1. Introduction & Scope

This guideline was developed to provide guidance for the clinical staff working with Children thought to have Septic Arthritis and is based on the British Society for Childrens Orthopaedic Surgery guidelines1 .

Background

Septic arthritis is defined as the infection of a joint. It can occur at any site of the body, but commonly occur in the lower limbs, especially knee and hip joints. It may arise from direct inoculation or spread from contiguous disease, but the most common method is haematogenous spread.

Related documents
Management of the limping child. UHL Children’s ED guideline C13/2016
Joint pains in Children Trust Ref:C89/2016

2. Diagnosis

Septic arthritis must be suspected in children presenting with joint swelling and/or any of the following:

- Pyrexia
- Generally unwell
- Localised tenderness
- Loss of function
- Pseudoparalysis (refusing to use limb) in young children
- Irritability; multifocal infection in very young infants
- A history of injury shouldn’t exclude the presence of a bone or joint infection.

Pyrexia > 37.5 degrees for > 7 days or localised symptoms for > 10 days is suggestive of a potentially complicated course.

Differential diagnosis for the acute onset of limp in a child can include injury, (including non-accidental injury), transient synovitis, soft tissue infection or osteomyelitis. A chronic limp can suggest rheumatologic disease or malignancy.
3. Immediate Actions

Septic arthritis is a limb-threatening emergency

The joint will require non-surgical drainage and may require surgical drainage. All cases of suspected septic arthritis should be discussed with, and reviewed by Orthopaedics as a matter of urgency. Keep the child nil by mouth until discussed with orthopaedics. Commence IV rehydration if child appears clinically dehydrated.

3.1 Joint Aspiration
Joint aspiration is the single most useful test to confirm the diagnosis of septic arthritis. Aspiration should ideally be taken prior to antibiotics, but should not delay commencement, especially in the very sick patient. All joint aspirations and arthrotomies are performed by the Orthopaedic on call team (bleep 4046). Joint aspirations are not undertaken by Radiology at the LRI. All specimens should be sent for immediate Gram stain (directs initial antibiotic therapy), microscopy, glucose, protein and culture.

Septic arthritis synovial fluid analysis = >50,000 white cells, >80% polymorphs

3.2 Imaging
Plain radiograph of the joint/limb is frequently negative in the early stages of infection, but is useful to exclude unexpected pathology

Ultrasound scan has low sensitivity and specificity but can demonstrate fluid collection beneath the periosteum and within joints, especially in neonates. MRI is preferable but ultrasound can support clinical suspicions; joint effusion is suggestive of septic arthritis; fluid beneath the periosteum is suggestive of osteomyelitis. The diagnosis must be reviewed if no effusion or collection is present.

MRI has high sensitivity and specificity for the diagnosis of osteomyelitis and offers detailed information of the joint and surrounding anatomy. It can help direct surgery, and is particularly useful in identifying unexpected sites of infection i.e. Pelvic osteomyelitis. In children under the age of 6, MRI is almost invariably performed under a GA and therefore due consideration must be given to the benefits of this investigation vis a vis surgical arthrotomy.

3.3 Laboratory Investigations
No single test is reliable, and trends are more helpful than individual results. Key blood tests are:

- C-Reactive Protein (CRP) – the most useful serum marker
- Plasma Viscosity
- White Cell Count (WCC)
- Blood cultures – should be taken prior to antibiotics but should not delay timely commencement of antibiotics. Blood cultures are positive in 50% of patients with septic arthritis and osteomyelitis
- Other blood tests should include: FBC, U&Es, Bone profile, sickle cell screen for Afro-Caribbean children
3.4 Antibiotic Therapy

Start empirical antibiotics before the results of specimen culture and sensitivity. Empirical choices given are for up to 5-days, after which review of cultures and discussion with microbiology is needed to determine ongoing treatment choice and duration.

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- Neonates: organism is likely to be Staphylococci, Streptococci or Gram negative bacilli. **1st line therapy is intravenous Cefotaxime 50mg/kg every 8 – 12 hours**

- Child aged >1 month: Staphylococci predominate and Streptococci cause a minority of infections. **1st line therapy is intravenous Flucloxacillin 50mg/kg (max 2g) every 6 hours. If known severe (e.g. anaphylaxis) allergy to penicillins – intravenous Vancomycin (as per vancomycin chart).**

- Children with sickle cell anaemia are susceptible to salmonellae infection – add Ceftriaxone

- Sexually active adolescents may have disseminated gonococcal infection – add Ceftriaxone

- In an immunocompromised patient discuss with microbiology and add Ceftazidime for broader coverage

Intravenous antibiotics can be changed to oral treatment once there are signs of clinical improvement (reduced swelling and pain) with afebrile period of > 48 hours and a falling WBC and CRP. A discussion with microbiology is needed to determine the ongoing treatment choice and duration. Antibiotics should be continued for at least 3 weeks, but can be up to 6 weeks depending on the clinical response and an improvement in inflammatory markers. CRP should initially be monitored no more frequently than every 48 hours for the first week, and then as clinically appropriate.
Reliable IV access is mandatory in all children with suspected bone and joint infections. It is advisable to request formal vascular access (eg a long line) by the Paediatric Surgical team in any child undergoing a procedure under GA.

4. Education and Training
No new skills or training are required to implement this guideline.

5. Monitoring Compliance

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5. Supporting References


6. Key Words

Septic arthritis, Children, Limp