Septic Arthritis

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Septic arthritis is a surgical emergency. It is the most rapid and destructive joint disease and has a significant morbidity with a mortality rate of 10%. The incidence is 2-10 per 100 000 in the general population and 30-70 per 100 000 in those with pre-existing joint disease or joint replacement

Patients with septic arthritis inevitably have a bacteraemia.

Haematogenous spread from either skin or upper respiratory tract is the most common source; infection from direct puncture wounds or secondary to joint aspiration is uncommon.

Risk factors for septic arthritis include; increasing age, pre-existing joint disease (principally RA), diabetes mellitus and immunosuppression (through drugs or disease)

In patients with RA the skin is a frequent portal of bacterial entry, especially because of maceration of skin between the toes due to joint deformity, compounded by difficulties in washing and drying the feet due to hand deformities.

Causative Organisms

In adults the most likely organism is Staphylococcus aureus, particularly in patients with RA and diabetes.

In young, sexually active adults disseminated gonococcal infection is an important cause. This occurs in up to 3% of patients with untreated gonorrhoea, usually presenting with migratory arthralgia, low-grade fever and tenosynovitis, which may precede the development of oligo- or monoarthritis. Painful pustular skin lesions may also be present.

Amongst the elderly or those who misuse intravenous drugs, Gram-negative bacilli or group B, C and G streptococci are important causes.

Other organisms that are occasionally isolated include group A streptococci, pneumococci, meningococci and Haemophilus influenzae

Signs and Symptoms

The usual presentation is with acute or subacute monoarthritis. The joint is swollen, hot and red and is held in the 'loose-pack' position (eg flexion at the knee), with rest pain and severe pain on movement. Redness is the key finding and indicates a severe inflammatory process in the underlying joint.

Although any joint can be affected, the lower limb, particularly knee and hip, is the most common site.

In patients with pre-existing arthritis involvement of one or more joints is not uncommon and a full MSK examination should be undertaken.

Differential diagnoses include crystal arthritis, osteomyelitis, viral arthritis and overlying cellulitis.

Investigations

Joint aspiration is **the** essential first step in management whenever septic arthritis is suspected. Synovial fluid should be sent for urgent gram stain and culture. Aspirated fluid often looks turbid or blood-stained but may appear more normal. Blood cultures should also be taken.

If the joint is not readily accessible (e.g. hip, spine, sacroiliac joint), aspiration should be performed under image guidance or in theatre. Prosthetic joints should **only** be aspirated in theatre and so referral to orthopaedics is mandatory.

Synovial fluid culture is positive in around 90% of cases of septic arthritis, though the initial Gram stain is positive in only 50% of these. By contrast, synovial fluid culture is positive in only 30% of gonococcal infections, making it important to obtain concurrent cultures from the genital tract (positive in 70-90% of cases).

Although fever with peripheral leucocytosis and raised ESR occur in most patients, these may be absent in elderly or immunocompromised patients or early in the disease course.

Management

Hospitalisation is essential under the care of orthopaedics. As said above the first thing you must do **before antibiotics** is to aspirate the joint. Once this is done the principles of management are:
- aggressive resuscitation (these patients are often very **sick** and may die)
- adequate pain relief
- parenteral antibiotics guided by microbiology advice
- **early** adequate drainage in theatre
- early active rehabilitation.

The recommended first-line antibiotic regime in adults is flucloxacillin (2 g i.v. 6-hourly), which will cover both staphylococcal and streptococcal infection until identification of the organism and its antibiotic sensitivities is possible.

Intravenous treatment is usually continued for 2-3 weeks followed by oral treatment for 6 weeks in total but the actual duration of therapy is guided by CRP and ESR monitoring.