

SEPTIC ARTHRITIS OF THE NATIVE HIP BY GRANULICATELLA ADIACENSA CASE REPORT AND LITERATURE REVIEW

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SUMMARY

Background: Septic arthritis of the native hip in adults is an infrequent clinical entity, typically occurring at an incidence of 2 to 10 per 100,000 person-years. *Granulicatella adiacens*, a fastidious, facultatively anaerobic gram-positive coccus and commensal of the oral flora, is rarely implicated in musculoskeletal infections, with most reported cases involving endocarditis or prosthetic joint infections.

Objective: This report describes a unique case of native hip septic arthritis caused by *Granulicatella adiacens* in a 58-year-old female, highlighting the diagnostic challenges and the clinical association with asymptomatic endocarditis.

Key Points: The patient presented with progressive right hip pain following a recent contralateral total hip arthroplasty. Initial magnetic resonance imaging demonstrated joint effusion, and synovial fluid analysis confirmed infection. Although arthroscopic lavage was initially performed, cultures required eight days in enriched media to isolate *Granulicatella adiacens*. Subsequent imaging revealed rapid chondrolysis and subchondral necrosis of the femoral head. Due to extensive articular damage and persistent symptoms, the patient underwent open debridement and the placement of a custom-made, vancomycin-loaded polymethylmethacrylate (PMMA) articulated spacer. Systemic antibiotic therapy was tailored to ceftriaxone and gentamicin based on sensitivity profiles. Concomitant echocardiography identified asymptomatic endocarditis, suggesting hematogenous seeding as the primary mechanism of joint infection.

Conclusion: *Granulicatella adiacens* can cause aggressive native hip destruction requiring staged reconstruction. Clinicians should maintain a high index of suspicion for endocarditis when this fastidious organism is isolated and utilize enriched culture media or molecular techniques to avoid diagnostic delays.

KEYWORDS

Arthritis, Infectious; Hip Joint; Granulicatella; Endocarditis; Arthroplasty, Replacement, Hip

INTRODUCTION

Septic arthritis of the native hip is a rare condition in the adult population [1]. Its incidence has been reported at approximately 2 to 10 per 100,000 person-years [2]. *Granulicatella adiacens* is a nutritional variant of streptococcus known to be a commensal of the oral flora [3]. This germ has been involved as a causative pathogen mainly in endocarditis and less frequently in infections of other systems [2],[3],[4]. To our knowledge, there are no reports of this microorganism as a cause of septic arthritis of the native hip. Therefore, this paper aims to present a case of septic arthritis of the native hip caused by this fastidious germ.

CASE

A 58-year-old woman consulted at our department with a history of high blood pressure, dyslipidemia and primary uncemented left total hip arthroplasty for osteoarthritis 9 months before, with a satisfactory result and a Harris Hip Score of 92 points. She presented walking without assistance complaining of right hip pain of 2 months duration. She referred dull pain, with an intensity of 5 on the visual analog scale and having received a steroid injection in the painful hip 6 weeks after the onset of symptoms and 15 days before consultation. Physical examination showed moderate pain during motion, with hip flexion 10 to 100°, internal rotation of 15° and external rotation of 20°. There was no fever or erythema in the area. At that time, an X-ray of both hips was performed which showed a normal right hip and left THA (Figure 1).



Figure 1: AP radiograph at two months after the onset of symptoms showing a normal joint space in the right hip, and a left THA.

As a complementary method of diagnosis, we requested an MRI. The following week she returned with an MRI, using an elbow crutch on the left hand due to increased pain (Visual Analog Scale 9) and intolerance to weight bearing. The MRI showed an increase in synovial fluid in the right hip (Figure 2). With suspicion of septic arthritis, we performed an arthrocentesis in the operating room and requested a blood test with infection related makers (normal values: White Blood Cell Counts < 9000 mm³, Erythrocyte sedimentation rate < 16mm/1st hour, C-reactive Protein <0.3mg/dL). Results were compatible with infection: WBC 16500mm³, ESR:26 and CRP: 0.1mg/dL. We decided to perform an arthroscopic lavage and collection of samples for bacteriological culture.

