

A case of *Candida* septic arthritis with rice body formation in a 2-month-old infant

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SUMMARY

We present a case of rice body formation in the left knee joint of a 2-month-old infant affected by *Candida albicans* septic arthritis which has never been reported before. Rice body formation has been described in association with rheumatoid or tuberculous arthritis and is very rare in *Candida* arthritis. After three weeks of therapy with amphotericin B administered

intravenously, the infant recovered fully from infection. Septic arthritis is a serious cause of morbidity and for proper evaluation and treatment fungal septic arthritis should be included in the differential diagnosis.

Keywords: *Candida*, infection, septic arthritis, rice body, differential diagnosis.

INTRODUCTION

Septic arthritis ranges in incidence from 5 to 12 cases per 100,000, and occurs more frequently in adults and infants [1]. Children with immune deficiency disorders have a higher risk of septic arthritis, while this condition is relatively rare in infant younger than 3 months [2]. Knees are most commonly affected, followed by hips and shoulders. Prompt diagnosis and treatment of septic arthritis is essential to reduce the likelihood of severe sequelae [3]. *Staphylococcus* spp. and *Enterobacteriaceae* are commonly implicated in septic arthritis, while fungal arthritis occurs less frequently [4]. *Candida* species are the most common organisms causing fungal arthritis [5]. In this report we describe a case of *Candida* septic arthritis associated with rice bodies in an infant younger than three months. The formation of rice

bodies, so called for their macroscopic similarity to polished grains of rice, is a rare occurrence, usually associated with rheumatoid or tuberculous arthritis [1, 5]. To the best of our knowledge, the presence of rice bodies in the joints of very young infants has not been previously reported [5, 6].

CASE REPORT

A baby girl born prematurely at 30 weeks of gestational age with a birth weight of 1,000 g presented, at age 2 weeks, with a fever of 38.1°C. Laboratory examination revealed an increased leukocyte count ($12 \times 10^3/\text{mm}^3$, normal range $3.5\text{--}8.8 \times 10^3/\text{mm}^3$) with eosinophilia (15%, normal range 2-4%), an elevated erythrocyte sedimentation rate (25 mm/h, normal range 0-2 mm/h) and increased serum procalcitonin (6 ng/ml, normal range 0-0.1 ng/ml). *Candida albicans* was isolated from a blood culture after 3 days incubation. Antifungal drug susceptibility testing was performed using the Vitek 2 system (AST-YS07 cards). The patient received fluconazole (12 mg/kg i.v. for two weeks)

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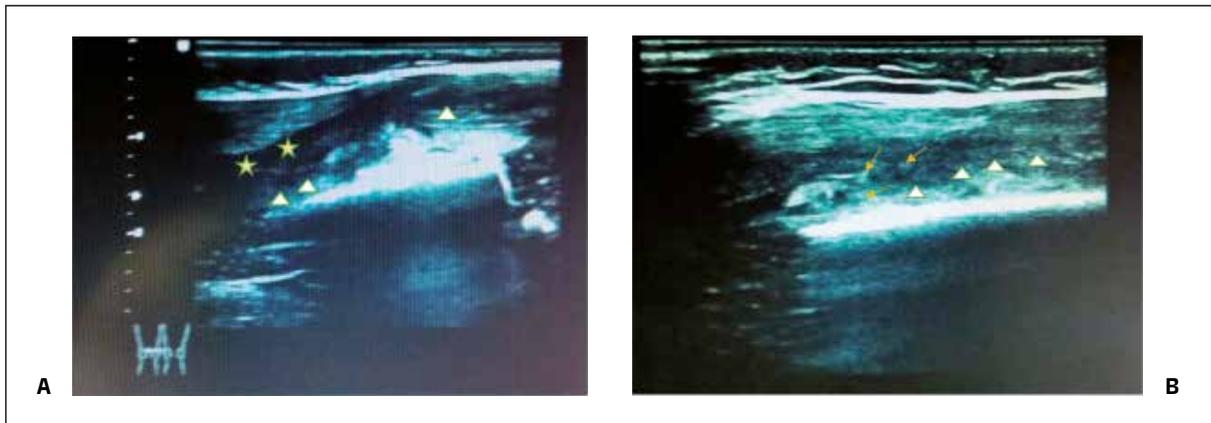


