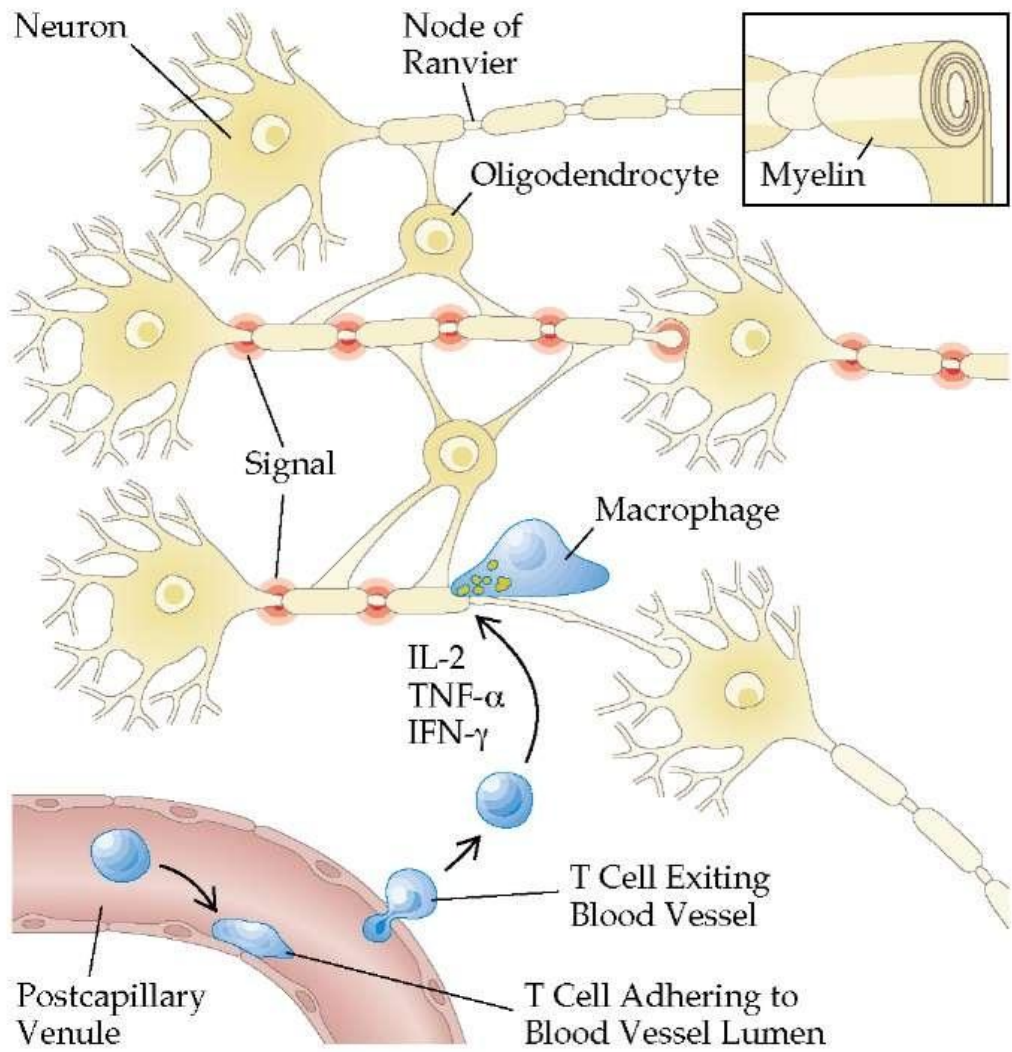


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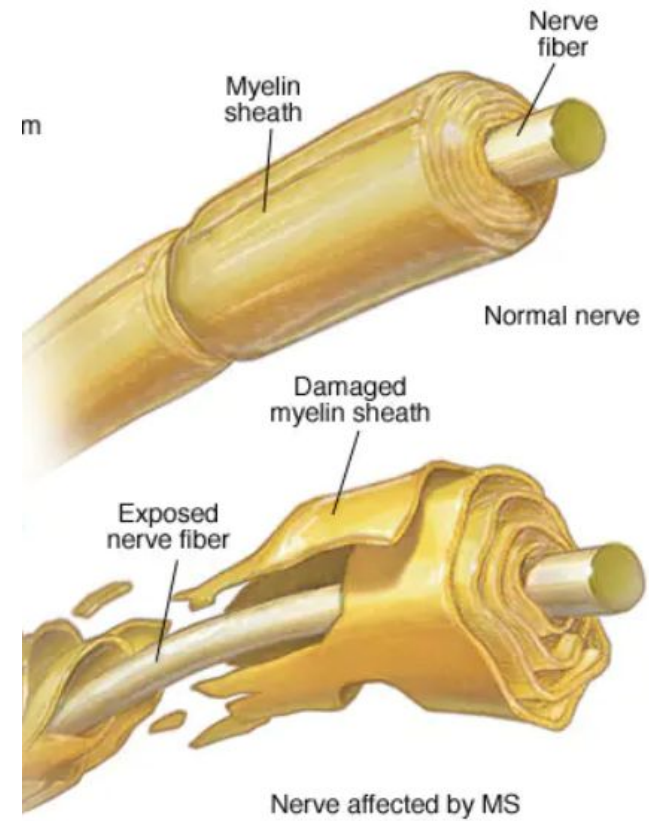
# NEUROLOGY

MS, meningitis, encephalitis, intracranial  
& cerebral abscesses, neurosyphilis,  
CJD





# MULTIPLY SCLEROSIS



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# MULTIPLY SCLEROS

Cause is unknown

It's linked to:

- Genetic: female (20-40 years); genes encoding for HLA-DR2
- Infections
- Vitamin D deficiency