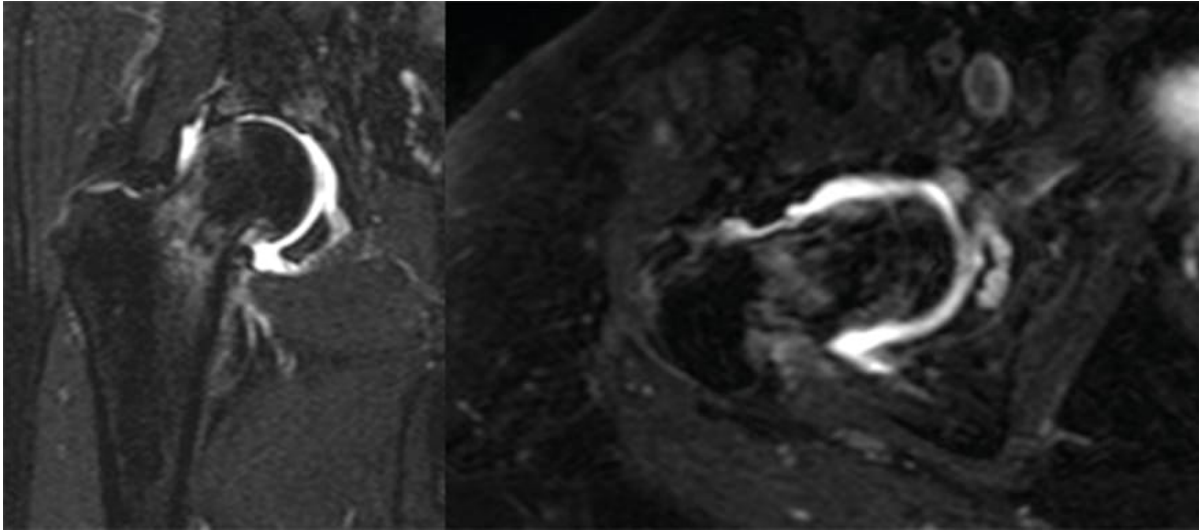


Figure 2: First MRI showing increased synovial fluid.

An empirical antibiotic therapy with Vancomycin and Ceftazidime was started. After one week (day 8) of culture in enriched media, *Granulicatella adiacens* was recovered and, according to the antibiogram, ATB was adapted to Ceftriaxone 1g/12 hours + Gentamicin 80 mg/ 8 hours for four weeks following by 8 weeks of minocycline orally. Sensitivity to Vancomycin was also reported. As additional data, the samples from the arthroscopy were negative. In addition, given the association of this germ with bacterial endocarditis, although she was asymptomatic, an echocardiogram was performed, and endocarditis was concomitantly diagnosed. Two weeks after treatment, she started again with pain in the right hip, so xray, laboratory and hip MRI were repeated. Xray showed chondrolysis with loss of the joint space. The laboratory values were similar to those of the initial diagnosis, while MRI showed hyperintensity in the femoral head in the STIR sequence, interpreted as subchondral necrosis secondary to septic arthritis. (Figures 3-4).

