WHAT EVIDENCE SUPPORTS PRESCRIPTION LENGTHS OF ANTIBIOTIC TREATMENT FOR SEPTIC ARTHRITIS/OSTEOMYELITIS IN THE NEONATE?

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ABSTRACT

Group B beta haemolytic streptococcus (GBS) can have protean manifestations: Septic arthritis with or without osteomyelitis is an uncommon but known complication. An early diagnosis and an adequate duration of antibiotic treatment are crucial. A case is presented of a neonate who developed septic arthritis and osteomyelitis of the right hip and proximal femur, caused by Group B beta haemolytic streptococcus (GBS). She was treated with 4 weeks of parental followed by 4 weeks of oral antibiotics. A detailed literature search illustrated a paucity of evidence supporting these periods of antibiotic treatment.

Keywords: group B streptococcus, GBS, bone infection, osteomyelitis, joint infection, septic arthritis, neonate, infant, duration of antibiotics, complication, treatment failure

THE CASE:

A ten-day old baby girl presented with reduced spontaneous movement of legs. She was otherwise well with no history of fever, rashes or trauma. Her mother had GBS in a previous pregnancy but had not been treated as per protocol. Vital signs were normal. Although, there were no obvious signs of inflammation at any joints, both lower limbs were held flexed at the hips and knee and there was abduction and external rotation at rest at hip joint. There was hypotonia and reduced reflexes at knee joint. Investigations showed a mildly raised platelet and white cell count, a CRP of 19 and blood cultures positive to GBS (sensitive to Penicillins). Investigations with an x-ray of the limbs, cranial ultrasound and coagulation excluded alternative diagnoses such as fracture (including non accidental) or neonatal stroke. Hip ultrasound was normal but raised a possibility of a developmental dysplasia of hip. An MRI demonstrated effusion of the right hip confirming septic arthritis and early signs of osteomyelitis in the proximal right femur (Figure below)
T2 weighted MRI of hip demonstrates a significant effusion in right hip joint consistent with septic arthritis and high intensity signal in proximal right femur suggestive of early osteomyelitis.
The infant was commenced on high dose Benzylpenicillin and Flucloxacillin (50mg/kg every 8 hours each) on admission and at 2 weeks, was changed to Ceftriaxone (80mg/kg once a day) on advice of a paediatric surgeon and in discussion with microbiologists. Although the infant remained afebrile and continued to feed well, minimal improvement was noted in her “pseudoparalysis”[1]. However, there was biochemical improvement in the form of decreased CRP to 4. The patient was ambulated and her care was transferred to a specialist centre with paediatric surgical input where she had a long line insertion for parental antibiotics for total of 4 weeks. The right hip joint was irrigated on week 3 and a Pavlik Harness was applied for 6 weeks. Parenteral antibiotics were changed to oral antibiotics for 4 weeks prior to discharge. Three months later the infant has normal growth and function of the affected joint.

**DISCUSSION:**

Septic arthritis or osteomyelitis is an uncommon but serious complication of infection with GBS and relatively few cases have been reported [2-3; 8-14]. It is possible there has been a recent increase in GBS as a cause of such infections [4-5] but the effect of new recommendations for the treatment of GBS positive mothers may influence this [7]. It less frequent than meningitis, and may present as a late-onset GBS infection [3, 6]. Infants may present with local joint signs and no systemic symptoms, unlike in the picture in older children [15]. A limitation in movement may be the only obvious sign, as in this clinical vignette. The rarity of the condition and the paucity of symptoms or signs make early diagnosis difficult.

Once the diagnosis is made, an adequate duration of antibiotic treatment is crucial to minimise early and late complications such as joint destruction and bone deformity and shortening [15]. Some reviews confirm that late and inadequate treatment is associated with poor outcome [16]. A general principle in isolated septic arthritis is to prescribe treatment for 2-3 weeks with IV antibiotics. If there is concomitant or isolated osteomyelitis, the duration of antibiotics should be 4-6 weeks [17-26]. Some hospitals in the UK then recommend a change to oral antibiotics for another 4-6 weeks. This recommendation depends on patient age, clinical condition and inflammatory markers and practice is variable.

A review of the literature using MEDLINE AND EMBASE from 1948 to 2011 was carried out by the author using the keywords: group B streptococcus, GBS, bone infection, osteomyelitis, joint infection, septic arthritis, neonate, infant, duration of antibiotics, complication, and treatment failure.

This confirmed that no clinical trials have been performed so far that tested various periods of antibiotic treatment in this condition. Case reports and small series suggest the current approach is effective but the low rate of
complications may make randomized controlled equivalence trials unfeasible [23].

Treatment patterns appear to mimic those used in older children for other organisms {26, 27}. In summary, there is a need for research to define a minimum period of antibiotic treatment to treat this condition in the neonate.

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