



CASE REPORT

Reactive Arthritis Due to Subcutaneous Abscess: A Possible Correlation?

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Abstract

Reactive arthritis is the specific entity of aseptic inflammatory arthritis and follows the previous infection in other parts of the body. The association of soft tissue infections with this disease is rare. A 63-year-old male patient after blunt trauma to the left knee progressively evolved with inflammatory signals and loss of joint function, followed by additive polyarthritis of large joints. He had bilateral knee arthroplasty, the last one three years ago. On clinical evaluation he had a non-mechanical, asymmetric polyarthritis of left shoulder, elbows, knees and ankles; periarticular edema on the medial left knee. Complementary exams showed leukocytosis. Septic arthritis and bacteraemia was suspected and administration of antibiotic was started after blood culture. A fluid collection of subcutaneous tissue on the medial left knee was demonstrated by ultrasound, which was drained revealing an abscess. Blood cultures and culture of the abscess were shown *Streptococcus sp*. Patient remained polyarthritis despite antibiotic therapy and drainage of the abscess. Reactive arthritis was considered; corticosteroids were started with complete and functional improvement of the joints in five days.

Keywords

Reactive arthritis, *Streptococcus*, Soft-tissue infections, Abscess

adults. Most common presentation of this disease is as an asymmetric oligoarthritis with predominance of the lower extremities [2].

Urogenital, gastrointestinal and respiratory infections are the most involved in reactive arthritis [1,2]. However, although less frequent skin and soft tissue infections may also be related to this disease. In these cases the main etiological agents involved are *Staphylococcus sp* and *Streptococcus sp*. Post-streptococcal reactive arthritis has been mainly related to cases of tonsillitis [3,4]. Only two case reports were found of reactive arthritis after subcutaneous abscess and *Streptococcus* bacteremia [5,6]. The differential diagnosis between reactive arthritis and septic arthritis in the presence soft tissue abscesses and adjacent to the joints is challenging and becomes even more urgent in patients with joint prostheses.

Thus, the aim of this study was to present, due to the rarity of the subject, a clinical case of a 63-year-old male patient with metallic knee prostheses with reactive polyarthritis associated to subcutaneous abscess of lower extremity due to blunt trauma.

Introduction

Reactive arthritis has been defined as an inflammation in the joints triggered by an extra-articular infection, in which the infectious agent is not normally isolated in cultures of synovial fluid [1]. The estimated prevalence of the reactive arthritis is 30/40 cases per 100,000

Case Report

A 63-year-old male was admitted to the hospital in December 2016, reporting blunt trauma to his left knee, which after three days evolved with inflammatory signs and loss of joint function. After five days he started with polyarthritis of large joints and unmeasured fever. On



Figure 1: Periarticular edema of the left knee.

the seventh day he presented pallor, sweating, dyspnea and jaundice. He reported knee arthroplasty with metal prostheses, the right side in 2013 and the left side in 2015. He denied chronic diseases or smoking. An examination he presented normal blood pressure (131 × 84 mmHg), pulse was 98, respiration rate was 19 irpm and 36.3 °C, Glasgow Coma Scale 15, jaundice 2+/4+ , afebrile and acyanotic and absence of cervical lymphadenopathy. Thoracic examination was observed decreased vesicular sound with crackles in the left hemithorax. The abdomen was flat with no palpable masses or visceromegaly and painless on palpation. In examining the musculoskeletal system was observed tenderness and limited range of movement of bilateral knee, elbow and ankle; periarticular edema of the left knee (Figure 1), suggestive of collection of soft tissue or joint effusion. Complementary tests showed leukocytosis and thrombocytopenia, liver and canalicular enzymes were above normal limits. HBV, HCV and HIV serologies were negatives. The rheumatoid factor, C3, C4, the anti-nuclear antibody and Anti-streptolysin O were negatives. Chest x-ray showed blunting of the costophrenic angle costophrenic on the left, suggestive of pleural effusion. Abdominal ultrasound and transthoracic echocardiography examinations were normal.

Initial diagnostic hypothesis was sepsis related to septic arthritis with probable septicemia. Blood cultures were collected and empiric treatment was initiated with oxacillin 2 g, intravenous of 4/4 hours. The aerobic blood culture bottle turned positive for gram positive cocci, therefore antibiotic was changed to Clindamycin 600 mg 6/6 h. Ultrasound of the left knee revealed a small intra-articular effusion associated with fluid collection of subcutaneous tissue medial to left knee,

which was punctured, revealing an abscess. The purulent material was sent to culture. After that, the surgical approach was performed with complete cleaning of the collection. The knee prosthesis was evaluated and was not compromised. Blood cultures and abscess culture revealed non-hemolytic *Streptococcus sp.* strains by a conventional test scheme. Ampicillin was prescribed for better anti-streptococcal coverage. However, patient still complained severe arthralgia despite the exchange of antibiotic therapy, abscess drainage and laboratory tests improvement. Reactive arthritis was considered as a hypothesis compatible with the clinical scenario. It was then started methylprednisolone 75 mg EV and after 3 days replaced with prednisone 60 mg orally with complete reduction of arthritis and functional recovery in 5 days.