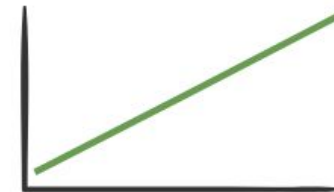
Increasing  
Disability



Relapsing-Remitting MS



Secondary Progressive MS



Primary Progressive MS



Progressive-Relapsing MS

Time

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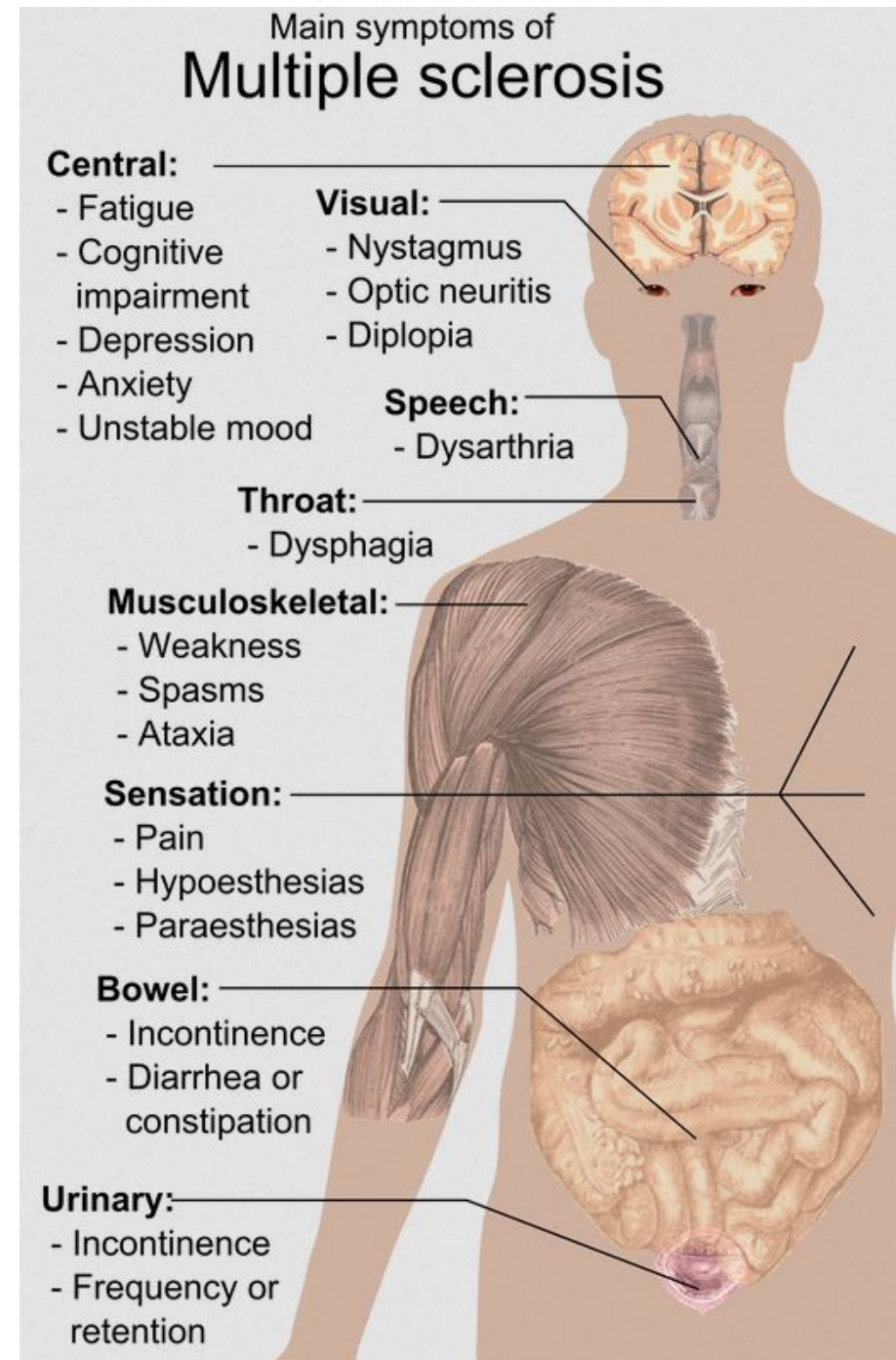
# MULTIPLY SCLEROSIS

## Charcot's neurologic triad

- Dysarthria
- Nystagmus
- Intension tremor

## Specific signs:

- Uhthoff's sign
- Lhermitte's sign



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# LHERMITTE'S SIGN



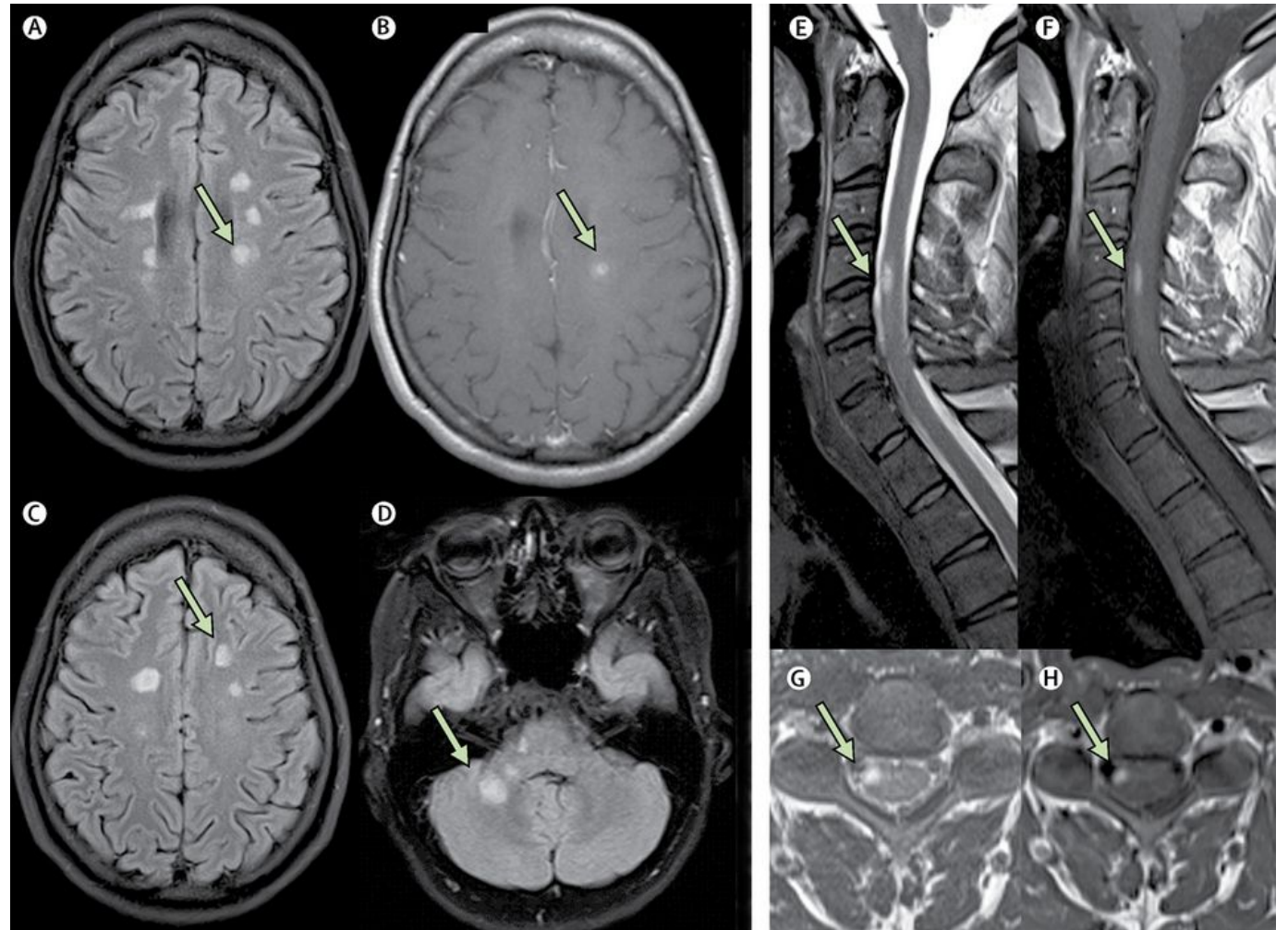
Electric shock sensation which occurs with neck flexion and often radiates down the spine

---

# MULTIPLY SCLEROSIS

## Diagnosis

- MRI
- Cerebrospinal fluid
- Visual evoked potential



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# MULTIPLY SCLEROSIS

## Treatment

### *RRMS*

- Corticosteroids, cyclophosphamide, intravenous immunoglobulin
- Plasmapheresis
- Immunosuppressant: recombinant b-IFN

