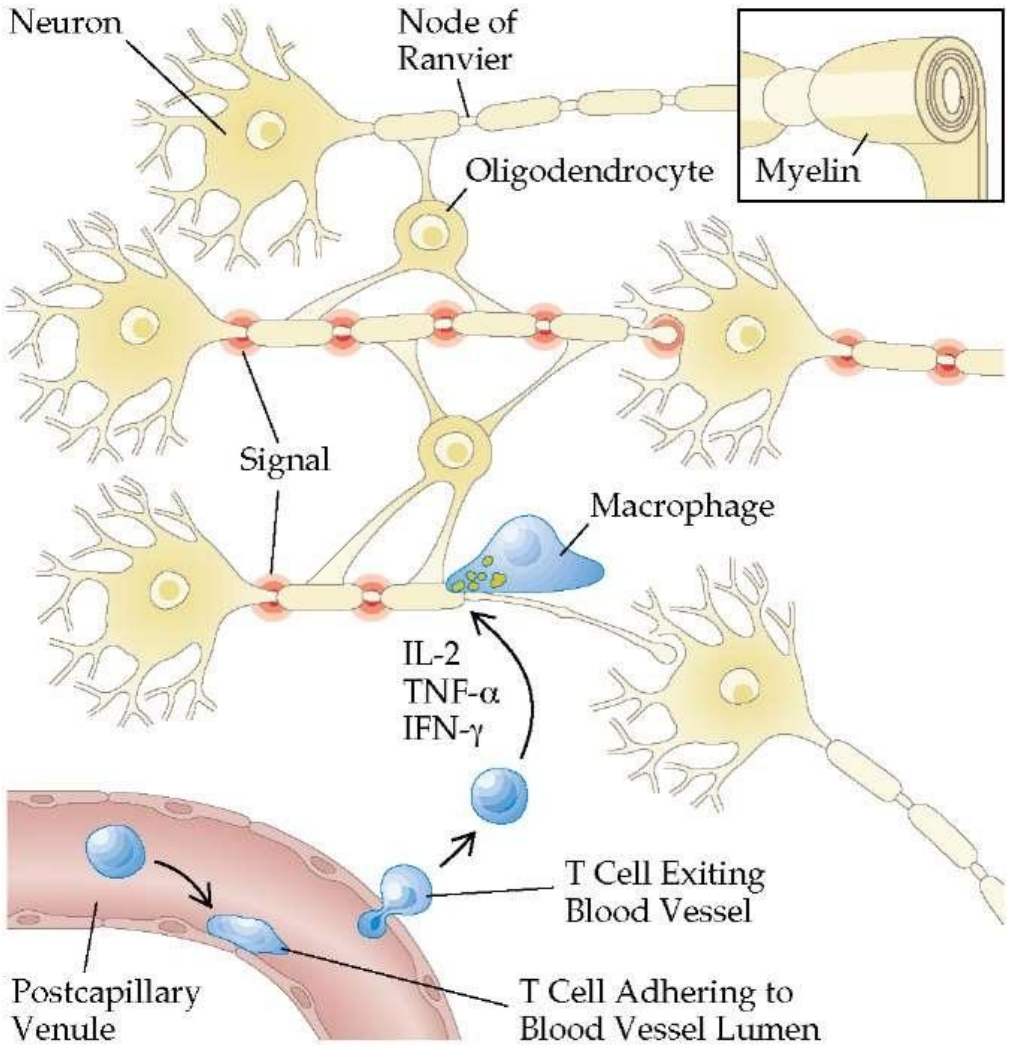
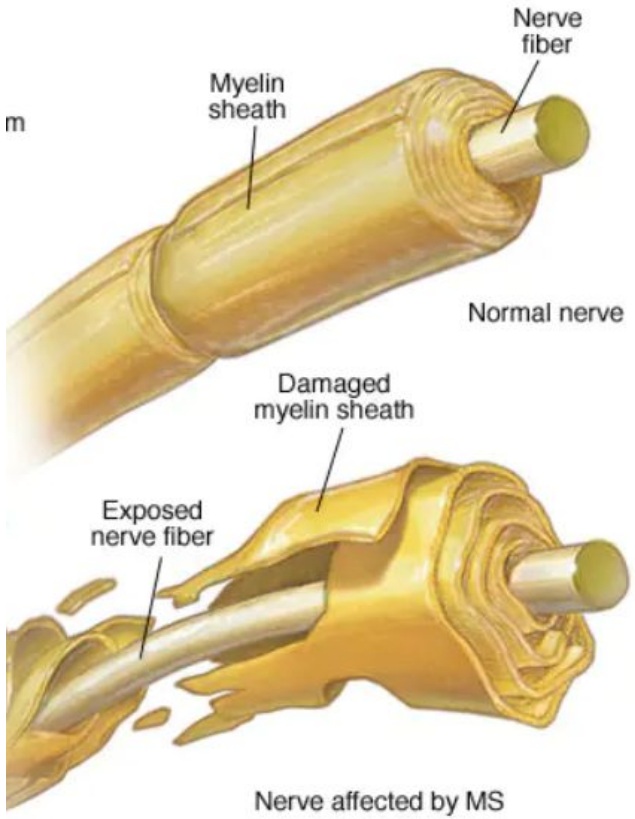
# NEUROLOGY

