



## Osteomyelitis

Infection of the bone as may occur in the skull or spine is called osteomyelitis. In general, treatment of osteomyelitis involves a long period of intravenous antibiotics prescribed by the infectious diseases team. The neurosurgery team may become involved in the following ways:

- Direct tissue diagnosis via a bone/tissue biopsy.
- Operative removal of the infected bone to prevent further spread of infection and allow antibiotics to work.
- Stabilisation of the spine in cases where the infection causes spinal instability through fractures.

### CAUSES

Osteomyelitis may occur via one of three ways:

- Direct spread from adjacent infected regions ie infection in the ear, the eye or the sinuses.
- Spread from distant infected regions through the bloodstream eg. urinary tract, lung and bone infections.
- Direct implantation of bacteria into the brain substance eg. post-trauma, skull fractures, surgery.

### SIGNS AND SYMPTOMS

Patients with osteomyelitis may be septic if associated with a brain or epidural abscess. They may show:

- Systemic symptoms.
- Localised symptoms depending on the site of infection.
  - Cranial osteomyelitis.
  - Spinal osteomyelitis.

#### Systemic symptoms

There may be normal signs of infection with swinging fevers, hot/cold flushes and drenching sweats. There may not be any systemic symptoms with chronic osteomyelitis.

#### Cranial osteomyelitis

Localised headache and signs of inflammation may be evident (ie swelling, redness, increased temperature). Headaches, nausea and vomiting may occur if there is associated brain abscess or subdural empyema.

#### Spinal osteomyelitis

There will be pain localized to the level of infection. There may be neurological deficits from spinal fractures and compression of the spinal cord, or compression from an epidural abscess.

### INVESTIGATIONS

#### Blood tests

These will include an FBE to demonstrate increasing white cell counts or sometimes anaemia in the case of chronic osteomyelitis, electrolytes to rule out multi-organ failure and at least 3 blood cultures performed as part of a septic screen for exclusion of systemic infection.

#### Microbiological analysis

Microbiological analysis of the infected bone is important to target antibiotic treatment.

#### Radiological tests

- Plain x-rays – this may be normal, however may demonstrate subtle signs of acute or chronic osteomyelitis.
- Bony CTs – this will demonstrate bony destruction from osteomyelitis and the presence of any spinal malalignment.
- MRI – this may assist in the diagnosis of any associated epidural or subdural abscesses. The T2 weighted images will demonstrate the degree of oedema in the affected bone and give a marker of chronicity.
- Bone scans – a bone scan used in conjunction with the above tests will help in the diagnosis of the age of the osteomyelitis.