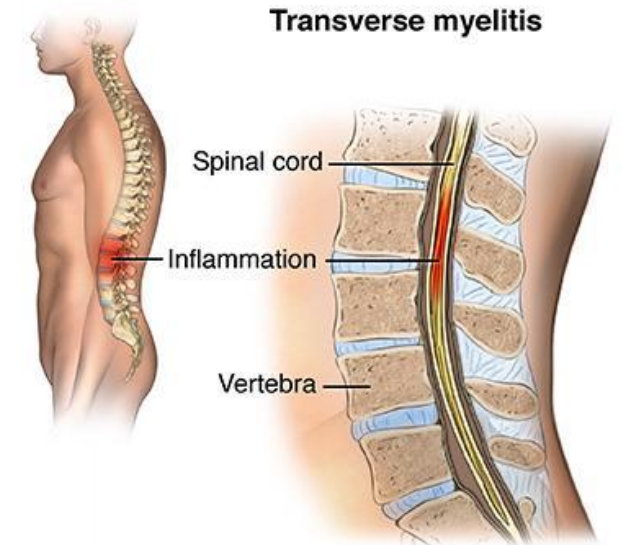
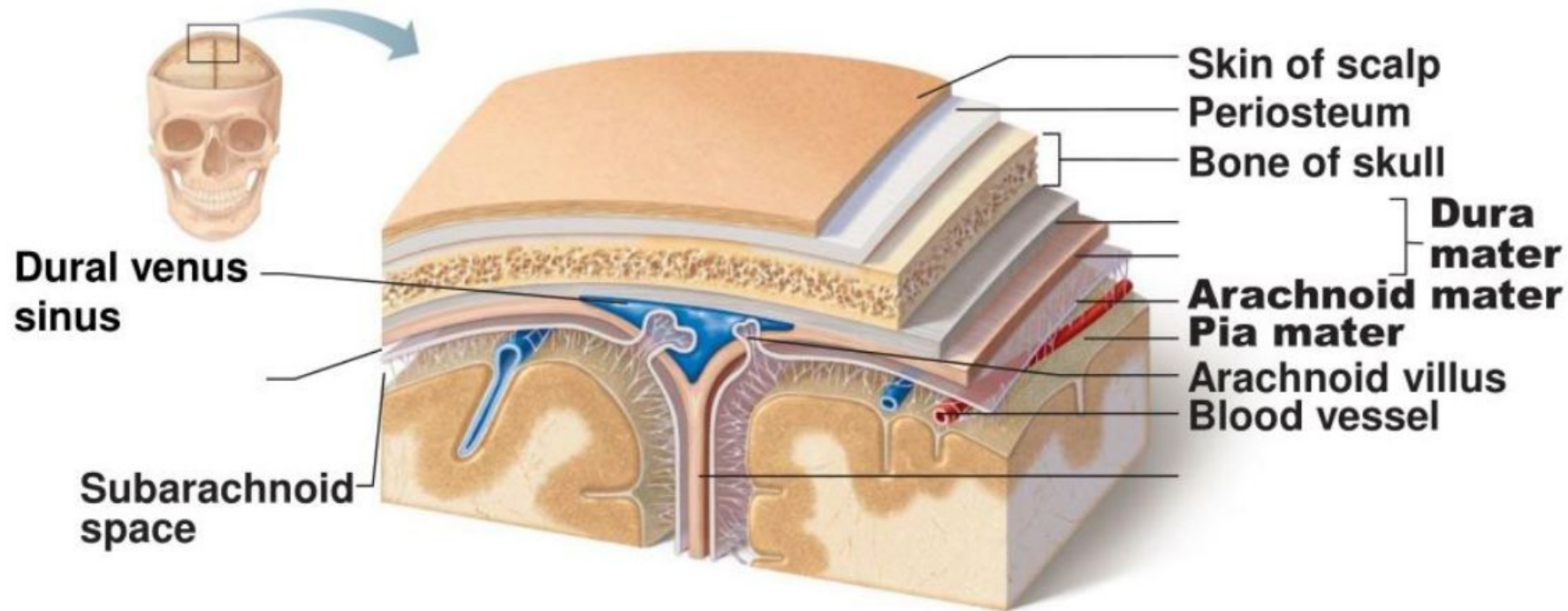
### *Progressive MS*

- Manage symptoms
- Physical therapy
- Cognitive rehabilitation therapy

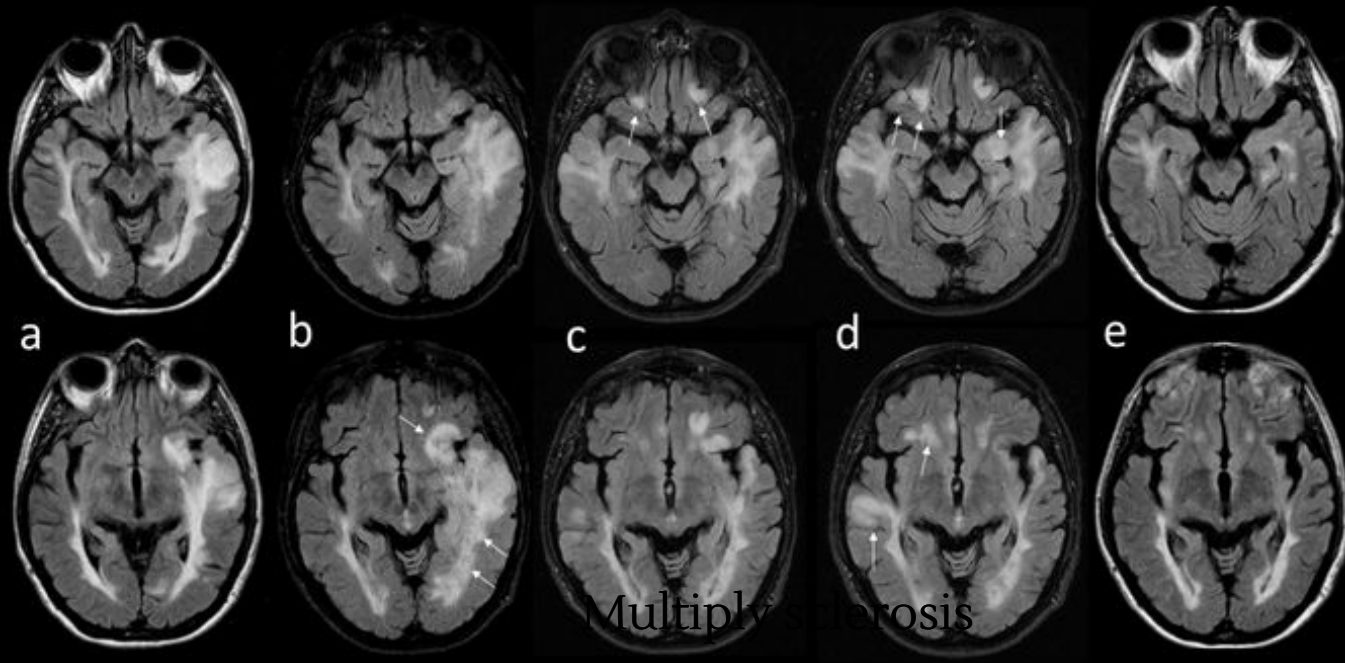
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# MENINGITIS ENCEPHALITIS

