A patient with neutropenic fever and intraosseous gas

A 44-year-old man with a history of blastic plasmacytoid dendritic cell neoplasm since 2015, presented to our emergency room with neutropenic fever. On the initial approach, no source of infection was documented. However, blood cultures were positives, isolated *Escherichia coli*. Its susceptibility testing showed cephalosporin susceptibility. He persisted febrile despite completing 5 days of therapy with broad-spectrum antibiotic and empiric antifungal therapy. A follow-up full-body computed tomography (CT) scan was performance, showed intramedullary gas in both humeri, femurs and the left iliac bone (Figure 1A–C); the latter was confirmed on a pelvic magnetic resonance imaging (MRI) (Figure 1D). The culture from iliac bone biopsy isolated *E. coli*, and histopathologic findings of acute osteomyelitis. Other metastatic foci were ruled out. He received 10 weeks of cefazidime intravenous and surgical debridement, with a good outcome.

Acute hematogenous long-bone osteomyelitis is a condition most commonly found in children, because the valveless sinusoidal loops of the venules at their reflection at the epiphysis are yet present, as the skeleton matures and the growth plate becomes avascular, the residual structure becomes durable and relatively impermeable to infectious breaches. Additionally, the patient had intraosseous gas in the extra-axial skeleton considered a pathognomonic sign of osteomyelitis. The mechanism of infection is commonly by hematogenous spread but may also relate to spread from an intra-abdominal source (e.g. urinary tract infection); after intra-abdominal or spinal surgery; skin and soft tissue infection. The extra-axial skeleton is one of the most frequent sites, although thoracic, lumbar vertebrae and sacral bones were reported in the case reports.

The most common causative organisms are the *Enterobacteriaceae* family. The appropriate treatment comprises antibiotic therapy based on antibiotic susceptibility, some guidelines recommended a minimum of 6 weeks of treatment; however, this should be based in inflammatory markers (erythrocyte sedimentation rate and or C-reactive protein).

Figure 1. (A) Thoracic CT scan showing intramedullary gas in both humeri (black arrows). (B) pelvis CT scan showing intramedullary gas in left iliac bone, (black arrows), (C) pelvis CT scan showing intramedullary gas in both femurs (black arrows), (D) pelvis MRI scan showing intramedullary gas in both femurs neck (white arrows).
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References