Guideline for the management of the hot swollen joint in adults with a particular focus on septic arthritis

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The British Society for Rheumatology (BSR) Standards, Guidelines and Audit Working Group, in conjunction with the British Society for Antimicrobial Chemotherapy, British Orthopaedic Association, Royal College of General Practitioners and British Health Professionals in Rheumatology, has produced an evidence-based guideline for the management of the hot swollen joint with particular focus on the septic joint. The aim of the guideline is to help accurate diagnosis and appropriate treatment when a joint is hot because of sepsis, while also ensuring that other causes such as crystal arthritis are recognized and not over-treated.

Keywords: Staphylococcus aureus, streptococci, methicillin-resistant Staphylococcus aureus, MRSA, Neisseria gonorrhoeae, Haemophilus influenzae type b, antibiotic policies, empirical antibiotic therapy, arthroscopy, needle aspiration

The hot swollen joint is a common clinical condition, which has a wide differential diagnosis, the most serious of which that must not be missed being septic arthritis. This has a mortality of up to 11% and results in permanent joint damage in up to a third of patients. The hot joint, however, presents to and is managed by a variety of clinicians most of whom are not specialists in this area. Of particular concern is that initiation of antibiotic therapy prior to or without obtaining a sample from the joint for microbiological examination may result in inadequate antibiotic therapy or even unnecessary therapy for a joint that was not septic. There is therefore a need for a clinical guideline to deliver appropriate management and reduce complications. Individual specialty groups have produced previous guidelines without consultation with the other specialities which may be involved in the care of these patients and therefore these have not been widely adopted. The British Society of Rheumatology (BSR) Standards, Guidelines and Audit Working Group has convened a multidisciplinary group to produce evidence-based guidance on the management of the hot swollen joint with particular focus on the septic joint. This has just been published in a summary form in the journal Rheumatology (http://rheumatology.oxfordjournals.org) with full guidance available online as supplementary data.1 The Working Group consisted of representatives from the main specialties who manage adult patients with septic arthritis and included representatives from rheumatology, primary care, orthopaedics, accident and emergency medicine, microbiology and a patient representative from Arthritis Care. The relevant societies were represented and the guideline has been endorsed by the BSR, British Society for Antimicrobial Chemotherapy, British Orthopaedic Association, Royal College of General Practitioners and British Health Professionals in Rheumatology. The aim was that the guideline would help accurate diagnosis and appropriate treatment when a joint is hot because of sepsis, while also ensuring that other causes such as crystal arthritis are recognized and not over-treated.

The main message of the guideline is that patients with a short history of a hot, swollen, tender joint (or joints) with restriction of movement should be regarded as having septic arthritis until proven otherwise. If clinical suspicion is high then it is imperative to treat for septic arthritis, even in the absence of fever. The guideline emphasizes that aspiration of synovial fluid must be performed prior to starting antibiotics and a possibly infected prosthetic joint should always be referred to an orthopaedic surgeon for aspiration. From a laboratory perspective the guideline confirms that the aspirate should be subject to Gram stain examination and culture by broth enrichment culture or lysis centrifugation in the laboratory in addition to direct agar culture. It does not support the use of bedside inoculation of specimens but does emphasize that laboratory processing needs to be prompt and readily available. In addition polarizing microscopy to examine the sample for crystals in a laboratory with adequate standardization and quality control is deemed important and all microbiology laboratories need to consider how this is provided.

The guidance includes a summary of recommendations for the initial empirical antibiotic therapy of a septic joint, but this is intended to be used to facilitate production of local policies, which take into account local resistance patterns and the local antibiotic formulary. A knowledge of the likely causative organism is important to ensure appropriate empirical antibiotic...
therapy and is best provided in up-to-date local guidelines which have had microbiological input and take into account the fact that the pattern of causative organisms has altered over time [as exemplified by the emergence of methicillin-resistant *Staphylococcus aureus* (MRSA) and the decline in gonococcal and *Haemophilus influenzae* type b infections] and that it also differs in different risk groups. Discussion with the local microbiology department is encouraged to ensure appropriate antibiotic therapy is rationalized in light of the culture results in individual cases. As the likely pathogens in all risk groups are *S. aureus* and streptococci, the guideline stresses that initial antibiotic therapy prior to organism identification should have bactericidal activity against these organisms. However, there is a need to modify the choice of empirical therapy in patients at risk of MRSA (e.g. nursing home residents and recent hospital in-patients) or Gram-negative organisms (such as elderly and immunosuppressed patients). Routine cover for *Neisseria gonorrhoeae* or *H. influenzae* type b is not recommended in the absence of specific clinical indicators. The Working Group concluded that there is very little high quality evidence with regard to the choice or duration of antibiotic therapy in the treatment of causes of septic arthritis other than *N. gonorrhoeae*. The advice given is that antibiotic therapy should be given intravenously for up to 2 weeks or until signs improve, then orally for around 4 weeks, and symptoms, signs and acute phase responses are all helpful in guiding the decision to stop antibiotics based on current convention in the UK.

The guideline states that in addition to antimicrobial therapy, the successful treatment of acute septic arthritis requires the removal of pus. The Working Group were unable to find evidence from the studies identified to enable one treatment strategy to be recommended over another, but concluded that both arthroscopy and needle aspiration appear to have a favourable outcome.

As this guideline has been produced with input from all the relevant specialities and endorsed by their societies, this should ensure that the management of a potentially septic joint is uniform and appropriate whichever specialist the patient first meets and is subsequently managed by. It stresses the importance of involvement of microbiology to produce local antibiotic policies and to be involved in the management of individual cases. Where a local guideline does not exist or has not been recently updated this guideline should with minor modification be appropriate for local needs. Audit points have been included which can be used to enable a collaborative audit to see whether this aim is met and whether outcomes are improved.

Transparency declarations

Both Dr Coakley and Dr Weston were members of the guidelines working group. Dr Coakley (a Consultant Rheumatologist) as Chair, represented the BSR Standards, Guidelines and Audit Working Group and Dr Weston (a Consultant Microbiologist) represented the BSAC.

Reference