Discussion

Currently there are no validated diagnostic criteria for reactive arthritis. The different criteria proposed share characteristics of a typical clinical picture (asymmetric oligoarthritis predominantly of the lower limb), exclusion of other rheumatic diseases and evidence of a previous or ongoing infection in the patient's history or laboratory examination and aseptic synovial fluid [1-3].

In this clinical case, the patient presented acute asymmetric polyarthritis after trauma that caused periarticular subcutaneous abscess of left knee. The first goal was the exclusion of septic arthritis, mainly because the patient had a metallic prosthesis adjacent to the site of the abscess. Therefore antibiotic was administered after blood culture. However, imaging and surgical approaches of the subcutaneous abscess rule out infectious articular on the knees, proving that the involvement was only of soft tissue. For others differential diagnoses rheumatologic tests (rheumatoid factor, anti-DNA, ASLO) were requested, which were negative. Blood culture and secretion culture of the subcutaneous abscess showed the same infectious agent, nonhemolytic *Streptococcus sp.* It was not possible to characterize the phenotype of this bacteria, being possible to affirm that it was not a beta or alpha-hemolytic *streptococcus*, and among non-hemolytic group we would have *Enterococcus*, *Streptococcus viridans* and *Streptococcus sp.* Regardless of the species of *Streptococcus*, the literature is scarce in cases that correlate soft tissue infection with poststreptococcal reactive arthritis.

In the literature only two articles were similar with our study [5,6]. The first case was of a 77-year-old woman who, after treatment for osteoarthritis of the knee with hyaluronic acid, developed pain in the left shoulder and knees. Septic arthritis was suspected, therefore blood culture and empiric antimicrobial therapy were warranted. However, tomography of the joints and culture of synovial fluid were normal. A subcutaneous abscess adjacent to the knee was visualized. Hemocul-

ture and abscess culture revealed Group B *Streptococcus*, suggesting the diagnosis of reactive arthritis. After drainage of the abscess, the inflammatory findings disappeared [5]. The second case was a 73-year-old female with polyarthralgia involving knees, shoulders and hip. Radiographs of the joints showed signs of degenerative changes, hemogram and biochemistry were normal. During hospitalization for treatment of hypovolemic and septic shock due to high gastrointestinal bleeding due to the administration of NSAIDs, right thigh edema was observed and magnetic resonance imaging showed muscle and subcutaneous abscesses that were drained. Blood culture revealed *Streptococcus dysgalactiae*, but there was no bacterial growth in the abscess culture, a result attributed to previous antibiotic therapy. The final diagnosis was streptococcal bacteremia, polymyositis and reactive arthritis. The patient was treated with hydrochloroquine and salazopyrine, remaining asymptomatic in the follow-up of one year [6].

In these two case reports, both were caused by *Streptococcus*. The first group consisted of a beta-hemolytic *streptococcus* (Group B *Streptococcus*), while the other group G *Streptococcus* (*Streptococcus dysgalactiae subsp. Equisimilis*). In these clinical cases, including ours, streptococci were related to severe and invasive infection and progression to reactive arthritis. The pathophysiology of this disease is not clear, it is believed to occur by immunological cross-reactivity between the infecting organism and the synovial membrane component, causing inflammation of the synovial membrane without infection to the joint space [1,2,5].

Regarding the specific treatment for reactive arthritis, the indication of the different therapeutic modalities is based on the extension of the involvement and the duration of the symptoms [1,4]. Antibiotic therapy is usually not enough to treat this disease, in agreement

with our findings. Acute and severe conditions respond to intra-articular or systemic glucocorticoids. Nonbiological Disease-Modifying Antirheumatic Drugs (DMARDs) are indicated for persistent symptoms after 3-6 months of illness, since the remission rate of symptoms in the first six months is 50-70%. However, 10 to 20% of the patients may remain symptomatic, one to two years after the onset of the disease. Our patient was discharged with oral corticosteroid and descalation of dose and four months he presented without medication.

This case report showed that reactive arthritis, although rare, should be a differential diagnosis to be remembered in patients with polyarthritis, especially when associated with soft tissue abscesses and in older age groups.

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