Space occupying lesions

→ symptoms: headache and fever, seizures also increased intracranial pressure and focal neurological defect can present.

→ Diagnosis: brain imaging (MRI, CT scan), Lumber puncture is contraindicated if there is increased intracranial pressure.

Brain abscesses

Focal supporitive infection within the brain parenchyma forming cavity filled with Dead and alive bacteria, WBC's, debris and surrounded by vascularized capsule.

* Infection starts as cerebritis (similar Lesion but without capsule)

← CSF examination is not useful

- Pathogens can spread from nearby infections Like: Ear, sinuses or brain infections after persisting for Long period then Infecting the bone near them. they can also spread hematogenously or after head trauma or cranial surgery

Like septic embolus from endocarditis or pulmonary infection it could go to brain Parenchyma bypassing blood brain barrier

Table 19.10 Factors predisposing to cerebral abscess

Predisposing condition	Microorganisms
Otitis media/mastoiditis	Streptococci, Enterobacteriaceae, Bacteroides spp., P. aeruginosa
Sinusitis	Streptococci, Haemophilus spp., Bacteroides spp., Fusobacterium spp.
Dental sepsis	Streptococci, Haemophilus spp., Bacteroides spp., Fusobacterium, Prevotella
Pulmonary/pleural sepsis	Streptococci, Fusobacterium, Actinomyces, Bacteroides, Prevotella spp., Nocardia spp.
Endocarditis	S. aureus, streptococci
Congenital heart disease	Streptococci, Haemophilus spp.
Urinary tract	Enterobacteriaceae, P. aeruginosa
Head trauma	S. aureus, Enterobacter spp., Clostridium spp.
Neurosurgery	Staphylococcus spp., Streptococcus spp., P. aeruginosa, Enterobacter spp.
Immunocompromised hosts	T. gondii, L. monocytogenes, N. asteroides, Aspergillus, C. neoformans, C. immitis, Candida spp., mucormycosis, zygomycosis
HIV infection	T. gondii, Nocardia spp., Mycobacterium spp., L. monocytogenes, C. neoformans

Treatment:

- neurosurgical Drainage and high Dose Parenteral antibiotics
- Empiric therapy with 3rd generation cephalosporin
- In History of recent trauma → add vancomycin

Prognosis:-

mortality < 15%

Significant sequelae ≥ 20% of survivors

Subdural empyema (SDE)

- collection of Pus between Dural and arachnoid membranes
- chronic sinusitis spreads infection to subdural Area
- It has rapid evolution, Incidence is higher in males
- The most common causitive organsims are aerobic and nonaerobic streptococci, staphylococci Enterobacteriaceae and anaerobic bacteria.
- contralateral hemiparesis or hemiplegia
- Diagnosis:- MRI is Superior to CT identifying SDE and any associated Intracranial infections while CSF examination is avoided
- Treatment:- evacuation of empyema is definitive step in management of the infection also Empiric antibiotic therapy should include 3rd generation cephalosporin, vancomycin → for staph and Metronidazole (for anerobs such as bacteroides)
- Gram stain and culture of fluid obtained via burr holes or craniotomy

Epidural abscess

- Suppurative infection between inner skull and dura (potential space), It is encountered after craniotomy procedures, cranial fractures and nearby infected bones (rarely hematogenous)
- diagnosis, presentation, causitive agents are similar to SDE
- spreads slower than SDE and It is smaller in size
- focal neurological defects are uncommon (5% of patients)

Supporative Intracranial Thrombophlebitis

- septic venous thrombosis of cortical veins and sinuses, so veins draining infected meninges can be damaged by suppuration followed by clotting.
- MRI showes decreased blood flow in affected veins
- treated with Antibiotics, hydration, Removal of Infected tissue and thrombus also anticoagulation with dose adjusted IV heparin is recommended