# MYELITIS

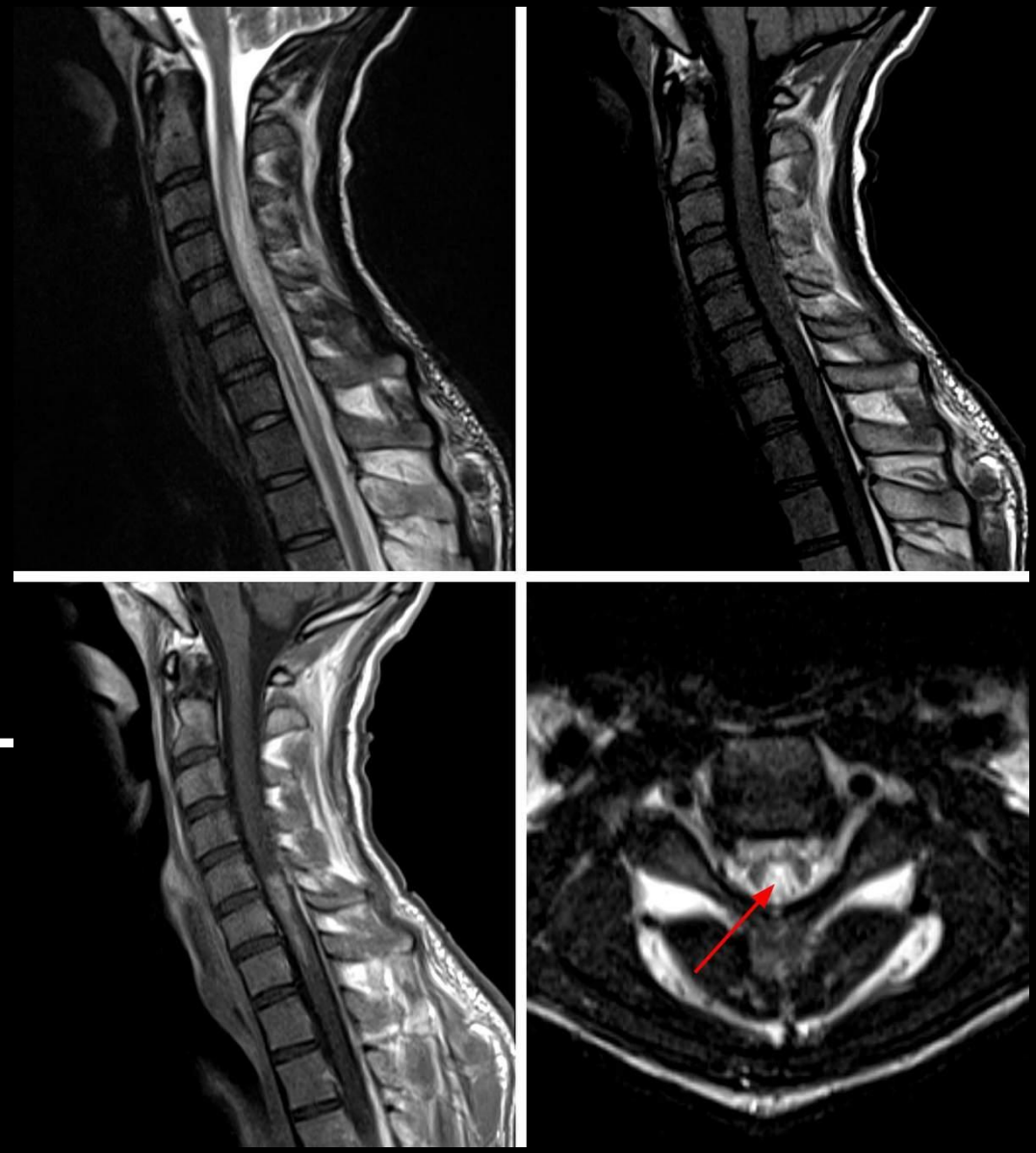






Days 0 2 25 47 120

# ENCEPHALITIS MYELITIS



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# MENINGITIS

## Inflammation triggers

- Autoimmune disease
- Adverse reaction to medication
- Infection

## Two ways of spreading

### *Direct spread*

- Through overlying skin
- Up through nose
- Anatomical defect

### *Hematogenous spread*

- Through binding to surface receptor
- Areas of damage
- Vulnerable spot

---

# CAUSES

## Bacteria

- Newborns: group B streptococci, E coli, Listeria monocytogenes
- Children and teens: Neisseria meningitidis, Streptococcus pneumonia
- Adults and elderly: Streptococcus pneumonia, Listeria monocytogenes

Tick-borne: Borrelia burgdorferi

## Viruses:

- Enteroviruses, Herpes simplex, HIV
- Mumps, Varicella zoster, Lymphocytic Choriomeningitis

Fungi: Cryptococcus genuses, Coccidioides genuses

Tubercular meningitis

Parasitic cause: Plasmodium falciparum

# SYMPTOMS

## Meningitis

Headache, fever, nuchal rigidity

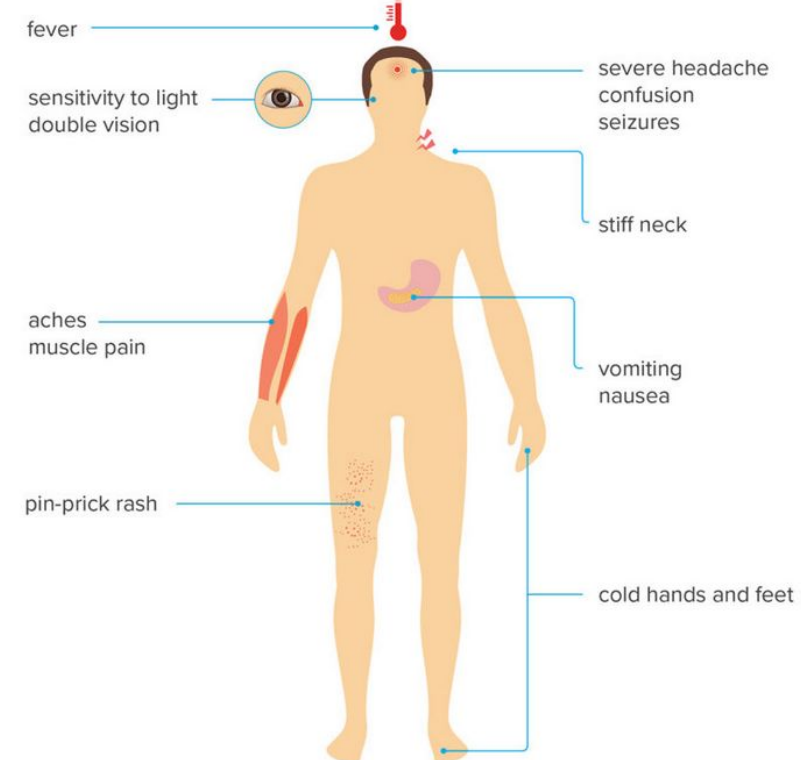
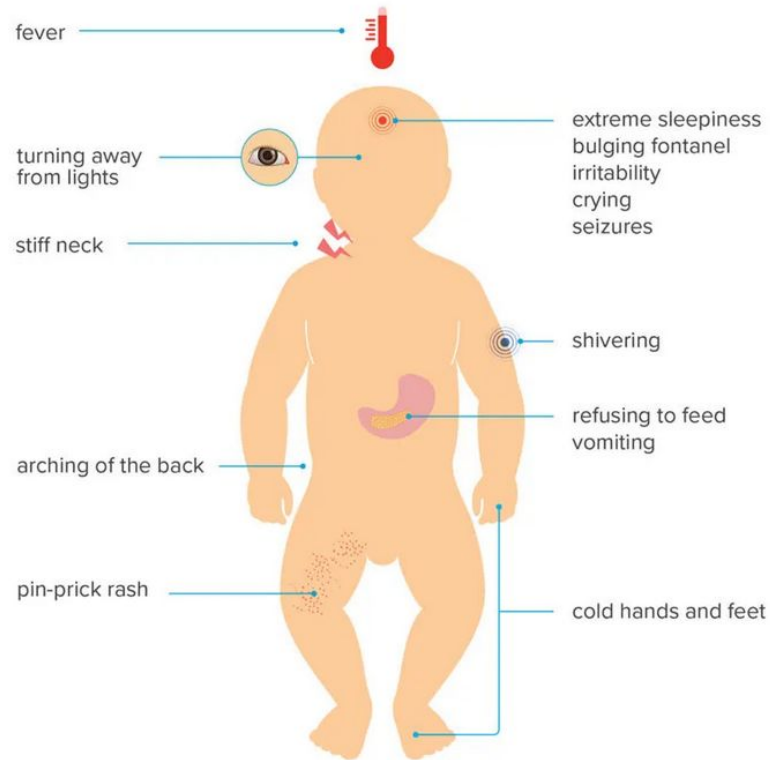
Photophobia and phonophobia

## Encephalitis

Fever, altered mental status, seizure or focal neurologic symptoms

## Myelitis

Flaccid paralysis and sensory loss



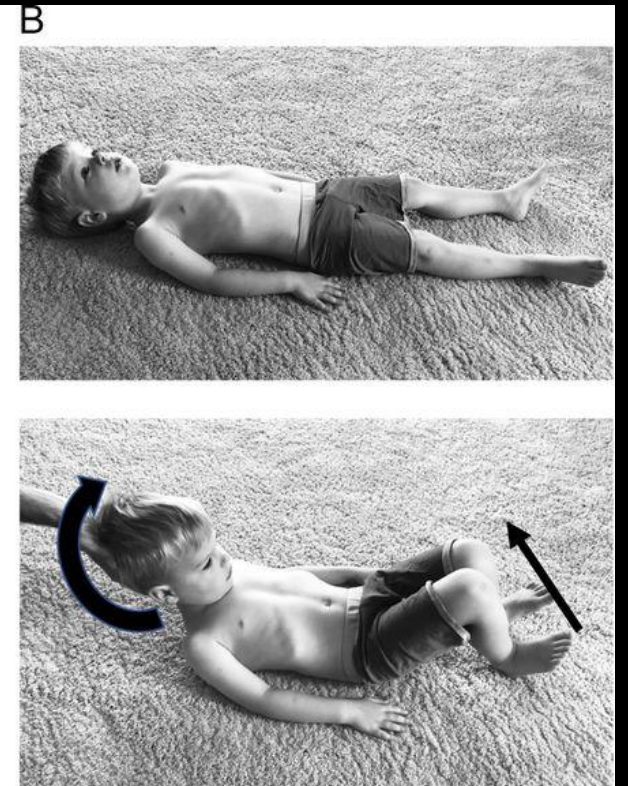
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# DIAGNOSIS

