagnosis providing superior contrast between soft tissue and bone marrow, with more sensitivity and specificity; but is not accessible to all hospitals and may delay treatment. Signs like soft tissue edema, soft tissue enhancement, effusion, fluid heterogeneity, synovial thickening may be present, but no single sign or combination could be consider pathognomonic or exclude joint infection. For differential diagnosis of osteomielitis the appearance of bone marrow edema, and periostic erosions can be conclusive [14].

In the treatment of septic ankle joint antibiotics should be targeted to specific organisms whenever possible. Until the etiology of the organism is known, broad-spectrum empiric treatment may begin with cefacillin or oxacillin parenterally. In areas where the prevalence of methicillin-resistant S. *aureus* is a concern vancomycin or clindamycin should be a part of empiric coverage. A third-generation cephalosporin may be added *if Haemophilus influenzae* is a concern in an inadequately immunized child. Surgical toilette is sometimes necessary. Parenteral antibiotics are recommended until there is clinical improvement, consistent reduction of ESR and CRP, and a resolution of fever; at which time oral antibiotics may be used to complete the course of treatment. Most textbooks recommend a minimum of 4-6 weeks of antibiotics.

Conclusion

On the basis of case reports and our experience, the pathology is uncommon, should be suspected in a patient with exacerbated and disproportionate joint pain with no initial clinical affection.

The function and range of motion of the joint returns to normal after treatment is complete. But the prognosis depends in the treatment implemented and the time spent in the diagnosis since the start of symptoms. It has been reported that poor predictors are delay in treatment, multiple joint affection, and positive bacterial culture [5].

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