Figure 1 - Longitudinal ultrasound scans show intense synovial hypertrophy, proliferation (arrowheads, panel A and B), anechoic joint effusion (stars, panel A) and loose hyperechoic nodular bodies (rice bodies) in the suprapatellar recess (yellow arrows, panel B).

and both the fever and elevated inflammatory markers went back to normal after five days. The patient was discharged home after completion of antibiotics. At 50 days of age, the infant showed swelling, warmth, pain and limited range of motion of the left knee and was brought by her parents to the Department of Pediatric Surgery of the Polyclinic "G. Martino" University of Messina. Additional examinations showed that she was afebrile with stable vital signs (haemodynamically stable, spontaneous breathing, regular renal perfusion and normal urine output, no clinical signs of sepsis). Longitudinal ultrasound scans of the knee showed intense synovial hypertrophy, proliferation and an anechoic joint effusion (Figure 1A). Moreover, numerous, loose and hyperechoic nodular bodies (rice bodies) were evident in the suprapatellar recess (Figure 1B). After culture on Sabouraud agar, the aspiration fluid yielded *Candida albicans*, while the blood culture was negative. Antifungal drug susceptibility testing, performed using the *Sensititre YeastOne* system, showed that the yeast was susceptible to all antifungal tested. Intravenous injections of amphotericin B (5 mg/kg die for two weeks) were given, followed by fluconazole (12 mg/kg die for four weeks). At three weeks after the beginning of therapy, the symptoms such as pain, swelling and limited motion were completely subsided and she ambulated without assistance. No recurrence of infection has been recorded during the follow-up period.

■ DISCUSSION

Septic arthritis generally arises from haematogenous seeding of a joint by different microorganisms and represents a major complication in both immunocompetent and immunocompromised hosts [1, 7]. However, the pathogenetic mechanisms of infection between pediatric and adult patients are considerable different since invasive candidemia before the appearance of arthritis is present in the 95% of paediatric patients versus 74% of adult patients [6, 8]. In the majority of patients *Candida* arthritis arose from a precedent bloodstream infection that in some cases represents a late complication of first infection [9]. Clinical manifestations include pain, erythema, fever and loss of range of motion of the affected joint [6]. Early diagnosis is crucial, since untreated septic arthritis can lead to rapid joint space destruction. Gram-positive, followed by Gram-negative, bacteria have been reported as the most frequent causative organisms, while the incidence of fungal arthritis is steadily increasing in the last 20 years [10]. Although the actual incidence of fungal septic arthritis in neonates and infants is unknown, reports indicate *C. albicans* as a common cause (accounting for approximately half of the cases), followed by other *Candida* species such as *C. tropicalis*, *C. glabrata*, *C. parapsilosis* and *C. krusei* [9-13]. Risk factors for neonatal *Candida* arthritis include: low birth weight (<1,500 g); use of multiple antibiotics; prolonged intravenous

catheterization; hyperalimentation; prolonged urinary catheterization and gastrointestinal diseases. Rice bodies are multiple, small, loose corpuscles that resemble grains of polished white rice that can be present in the joints of patients with rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus, tuberculosis and atypical mycobacterial infections [5, 14]. These corpuscles are variable in size, shape, and usually consist of amorphous material surrounded by fibrin. The pathophysiology of rice body formation remains unclear but it is generally accepted that they represent an unusual response to chronic joint or synovial inflammation [1, 15]. Rice bodies in septic arthritis are uncommon and, to our knowledge, only one case of rice body formation has been reported in *Candida* arthritis [5]. That report concerned an elderly patient affected by *Candida parapsilosis* arthritis, while the present one occurred in a very young infant and was caused by *Candida albicans*. Although *Candida* arthritis rarely occurs in infants younger than three months, for proper evaluation and treatment fungal septic arthritis should be included in the differential diagnosis.

Conflict of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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