## OF MENINGITIS



Kernig's Sign



Brudzinski's Sign

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# DIAGNOSIS

Lumbar puncture

PCR

Western blot

Thin blood smear

Etiology	Glucose	Protein	White Cell Count	Gram Stain	Bacterial Culture
<b>Bacterial meningitis</b>	Low	High	>100; ↑ PMN	+	+
<b>Aseptic meningitis</b>	Low/NL	NL/High	> NL; variable	-	-
<i>Pre-treated bacterial meningitis</i>	Low	NL/High	>100; ↑ PMN	-	-
<i>Viral meningitis</i>	NL	NL/High	>10-100's; ↑PMN (early) ↑ Lymphs (late)	-	-
<b>Encephalitis</b>	NL	NL	> NL	-	-

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# TREATMENT

Bacterial: Steroids and antibiotics

Antivirals, antibacterial, antifungals, antiparasitic

Prevention vaccine: Neisseria Meningitidis, Disseminated tuberculosis

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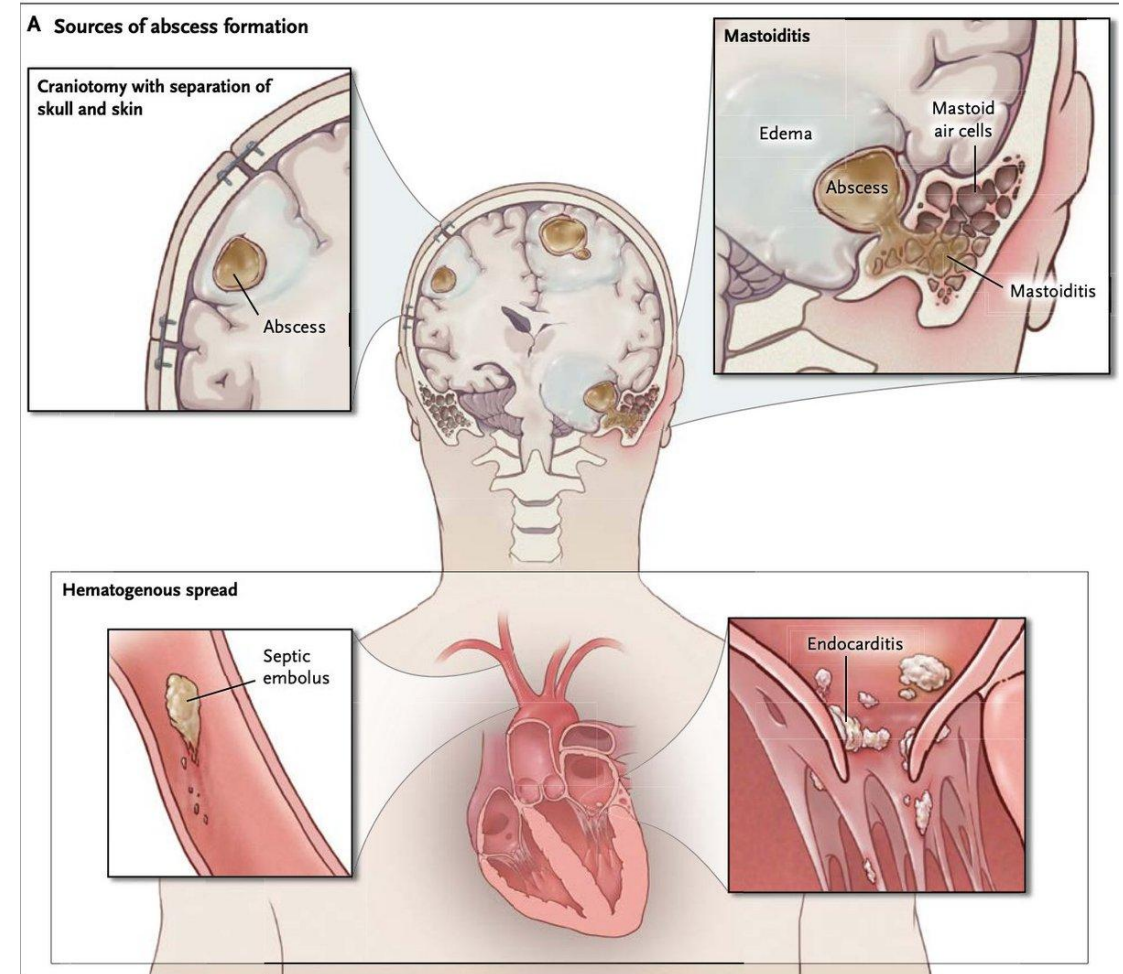
# BRAIN ABSCESS

## Direct spread

Cause a single brain abscess

Primary infection include:

- Subacute and chronic otitis media and mastoiditis (the inferior temporal lobe and cerebellum)
- Frontal or ethmoid sinuses and dental infection (the frontal lobe)





