Journal of Microbiology, Immunology and Infection (2018) 51, 153–154

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An infant with *Klebsiella oxytoca* septic arthritis

Dear Editor,

Joint infections in childhood are most commonly established after haematogenous spread of bacteria. However, only a minority will have positive blood cultures.[1] Joint fluid aspiration may yield the definitive organism. *Staphylococcus aureus* and *Kingella kingae* are common aetiologies but others must be kept in mind when the course of recovery deviates from the expected.

This infant presented day 3 of life with cyanotic spells. Echocardiography revealed a patent ductus arteriosus and a small persistent foramen ovale. Cerebrospinal fluid analysis revealed 4 polymorphonucleocytes and 6 lymphocytes, normal lactate and glucose. EEG showed epileptic activity. Antiepileptic medications were started and the cyanotic spells ceased. Brain imaging and metabolic work-up was normal. He was discharged at three weeks of age. 10 days later he was admitted with swelling and unwillingness to move his right knee. He was afebrile and CRP was 51 mg/L. Ultrasound showed areas of increased echogenicity in the muscle tissue adjacent to the distal part of the femur. No obvious joint fluid or periostal abscess could be visualised. After blood cultures, he was started on IV cefotaxime. On day three, MRI revealed profound joint effusion and synovial enhancement but no skeletal involvement was noted. There was intense intramuscular oedema of the quadriceps femoris and subcutaneous oedema around the knee (see Fig. 1). Joint fluid was cloudy and revealed 103×10^6 cells/mL (98% polymorphonuclear cells). Bacterial culture (Maldi-TOF for species identification) as well as bacterial DNA sequencing showed *Klebsiella oxytoca* susceptible to all tested antibiotics (piperacillin/tazobactam, imipenem, meropenem, amikacin, trimethoprim/sulfamethoxazole, cefotaxime, ceftazidime, gentamicin, ciprofloxacin). MIC for amoxicillin-clavulanate acid was 2 mg/L. After seven days of intravenous antibiotics, he was prescribed oral amoxicillin-clavulanate acid. At four weeks, no remaining symptoms were present and X-ray at six months was normal and the child recovered completely.

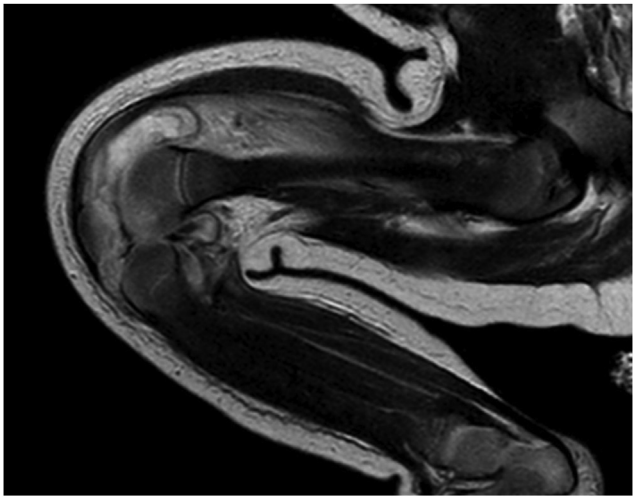

Figure 1. MRI on day three revealed joint effusion and synovial enhancement as well as intense intramuscular oedema of the quadriceps femoris and subcutaneous oedema around the knee.

This is the first published case of an infant with *K. oxytoca* septic arthritis. The only other reported paediatric case is a 30-month-old girl from France who recovered completely.[2] In order to find out if his neonatal cyanotic spells were a result of the present *K. oxytoca* infection, we went back to analyse the cerebrospinal fluid which was used in the earlier work-up to look for any bacterial DNA. This came back negative. 12 days prior to his onset of septic arthritis, while still being hospitalized for cyanotic spells he

http://dx.doi.org/10.1016/j.jmii.2016.12.011

had a femoral vein puncture performed due to difficult vein access elsewhere. We believe that bacteria were introduced through vein puncture, and subsequently seeded in his right knee joint. *K. oxytoca* is a well-known hospital pathogen and neonatal and paediatric outbreaks have been reported.[3,4] Colonization of infants by *Klebsiella* and *Enterobacter* spp rarely derive from the mother but rather from the hospital environment.[5] Possible mechanisms of spread in our case include skin colonization from hospital staff or surfaces and subsequently introduction into bloodstream through IV cannula insertion. This case highlights the importance hospital hygiene and thorough surface skin cleansing before invasive procedures.

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Olof Hertting*
Paediatric Infectious Diseases Unit, Astrid Lindgren Children's Hospital, Karolinska University Hospital, Stockholm, Sweden

Ola Gremark
Department of Orthopedics, Danderyd Hospital, Stockholm, Sweden

Owe Källman
Clinical Microbiology, Karolinska University Hospital, Stockholm, Sweden

Department of Laboratory Medicine, Karolinska Institutet, Stockholm, Sweden

Linda Guler
Paediatric Radiology, Astrid Lindgren Children's Hospital, Karolinska University Hospital, Stockholm, Sweden

Jonas Bergström
Paediatric Orthopaedic Surgery, Astrid Lindgren Children's Hospital, Karolinska University Hospital, Stockholm, Sweden

*Corresponding author.
E-mail address: olof.hertting@karolinska.se

14 September 2016
Available online 29 June 2017