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

# MULTIPLY SCLEROSIS



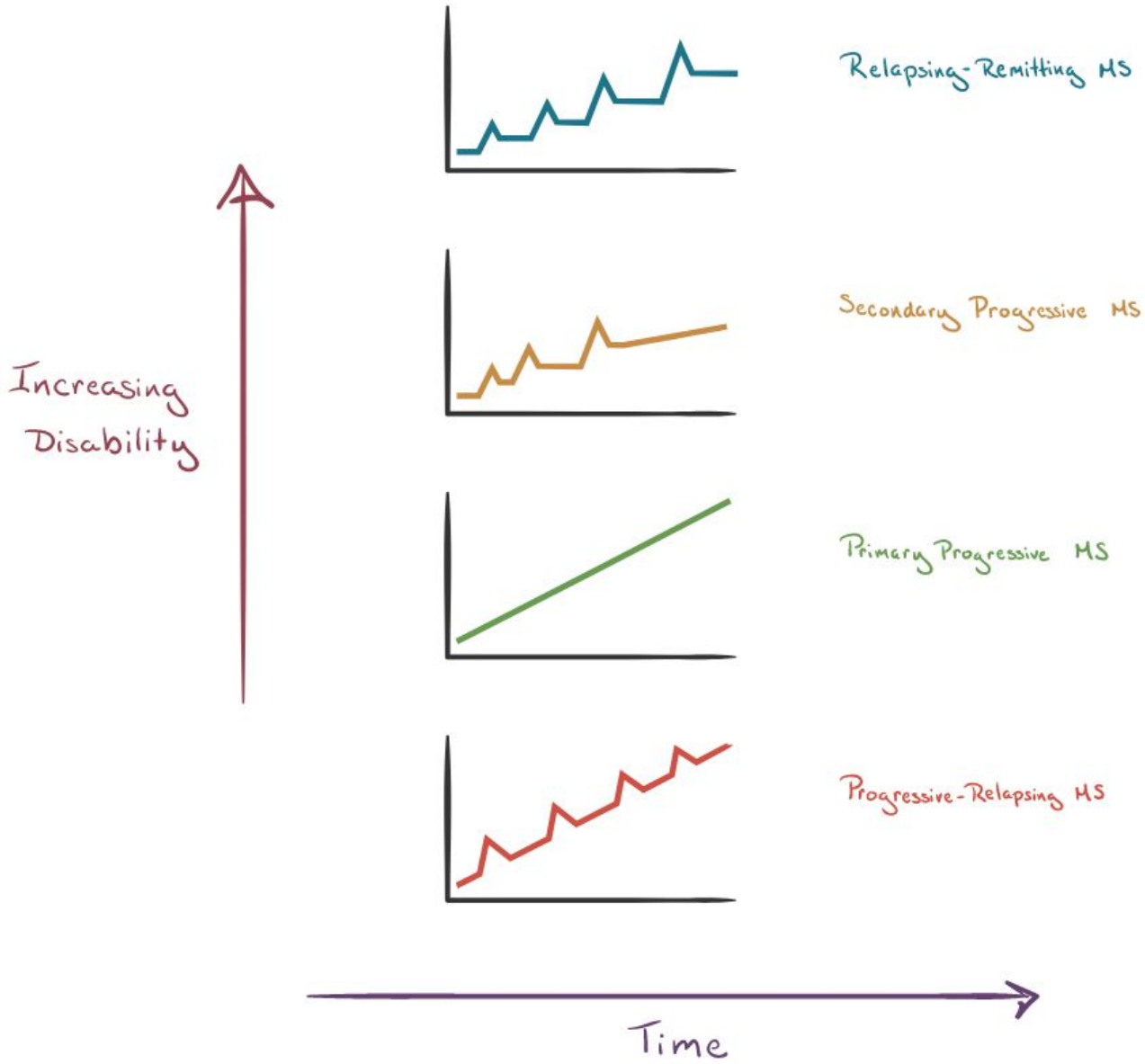



# MULTIPLY SCLEROS

Cause is unknown

It’s linked to:

