

Clinical Case

Gonococcal arthritis with systemic involvement: A case report

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Abstract: INTRODUCTION Septic arthritis caused by *N. gonorrhoeae* is rare in our setting. Systemic dissemination may present as a characteristic triad of skin rash, tenosynovitis and arthritis. CASE PRESENTATION A 47-year-old man, previously healthy, had oligoarticular pain for seven days. He developed polyarthralgia and skin lesions. Arthrocentesis, blood cultures and laboratory tests with a rheumatological profile were performed. Antibiotic treatment was started and subsequent arthroscopic debridement of the knee was performed after synovial fluid and laboratory analysis. Blood cultures revealed *N. gonorrhoeae*. The patient complied with antibiotic treatment and evolved favorably until he recovered completely. DISCUSSION *N. Gonorrhoeae* has a low systemic dissemination. Joint involvement may resolve spontaneously. Tenosynovitis affects more the dorsum of the hands and wrists. The skin lesions are purplish macules that may develop into vesicles or pustules. There may be immunological lesions. Cultures are often negative. Other pathologies with joint and skin involvement should be known, such as systemic lupus erythematosus, psoriatic arthritis and reactive arthritis. Treatment consists of surgical debridement and antibiotics. In contrast to other septic arthritis, complications are rare and the prognosis is good.

Keywords: arthritis; septic; gonococcus; disseminated

1. Introduction

Septic arthritis (SA) tends to be uniarticular (the knee being the most frequent location) and most frequently affects older men with previous joint pathology and/or chronic diseases that compromise immunity. The most commonly isolated germ is *S. Aureus* (1).

AS caused by *N. gonorrhoeae* is less common: It is estimated that up to 20% of septic arthritis in the United States is due to *N. gonorrhoeae*, but its true frequency in the rest of the world is unknown (2). Risk factors have been identified, such as intrauterine devices; immunological deficiencies, which limit the host response and favor the persistence of bacterial infections; and risky sexual relations, including multiple or unprotected partners, which represent a direct route of transmission of the bacteria. In addition, certain age groups, particularly young adults, have a higher incidence of *N. gonorrhoeae* infections.

This hematogenous dissemination presents clinically as septic arthritis without further alterations or as a triad of rash, tenosynovitis and arthritis (3).

Due to the rarity of this pathogen in our environment, we present a clinical case along with its possible differential diagnoses.

2. Case presentation

Male patient aged 47, previously healthy. He did not take any regular medication. He denied allergies, toxic habits or previous surgeries.

The patient had oligoarticular pain of seven days' duration, not associated with trauma. The condition began synchronously in the right knee and left ankle, with edema and pain on axial load.

After three days of rest and anti-inflammatory drugs, the initial symptoms were accompanied by pain in both trapeziometacarpal and distal interphalangeal joints of both hands and, in the last 48 hours, multiple skin lesions appeared on the hands, wrists, legs and feet. These were not painful or itchy.

He did not report any febrile episodes, but occasional night sweats. He denied morning stiffness lasting more than a few minutes.

His only infectious history was a case of gastroenteritis of probable viral cause 2 weeks prior to the condition.

Upon admission, a knee arthrocentesis was performed and a complete laboratory test (21 thousand leukocytes with neutrophilia and 15.63 PCR) with a normal rheumatological profile.

From the infectious disease department, due to the skin lesions and evolution, they suspected a case of ecthyma gangrenosum (rapidly evolving necrotizing vasculitis usually caused by *Pseudomonas Aeruginosa*) and indicated starting intravenous antibiotic therapy with 2 grams of Cefepime every 8 hours and blood cultures.

During our visit the patient was hemodynamically stable, afebrile, and looked good.

Regarding his right knee: Edema without erythema or increased temperature, ROM 5/100 (contralateral 0/130) painful at maximum flexion and extension, positive key sign, pain in the medial interline without signs of ligamentous instability. It was impossible for him to bear weight on that limb. In his left ankle we observed edema, without erythema and slightly increased temperature. He had a full range of mobility, but painful at maximum dorsiflexion.

Musculoskeletal examination of the upper limb revealed pain at both bases of the thumb, with a positive grind test, pain in the first extensor compartment of the wrist without edema. In addition, the patient had pain on palpation of several distal interphalangeal joints of both hands. The active and passive range of motion of all joints was normal, with no edema or other pathological signs.