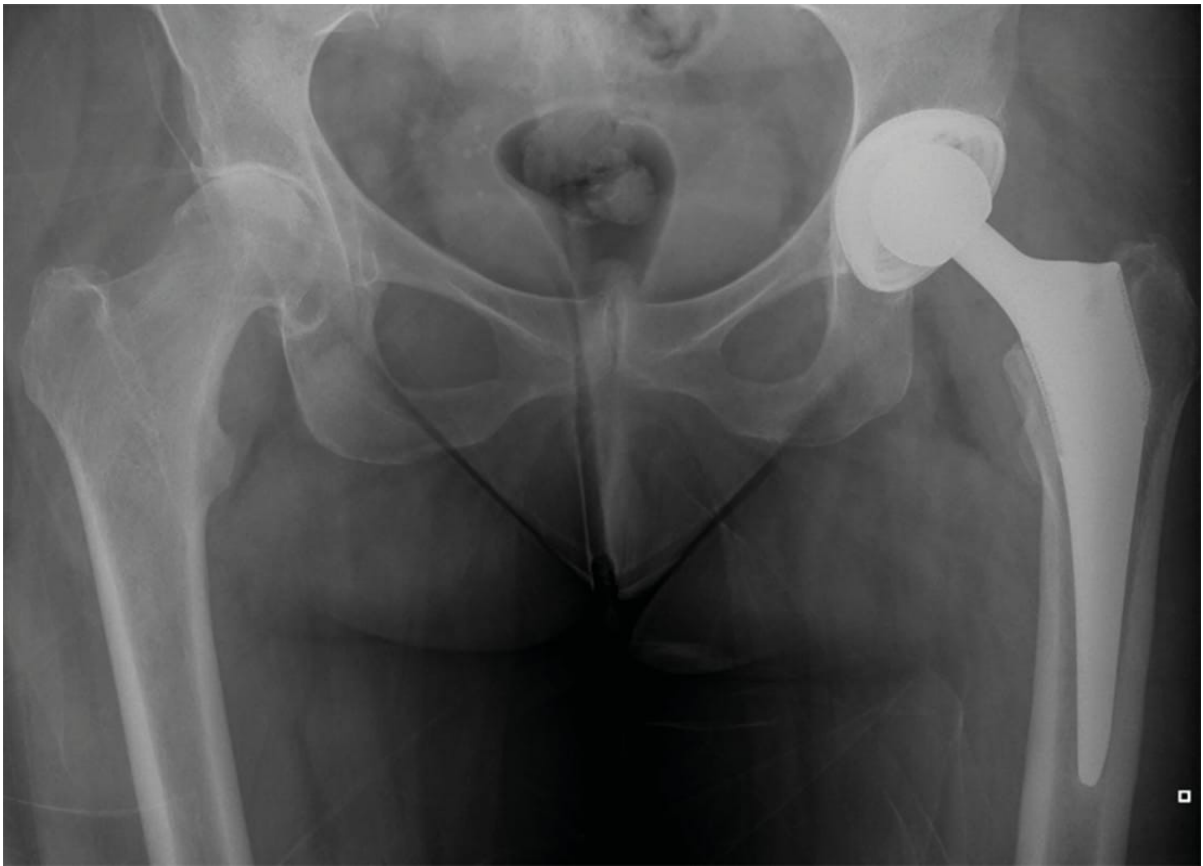


Figure 3: AP radiograph three months after the onset of symptoms shows chondrolysis with significant joint space narrowing in comparison to the previous radiograph.