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



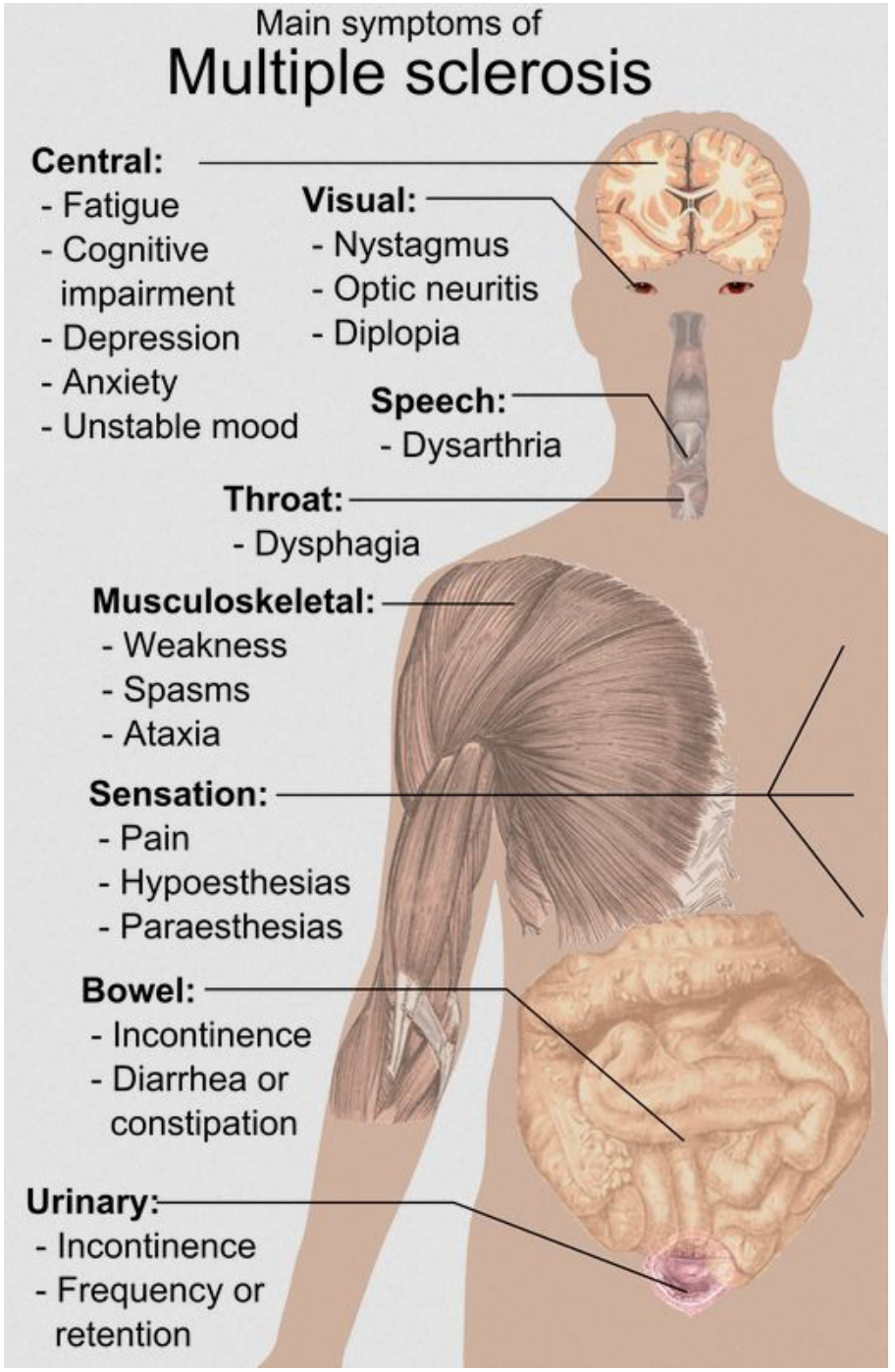
# MULTIPLY SCLEROSIS