The multiple skin lesions were highlighted, which appeared to have different evolutionary patterns: purpuric macules on the right ankle, a violaceous nodule on the distal phalanx of the third toe of the right foot with peripheral petechiae, erythematous-



violaceous figurative macules on the hands and an individual tumor with defined edges on the volar surface of the left wrist (Fig 1). There were no other clinical alterations.



Fig 1. Multiple violaceous lesions.

Previous studies were reviewed, paying special attention to the results of her arthrocentesis, whose cellularity and predominance of polymorphonuclear cells were suggestive of septic arthritis (Fig 2). The microbiological cultures of this puncture ended up being negative days later.

Descripción	Valor
Naturaleza de la Muestra:	LIQ ARTICULAR
Proteínas:	5
LDH:	815
Glucosa:	62
Células:	42000
	: PMN: 80%
	: MN: 20%

Fig 2. Analysis of arthrocentesis fluid.

Based on the clinical and analytical findings, the condition was interpreted as a probable disseminated AS due to *N. Gonorrhoeae*. The patient was explained the situation and an emergency arthroscopic lavage was performed. Synovial tissue with an inflammatory but non-purulent appearance was found, with articular cartilage with a polished appearance in the femoral condyles. All intraoperative samples were negative.

3. Results

Two days after arthroscopic lavage, the results of the blood cultures were received (Fig 3), which confirmed the diagnosis of disseminated *N. gonorrhoeae* infection. The patient was then switched to intravenous ceftriaxone for ten effective days of antibiotics, then switched to oral cefixime 400 mg every 12 hours until discharge from the infectious disease clinic. In subsequent outpatient check-ups, the patient regained range of motion and the ability to fully load the right leg, without the need for analgesia or other treatment.

Descripción	Valor
	: HEMOCULTIVO x2
1ª MUESTRA PARA AEROBIOS:	Derrollo de diplococcos Gram(-)
2ª MUESTRA PARA AEROBIOS:	Derrollo de diplococcos Gram(-)
ID MALDI-TOF ESPECT. MASAS:	Neisseria gonorrhoeae
ATB AUTOMATIZADO:	Azitromicina CIM 0.75 Mg/ml 5
PENICILINA:	R
CIPROFLOXACINA:	R
CEFTIAJONA:	S
ANTIBIOT.COMPLEMENTARIO:	TETRACICLINA R
OBSERVACIONES:	Azitromicina sensible para uso combinado con Ceftriaxona

Fig 3. Blood culture results with antibiogram.

4. Discussion

N. gonorrhoeae has a low systemic dissemination (0.5%). For this reason, cases with joint and skin involvement are rarely seen in routine practice (4,5).

Unlike isolated genitourinary infection, the window time between infection and the appearance of symptoms can range from just one day to two months, which could make it difficult to identify risk behaviors that lead to suspecting it (3).

Joint involvement is usually asymmetrical and resolves spontaneously in up to 30% of cases. Tenosynovitis is characteristic of gonococcal arthritis since it does not usually appear in other septic arthritis and occurs in approximately 80% of patients and is always more frequent on the back of the wrists and hands. Skin lesions, which are definitely the most striking manifestation of the condition, occur in between 40 and 70% of those affected by the disseminated form of the disease. Typical primary lesions are multiple erythematous or violaceous macules, and may evolve into lesions such as vesicles and pustules. Other immunological skin lesions such as erythema nodosum, multiforme, urticaria and bullae may coexist with septic embolisms (6).

The diagnostic yield of laboratory studies is often disappointing. Arthrocentesis is positive in only 50% of cases. Blood cultures are rarely positive (7). DNA amplification by PCR is not routinely performed or widely available and does not allow for antibiograms (8).

It is essential to be aware of other differential diagnoses when a case of these characteristics is presented. Rheumatological diseases may present with oligoarthritis and skin manifestations: systemic lupus erythematosus (SLE), psoriatic arthritis or reactive arthritis.

Treatment has two main pillars: antibiotic therapy and surgical debridement. Strains of *N. gonorrhoeae* are resistant to penicillins and tetracyclines, so the appropriate treatment is with Ceftriaxone. Current treatment guidelines recommend 1 g of Ceftriaxone daily until switching to an oral regimen based on microbial sensitivity after 24-48 hours of clinical improvement, for a total of 7 days (9).

It is important to suspect a concomitant infection with *C. Trachomatis* (7). In contrast to other septic arthritis, the prognosis is usually encouraging and serious complications such as osteomyelitis, meningitis and endocarditis are rare (1).

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