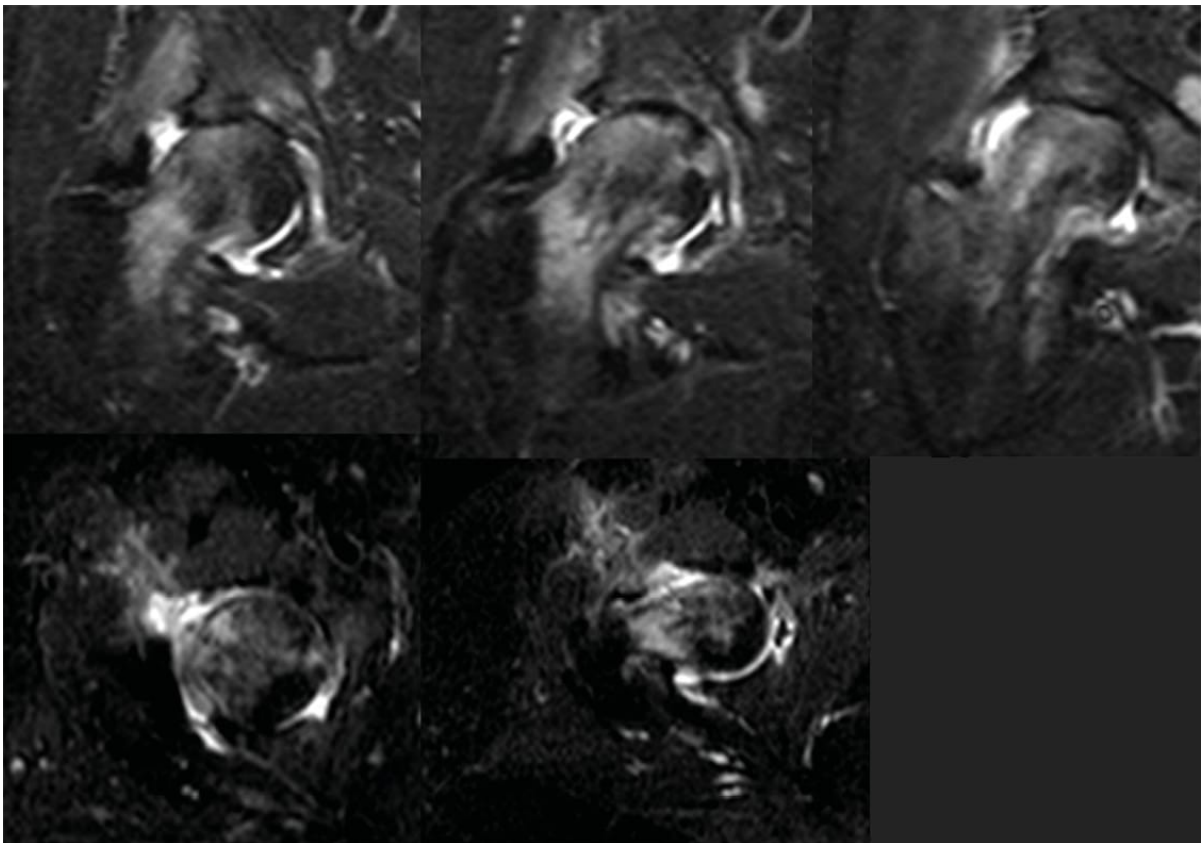


Figure 4: MRI images showed subchondral necrosis of the femoral head

We therefore decided to perform open debridement, reaming the acetabular cavity and placing an articulated custom-made spacer coated with Vancomycin loaded cement. Two grams of Vancomycin were added to each dose of 40 grams of cement. (Figure 5).



Figure 5: AP radiograph showing the spacer consisting of an implant covered with vancomycin loaded cement.

Intraoperative, severe damage to both acetabular and femoral head cartilage was noted. The seven intraoperative samples sent to culture were negative. The patient continued the same ATB treatment, evolving favorably regarding her infectious disease.

At two months postoperatively, the patient is recovering uneventfully, ESR and CRP have returned to normal values and a reimplantation of a definitive THA is planned at the end of the antibiotic treatment. She is currently completing the second of three months of planned parenteral ATB treatment, walking without pain with the assistance of a cane.

DISCUSSION

Granucitella species are gram-positive anaerobic cocci, which are part of the normal flora of the upper respiratory, intestinal, urogenital, and oral tract [2]. They are facultatively anaerobic species with slow growth in standard culture media, which can cause delays in diagnosis and, consequently, treatment [2],[3],[4],[5]. Due to their difficult growth, they often require molecular diagnostic techniques. Recently MALDI-TOF mass spectrometry was reported as a fast and accurate method of diagnosing these pathogens [5]. In the case presented,

given the specific requirements for developing *Granulicatella adiacens*, cultures were positive after one week in blood culture bottles with pyridoxine. This specific requirement was previously reported by Shailaja et al [6].

Bone or joint infections by this germ are infrequent [1],[4]. Reviewing the literature, we have found a few cases of vertebral osteomyelitis [7], periprosthetic hip infections [4],[8], and the report of only one case affecting a native joint [9]. It was reported in 2003 by Hepburn et al., who reported septic arthritis of the knee in a 68-year-old woman. These authors did not highlight any risk factors for native septic arthritis, such as rheumatoid arthritis, diabetes, immunocompromised status, drug abuse, or previous surgeries [10]. In our case, septic arthritis probably originated from hematogenous dissemination from endocarditis.

Contamination following corticosteroid or hyaluronic acid injection has been reported with a risk of 1 in 1000 [10] but in our case the intraarticular steroid injection had been performed 6 weeks after the onset of symptoms.

Regarding the treatment of septic arthritis, there is no clear recommendation on the duration of ATB treatment [11]. Although this will depend on different factors, there is some consensus regarding administering at least 2-3 weeks of IV antibiotics followed by 2 to 4 weeks orally [11],[12]. In the case of arthritis caused by *Granulicatella adiacens*, given its low frequency, there is no formal recommendation yet. Although not in native joints, Quenard et al [4]. reported 5 cases of periprosthetic infection with this germ using, in addition to surgical treatment, an ATB therapy of 180 days without reporting subsequent recurrences.

In combination with systemic ATB therapy, a recent review recommends performing serial arthrocentesis (in patients at high surgical risk), arthroscopic lavage, or open surgical debridement [11]. Regarding arthroscopic or open treatment, the literature has reported similar results [10],[11],[12]. Additionally, in chronic cases and with joint damage, staged treatment using AB-spacers is the best option [11],[13]. In the case presented, we decided to perform a staged treatment with a PMMA spacer with ATB after failed arthroscopic lavage. Given the sensitivity to vancomycin obtained in the antibiogram we used primary components covered with vancomycin loaded cement. A regular polished tapered stem was used on the femoral side and a polyethylene dual mobility liner on the acetabular side. The outer aspect of this liner is smooth, so it was roughened to promote cement adherence.

To our knowledge, this is the first report of septic arthritis in a native hip caused by *Granulicatella adiacens* as the only infecting germ. We emphasize its association with asymptomatic endocarditis and the difficulty of its isolation in standard culture media, as well as the absence of established guidelines for its therapeutic approach. We will continue with the treatment of this patient to report the final results in the future.

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