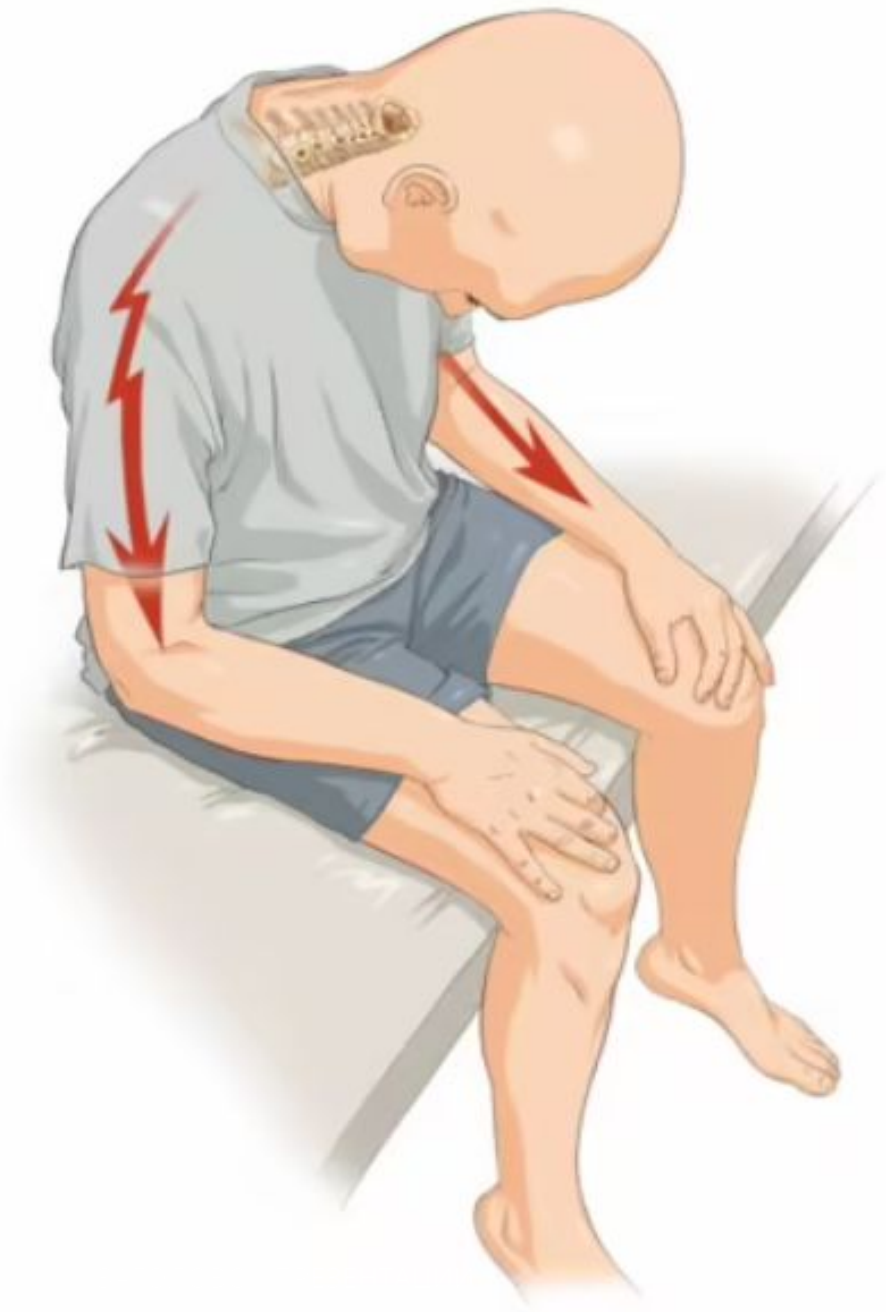
Charcot's neurologic triad

- Dysarthria
- Nystagmus
- Intension tremor

Specific signs:

