



An Unusual Cause of a Brodie's Abscess

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Case

A 36yo normally fit and well male presented to hospital with a two week history of a swollen and painful right ankle. His GP had diagnosed gout and treated him with oral Flucloxacillin and steroids but the pain and swelling had not improved. There was no history of trauma or fever. His WCC count was $14 \times 10^9/L$ and CRP 25mg/L. A right ankle X-ray showed a large joint effusion and a soft tissue swelling over the lateral malleolus. He was treated with IV Teicoplanin for suspected septic arthritis. A joint aspirate showed Gram negative bacilli and grew a non-typhoidal *Salmonella* spp. On further questioning he reported a bout of diarrhoea a couple of weeks before the onset of the pain and swelling. His treatment was changed to IV Ceftriaxone 2gm once daily. An MRI scan of the patient's ankle and lower leg showed no signs of septic arthritis but did show a Brodie's abscess in the anterior aspect of the distal tibia close to the articular surface.

The patient underwent a debridement of the infected tissue. The bacteria was identified as a *Salmonella* serotype Typhimurium, resistant to Chloramphenicol and Amoxicillin but susceptible to Ciprofloxacin, Ceftriaxone and Co-trimoxazole. He was HIV negative and was not immunosuppressed for any other reason. The patient was switched from IV Ceftriaxone to oral Ciprofloxacin 750mg bd which will be given for a minimum of 6 weeks.



Fig1: MRI Scan showing the satellite lesions within the shaft of the right tibia on MRI imaging

Brodie's Abscess

A Brodie's abscess is an uncommon form of subacute osteomyelitis, typically seen in the metaphases of long bones in children and adolescents [1]. It was first described by Sir Nicholas Brodie in 1832 [1]. There is usually a paucity of clinical signs or symptoms of systemic disease [1,2]. The tibia is the most usual bone affected, with *Staphylococcus aureus* being the most common organism [1]. Other likely pathogens include *Pseudomonas aeruginosa*, *Klebsiella* spp and *Salmonella serotype* Typhi [1]. The treatment of choice for a Brodie's abscess is surgical debridement and a prolonged course of antibiotics.

Non-Typhoidal Salmonella

Non-typhoidal *Salmonella* (NTS) most commonly cause an enterocolitis [3]. Due to its ability to invade and replicate within macrophages, NTS can occasionally cause an invasive disease and establish infection extra-intestinal sites[3].

The enterocolitis associated with NTS commonly manifests as diarrhoea, abdominal pain with occasional fever [4,5]. These symptoms are usually self-limiting and occur between six to seventy-two hours after ingestion of the pathogen, although symptoms have been reported up to one week following exposure [5]. Extra-intestinal manifestations of NTS can follow an associated bacteraemia and can include osteomyelitis, meningitis, myocarditis, pneumonitis, pyelonephritis and endovascular infections [3-7].

The risk factors for developing a bacteraemia and invasive NTS Salmonellosis are immunosuppression, HIV, malaria, malnutrition and the extremes of age [8]. For invasive NTS disease, third generation cephalosporins such as cefotaxime or ceftriaxone are the empiric treatment pending sensitivity testing [3,4]. Increasing antibiotic resistance in NTS means that sensitivity testing is essential.



Fig 2: MRI Image of the right ankle showing a Brodie's abscess in the distal tibia

Discussion

This case highlights three interesting points:

- 1) A presentation of a Brodie's abscess with an unusual pathogen.
- 2) The patient was immunocompetent.
- 3) The Brodie's abscess presented acutely rather than as a sub-acute presentation.

A Brodie's abscess accounts for 1-2% of the presentations of osteomyelitis [1]. A Brodie's abscess is a clinical diagnosis and should be considered as part of the differential diagnosis in a patient with an atypical history of joint pain and swelling.

References

- 1) Ogbonna et al. Brodie's abscess in a patient presenting with Sickle Cell vasculocclusive crisis. Case Reports in Medicine. Vol 2015.
- 2) Hammad et al. Acute leg pain with suspected beginning leg compartment syndrome and deep vein thrombosis as differential diagnoses in an unusual presentation of Brodie's abscess: case report. Journal of Medical Case reports. DOI 10.1186/s13256-015-0770-x
- 3) Mandell et al. Principles and Practice of Infectious Diseases. 6th Edition, 2005. Chapter 220. Elsevier.
- 4) Varma et al. Hospitalization and Antimicrobial resistance in Salmonella outbreaks, 1984-2002. Emerging Infectious Diseases. 2005. 11(6):943-946
- 5) Onwuezobe et al. Antimicrobials for treating symptomatic non-typhoidal Salmonella Infection. Cochrane Review. 2012. Wiley
- 6) NICE. Antibiotics for treating Salmonella gut infections. www.evidence.nhs.uk/qualityandproductivity
- 7) Hassing et al. Salmonella subtypes with increased MICs for Azithromycin in Trevelers returned to the Netherlands. Emerging Infectious Diseases. 2014. 20(4): 705-708
- 8) Parry et al. A retrospective study of secondary bacteraemia in hospitalised adults with community acquired non-typhoidal Salmonella gastroenteritis. BMC Infectious Diseases. 2013, 13: 107