paradural abscess [created by Paul Young 17/11/07]

epidural abscess

general
- within the vertebral column a thin layer of fat and blood vessels separate the dura from the vertebral column making the epidural space a more common site of infection than the subdural space
- once an infection develops in the epidural space it may dissect for a considerable distance

clinical manifestations:
- usually begins with localised spinal pain
- higher functions are generally intact
- symptoms usually progress through four clinical phases of spinal ache, nerve root pain, radicular weakness and paralysis
- back pain with fever, focal tenderness & sensory & motor deficits strongly suggests this disease

aetiology
- S. aureus accounts for 2/3rds of epidural abscess
- 80% of spinal epidural abscess is community acquired while 20% of cases occur after spinal instrumentation (surgery or epidural); in the latter population causative organisms may include nosocomial infections such as MRSA or pseudomonas
- a source of haematogenous seeding may be identified in 75% of patients

risk factors for epidural abscess include:
(i) spinal instrumentation
(ii) iv drug use
(iii) diabetes mellitus
(iv) trauma
(v) dialysis

differential diagnosis:
- degenerative disease of metastatic tumour may mimic epidural abscess (especially if fever is present); MRI will distinguish these

investigation:
- diagnosis hinges on visualisation of a collection in the epidural space
- MRI is the diagnostic modality of choice because it defines cord compression & the presence and extent of abscess, identifies drainable paraspinal collections & detects concomitant vertebral osteomyelitis
- CT scanning can be performed in MRI is not available

- treatment should be based on the Gram stain and culture results of operative material.
- Initial empirical therapy should be commenced prior to surgery. Antibiotic guidelines recommend:
flucloxacillin 2 g (child: 50 mg/kg up to 2 g) IV, 6-hourly
PLUS
gentamicin 4 to 6 mg/kg (child <10 years: 7.5 mg/kg; =10 years: 6 mg/kg) IV, daily
(adjust dose for renal function, see Monitoring and dosing of aminoglycosides).
- For patients with penicillin allergy, substitution of vancomycin for flucloxacillin is recommended

treatment

- antibiotics alone are inadequate if there is evidence of nerve compression & neurosurgical drainage remains the mainstay of treatment; if nerve compression is present, decompression within 24 hours offers the best chance of recovery

- non surgical management might be considered if a pathogen is identified by peripheral blood cultures or by needle biopsy if there is no progression of neurological findings on frequent examination, if pain improves, white cell count declines & fever settles with treatment

general

- the epidural space is the space between the dura and the bony structure of the the skull and the vertebral column while the subdural space is the space between the subarachnoid membrane and the dura
- although subdural abscesses are more common within the cranium & epidural abscesses are more common within the vertebral column, the causes, pathophysiology & therapies are similar

subdural abscess

- in the skull, the epidural tissues are dense and the abscess formation is unusual; the subarachnoid membrane is much less adherent to the dura, making the subdural space the more likely site of infection
- cranial subdural abscess may be clinically indistinguishable from brain abscess

causative organisms
- usually associated with infection of the paranasal sinuses & less commonly of the ears and mastoids; trauma, surgical intervention, or haematogenous sources cause the remaining cases
- organisms common to sinusitis, including streptococci, pneumococci, H. influenzae, anaeorobes, and staphlococci cause most infections
- gram negative enteric bacilli may be associated with middle ear and mastoid infections

- antibiotic guidelines recommend subdural empyema be treated with the same antibiotic regime as a brain abscess