

An Unusual Cause of Osteomyelitis in a 17-year-old

Victoria Shivji¹, Shiu-Shing Soo², Susan Snape³

¹Department of Infectious Diseases, Nottingham University Hospitals (NUH) NHS Trust, Nottingham, UK. ²Department of Clinical Microbiology, NUH NHS Trust, Nottingham, UK. ³Departments of OPAT and Clinical Microbiology, NUH NHS Trust, Nottingham, UK.

Case History

A 17-year-old male with a past medical history comprising only of childhood asthma, who took no regular medications, presented to the Trauma & Orthopaedic outpatient clinic at Nottingham University Hospitals NHS Trust in August 2015 after a GP referral. He had a one year history of intermittent swelling and pain over the proximal aspect of his left lower leg. Imaging of the area revealed a proximal tibial lesion with an unusual appearance (Figure 1 – MRI), and later a PET-CT demonstrated foci of increased metabolic activity over the left proximal tibia and distal femur (Figure 2). He was believed to have multifocal osteomyelitis. He had suffered no known overt trauma to the area, although he was a keen footballer and had sustained many minor injuries in the past. He had never had any surgery to the area. He hadn't been unwell with any other illness prior to his initial symptoms developing. He had never travelled abroad, and he and his family were from the UK. He denied any sexual contact. His only animal contact was that of a pet lizard that had died several months previously. He was not knowingly immunosuppressed; his HIV test was negative. He lived with his mother and stepfather, who were both well.



Diagnostic Methods

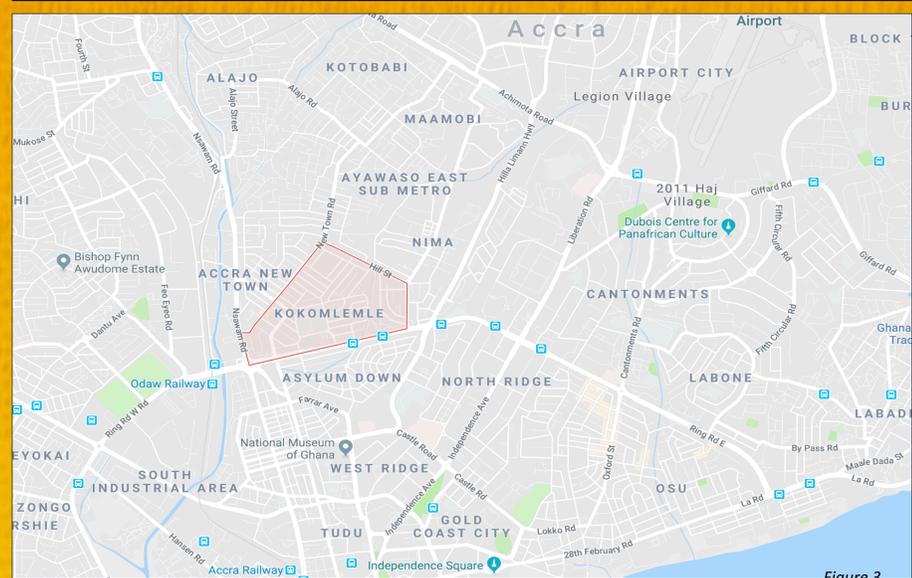
Initial bone biopsies of the site were taken (x 5) intraoperatively, and sent for microbiological culture and histological examination. A copious amount of pus superficial to the lesion was drained. Histology revealed a diffuse inflammatory infiltrate, with no features of malignancy. Somewhat surprisingly, microbiological culture was negative after 48 hours. Following surgery, he developed a sinus tract at the point of the incision. Four weeks later he underwent extensive debridement of the proximal tibia, distal femur and sinus tract. Extensive amounts of reaccumulated pus were again drained. Pus was cleared out from the bony cortex and dead tissue debrided. Multiple samples were sent to microbiology. Bone cavities were packed with antibiotic-impregnated cement beads, and wound coverage obtained with a gastrocnemius flap and a split skin graft.

Deep solid specimens were homogenised using Ballotini beads. All samples were inoculated onto blood, CLED, and fastidious anaerobic agar (FAA) and incubated appropriately. At the 48-hour plate read, growth was seen on all plates from the majority of samples. 2-3mm moist grey colonies were seen on blood agar (with smaller variants on FAA), and colourless non-lactose fermenting colonies described on CLED. Gram stain revealed a Coliform-like gram-negative rod.



Clinical Case Diagnosis

Biochemical identification tests identified the organism as a *Salmonella* species. The organism was sent to the Gastrointestinal Bacteria Reference Unit in the UK for typing, and was confirmed as *Salmonella enterica serotype Kokomlemle* (*S. kokomlemle*). Kokomlemle is a town in the Greater Accra region of Ghana (Figure 3), and the species was first identified in 1956 through experimental culturing of the droppings of house lizards from various regions in Ghana. This species, previously unidentified, was 1 of 40 positive *Salmonella* cultures (Vella, 1958). It has subsequently rarely been seen, being reported in a paucity of papers on *Salmonella* screening of large numbers of animals worldwide, including British turkeys, farm animals in Burkina Faso, and lizards in Taiwan, being cultured only once or twice each time in these reports. A Public Health report from New Zealand from 2012 states it was reported as a human infection for the first time there, but no details have been published.



Discussion

This is the first known incidence to the literature of a human infection with this organism. We believe the likely source to be the patient's previously owned lizard. The organism tested broadly sensitive, and the patient was treated successfully via OPAT (Outpatient Parenteral Antibiotic Therapy) with 3 weeks of IV ceftriaxone followed by 3 weeks of oral ciprofloxacin. It reminds us to keep an open mind when considering microbiological causative agents of osteomyelitis.