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# BRAIN ABSCESS

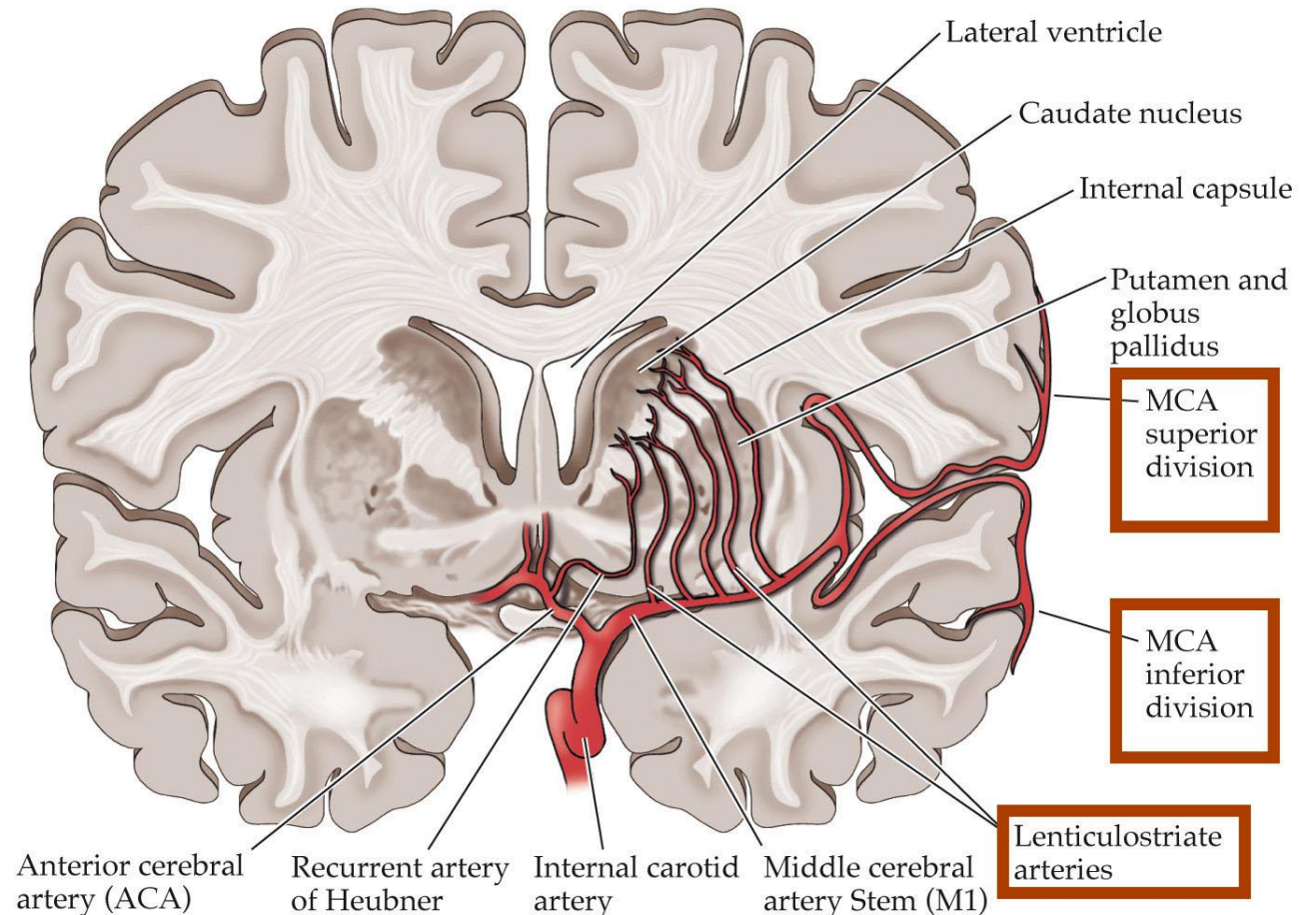
## Hematogenous spread

Usually multiply abscess

Most commonly located in the distribution of the middle cerebral artery

Sources:

Skin infection, pelvic infection, intraabdominal infection, esophageal dilation, bacterial endocarditis, cyanotic congenital heart disease

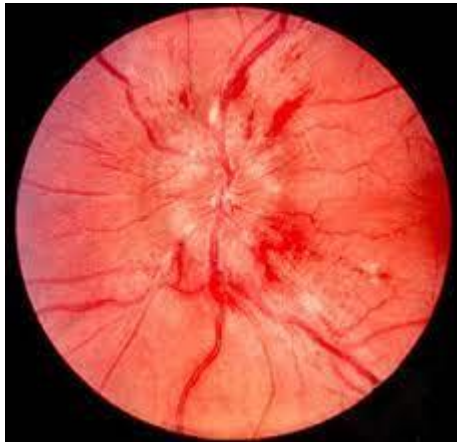


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# BRAIN ABSCESS

## Symptoms

- A headache (69% to 70%)
- Mental status changes (65%) lethargy progressing to coma is indicative of severe cerebral edema
- Focal neurologic deficits (50% to 65%)
- Fever (45% to 53%)
- Seizures (25% to 35%).
- Nausea and vomiting (40%)
- Nuchal rigidity (15%)

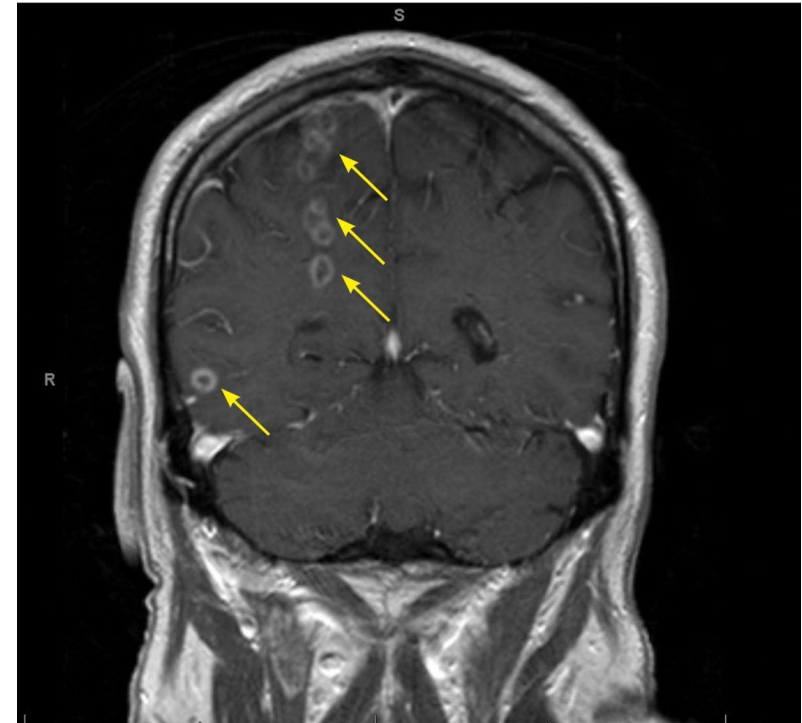


## Diagnosis

Clinical: focal symptoms and signs

Papilledema

MRI



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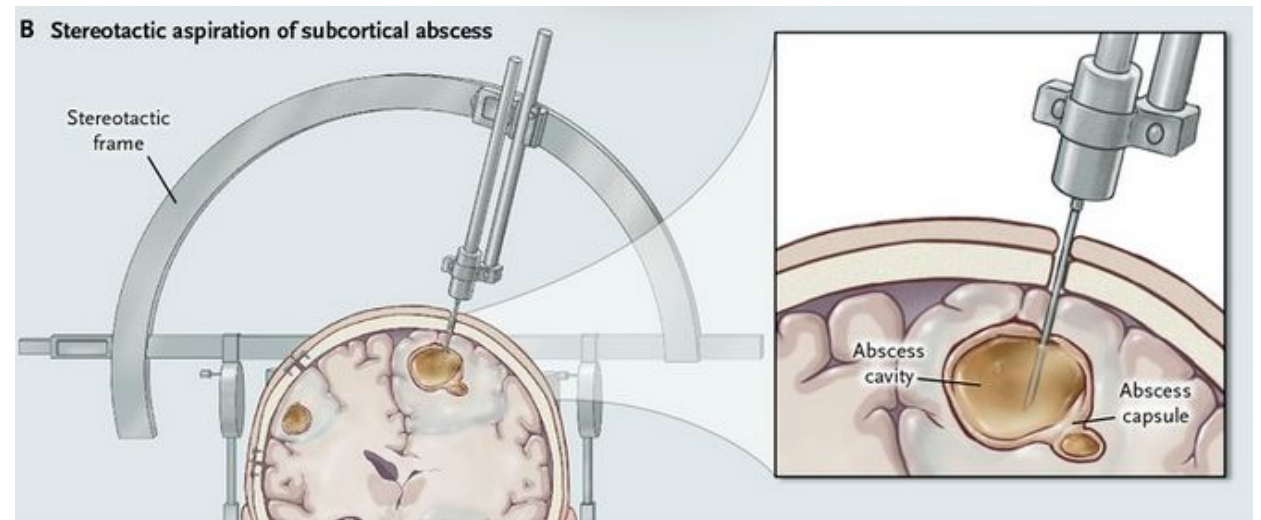
# BRAIN ABSCESS

