

BACTERIAL MENINGITIS

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BACTERIAL MENINGITIS

Section 1: Epidemiology and Aetiology:

Bacterial meningitis is a potentially life threatening illness that results from bacterial infection of the meninges. Acute meningitis is a notifiable disease. Bacteria probably invade the blood stream via tonsils and then the meninges by direct haematogenous spread. Less commonly, they spread from an infected area such as the sinuses. Patients often have bacteraemia and may have symptoms and signs of sepsis. The meningeal inflammation as well as abnormal cerebral circulation lead to irritability, reduced level of consciousness and raised intracranial pressure.

The impact of vaccines: the three most common organisms are; *Neisseria Meningitidis*, *Streptococcus pneumoniae* and *Haemophilus influenzae* type b (Hib). Since the introduction of the conjugate Hib, pneumococcal and meningococcal C vaccines, the incidence on meningitis has decreased. Bacterial meningitis needs to be separated from infective cause of meningitis in children, including viral, myco-bacterial (TB), fungal and protozoal, as well as encephalitis and non-infective causes, such as Kawasaki disease.

Making the Diagnosis:

In children under two years of age, the clinical features of meningitis are not always present.

Symptoms and signs of meningitis: fever, lethargy, apathy, reduced mental state, irritability, listlessness, shrill cry, anorexia, D&V, bulging fontanelle in <1 year old, pallor, shock, poor capillary refill time, headache, reduced level of consciousness, neck stiffness, Kernig's sign, and Brudzinski's sign, photophobia, seizures, cranial nerve palsy, rash: may be flea bitten petechiae or purpura. Kernig's sign: knee extension leads to neck pain. Brudzinski's sign: flexing of hips when flexing patient's head.

Lumbar puncture: Most patients over two years of age should be diagnosed clinically, CRP as well as neutrophils are often elevated in people with bacterial meningitis, but will not differentiate from other patients with other infections. A lumbar puncture is necessary for a definitive diagnosis. If a diagnosis of meningitis is high on the differential list and the LP is likely to be delayed, parenteral antibiotics should be administered.

Management: Treatment of bacterial meningitis initially follows the ABC logarithm: airway, breathing, circulation. IV access and blood should be taken. Correction of dehydration and poor perfusion is vital, but care should be taken that fluid overload and worsening of cerebral oedema doesn't occur. Antibiotics: if access is impossible and LP is delayed, IM penicillin or ceftriaxone is an option in primary care, in secondary care first line therapy is cefotaxime or ceftriaxone.

chemoprophylaxis:

All household contacts within the past 7 days should be offered chemoprophylaxis (rifampicin, ciprofloxacin). Family members (same household) should be treated in secondary care. If contacts are un-immunised children, meningococcal C, pneumococcal conjugate vaccine and/or Hib vaccine should be offered.

prognosis;

Death from meningitis in children in most developed countries is uncommon: it ranges from <1% to >10%. Complications are learning difficulties, neurodisabilities, seizure disorders, hearing loss, visual disorders, speech and language problems, behavioural problems.

All children should have a hearing assessment soon after discharge. Early referral for cochlear implant assessment is vital in patients with severe hearing loss, before the inner ear ossifies.