## Treatment

- IV antibiotic: PenG + Chloramphenicol or Metronidazole

For MSSA: Nafcillin or Oxacillin

- Surgery
- Aspiration
- Glucocorticoids: dexamethasone



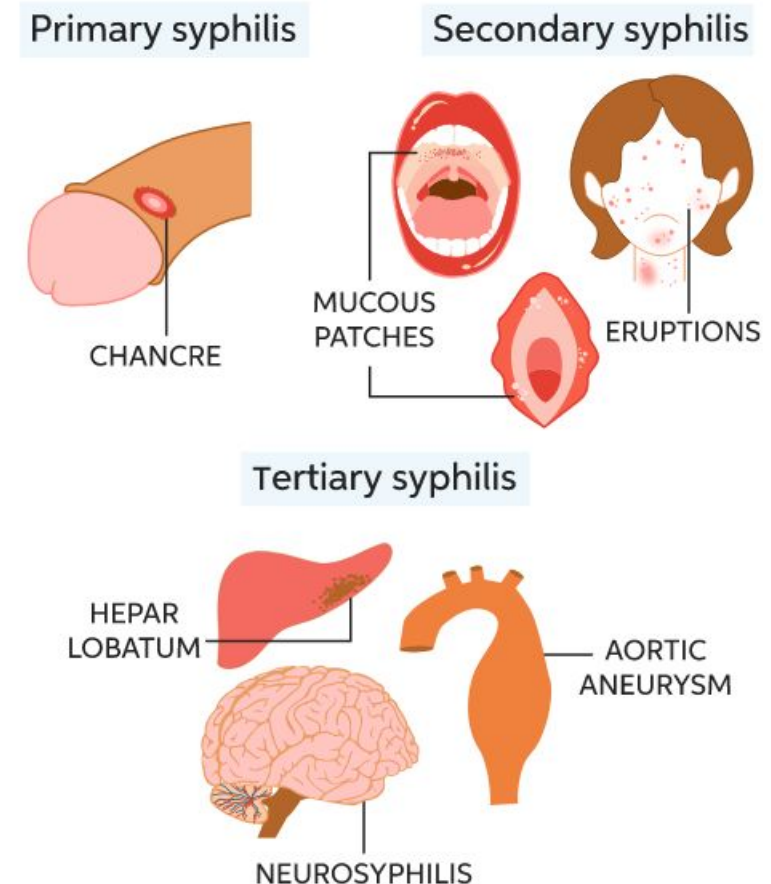
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# NEUROSYPHILIS

Neurosyphilis is caused by *Treponema pallidum*

There are different forms of neurosyphilis:

- asymptomatic neurosyphilis
- meningeal neurosyphilis
- meningovascular neurosyphilis
- general paresis
- tabes dorsalis



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# NEUROSYPHYLIS

## Early

- Asymptomatic neurosyphilis
- Acute symptomatic *syphilitic meningitis*: nausea, vomiting, headache, CN 2,4-8 abnormalizes
- *Meningovascular syphilis*

5-6 years after infection

Focal neurologic signs, vasculitis, stroke, transverse myelitis

## Late

- *Dementia paralytica*

10-20 years after infection

Slow cognitive decline, weakness, tremor, pupillary abnormalities, bowel-bladder incontinence

- *Tabes dorsalis*

15-20 years after infection

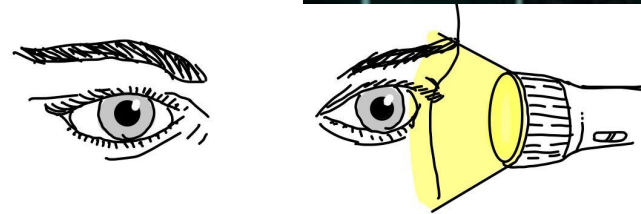
Radicular paresthesia, “thunder bolt” pain in limbs, back or face; broad-based, foot-slapping gait, loss of reflexes in lower limbs, Argyll-Robertson pupils

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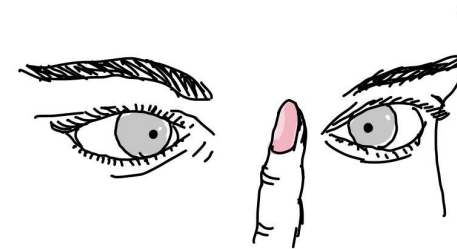
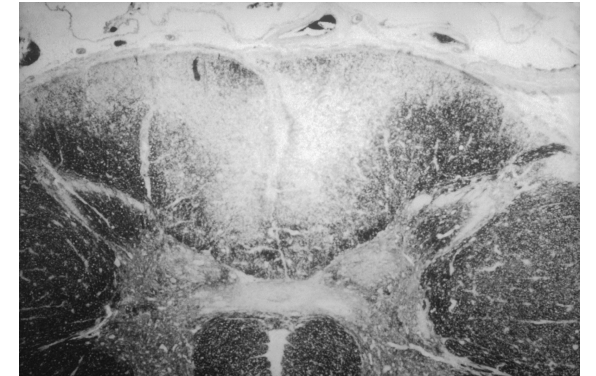
# NEUROSYPHILIS

## Tabes Dorsalis morphology:

- D**orsal column degeneration
- O**rthopedic pain (Charcot joints)
- R**eflexes decreased (deep tendon)
- S**hooting pain
- A**rgyll-Robertson pupils
- L**ocomotor ataxia
- I**mpaired proprioception
- S**yphilis



Pupils DO **NOT** constrict when exposed to bright light. ("light reflex")



Pupils DO constrict on a near object. ("accommodation reflex")

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# NEUROSYPHILIS

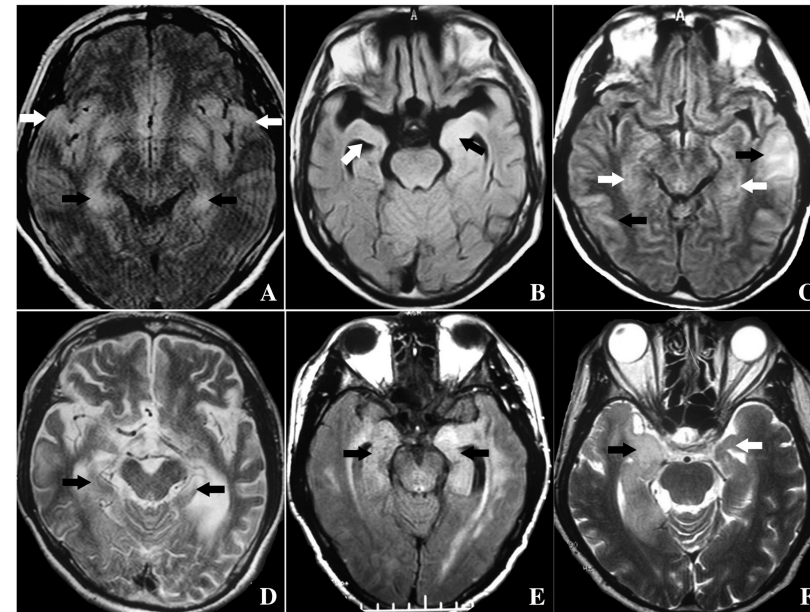
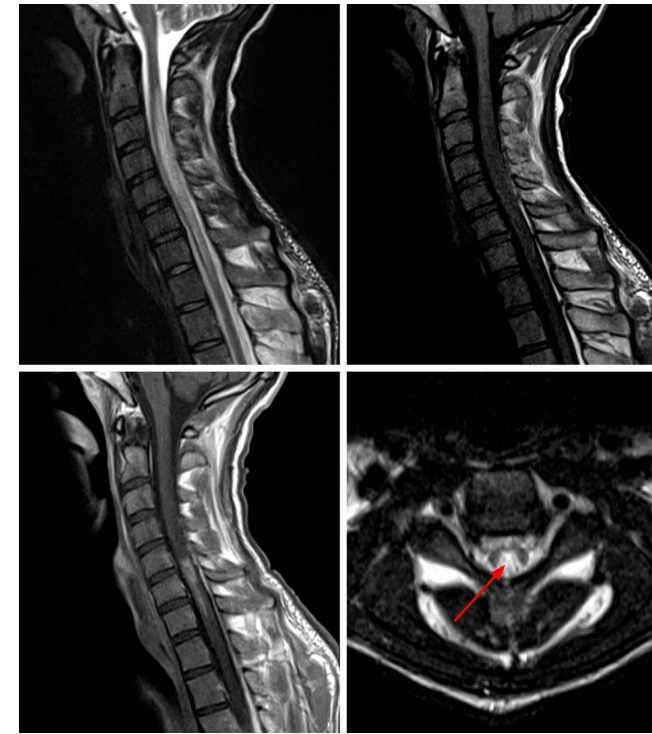
## Diagnosis

- Serum nontreponemal tests : RPR, VDRL

Nonreactive in late neurosyphilis

- Serum treponemal test: FTA-ABS, TPA or syphilis EIA
- LP: lymphocytic pleocytosis

, high protein, low or NM glucose, reactive csf-VDRL



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# NEUROSYPHILIS

## Treatment

- Aqueous crystalline **penicillin G** (18 to 24 million units per day, administered as 3 to 4 million units intravenous every four hours, or 18 to 24 million units daily as a continuous infusion) for 10 to 14 days, or
- Procaine **penicillin G** (2.4 million units intramuscular [IM] once daily) plus **probenecid** (500 mg orally four times a day), both for 10 to 14 days
- Ceftriaxone 2 g IV daily 10-12 days



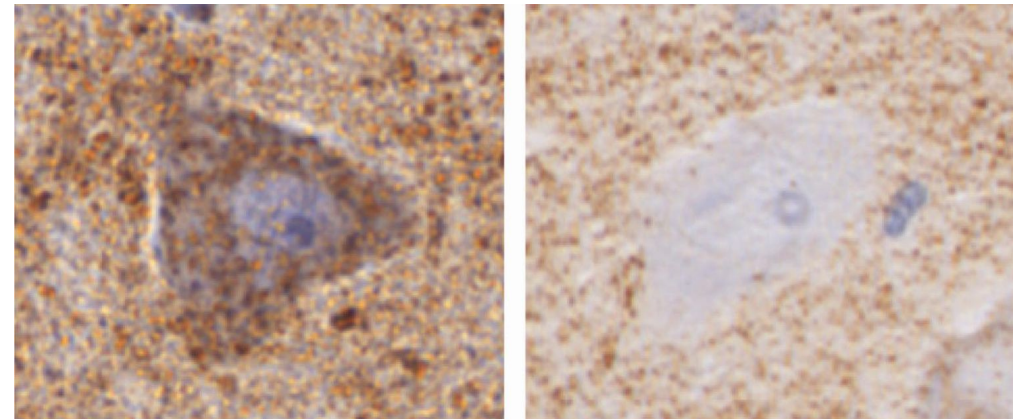
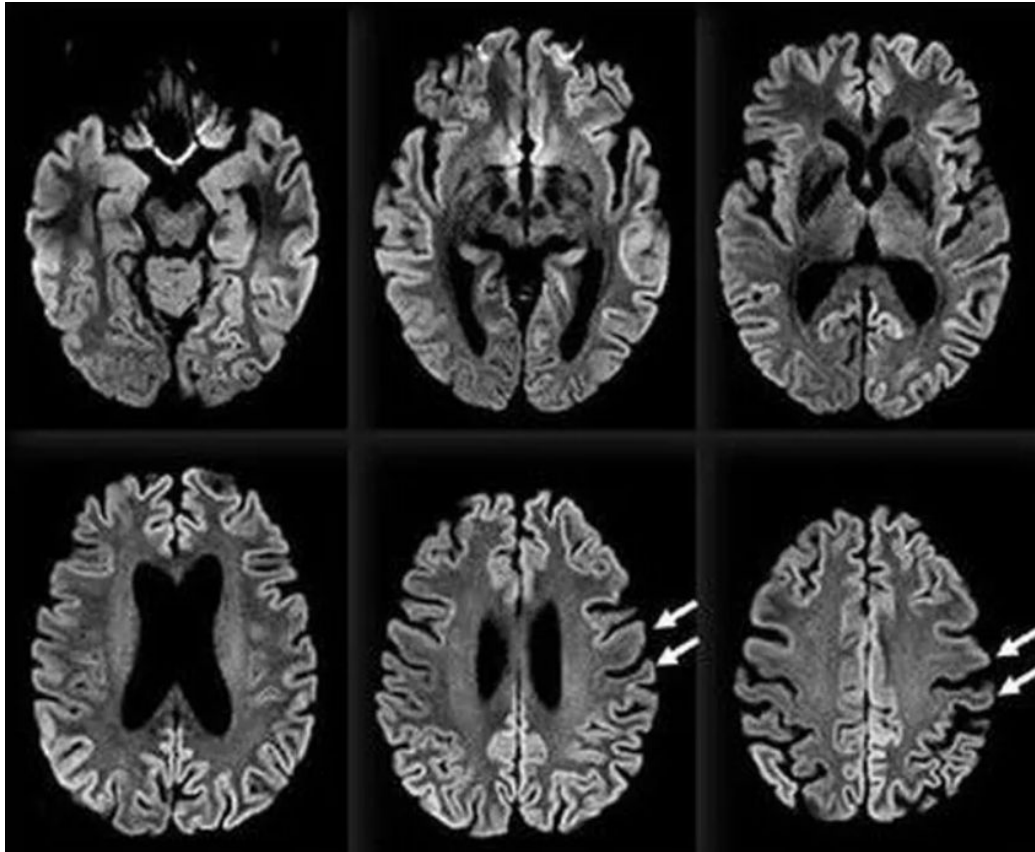
# CREUTZFELDT-JAKOB DISEASE

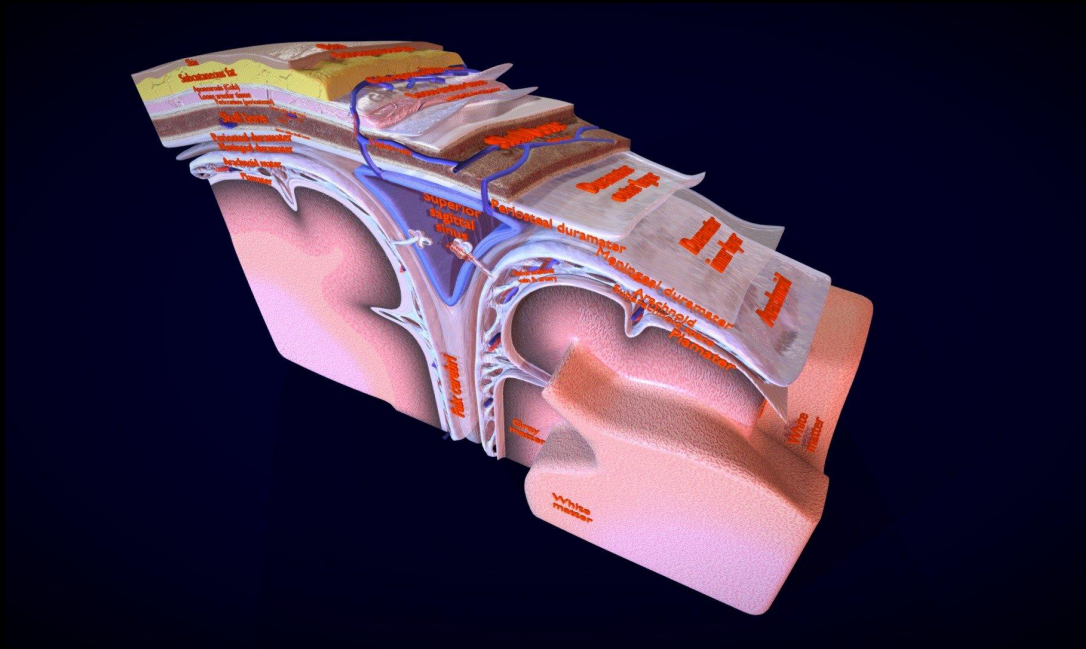
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- CJD is a neurodegenerative disease with a rapid onset characterized by **progressive dementia, myoclonus and also cerebellar, pyramidal and extrapyramidal signs.**
- Abnormal prion protein accumulate in the brain and it can cause irreversible damage. It lead to brain atrophy or wasting; cytoplasmic vacuoles in neurons and astrocytes
- Symptoms: fatigue, sleep problems, reduces appetite; dementia, behavior changes and confusion; cerebellar ataxia, aphasia, visual disturbances and motor weakness
- Diagnostic: exclude infection and toxicity. Brain biopsy
- Treatment: no cure

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# CREUTZFELDT-JAKOB DISEASE





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# THANK YOU