- Uhthoff's sign
- Lhermitte's sign





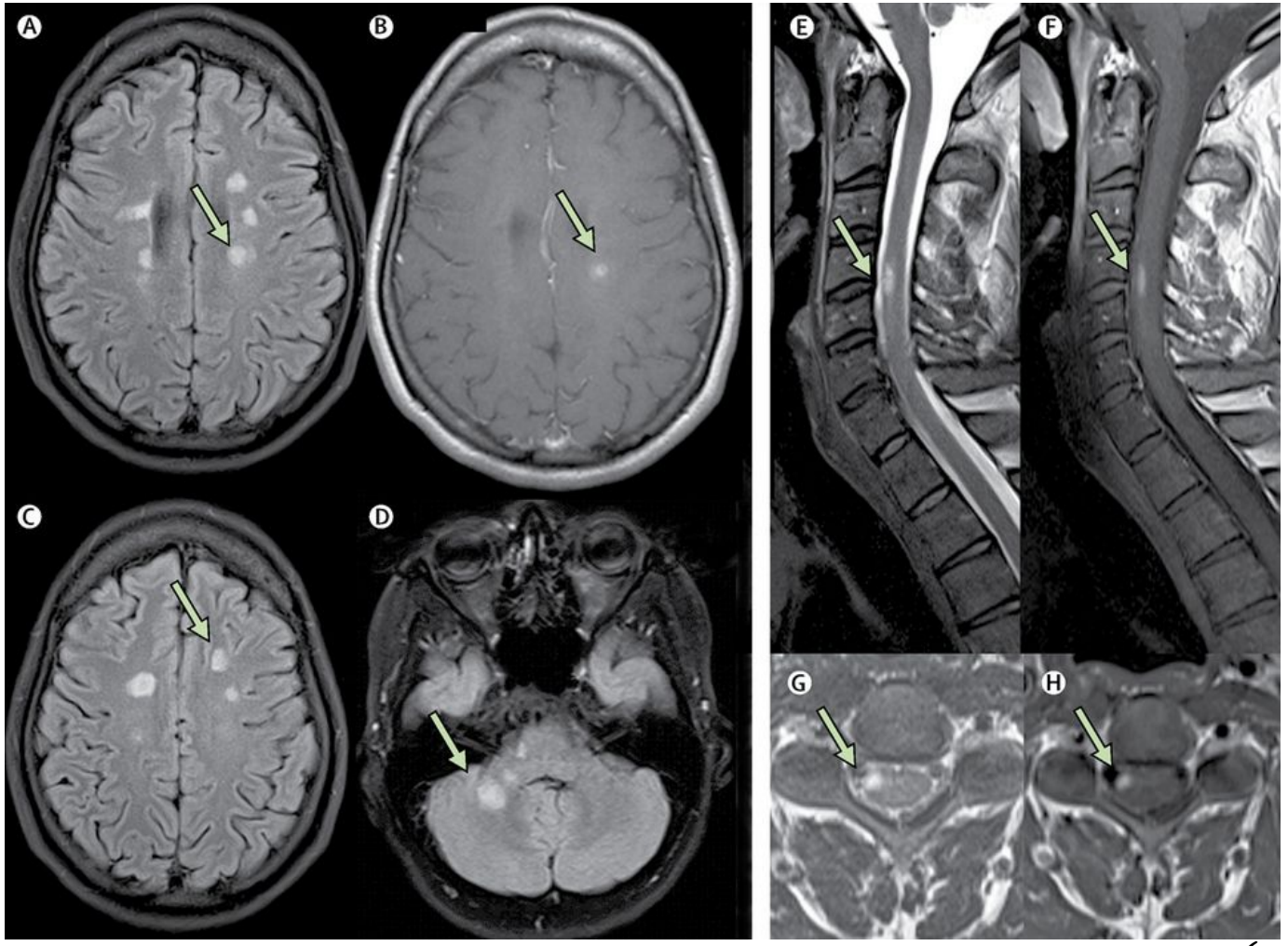
# LHERMITTE'S SIGN

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

# MULTIPLY SCLEROSIS

## Diagnosis

- MRI
- Cerebrospinal fluid
- Visual evoked potential



# MULTIPLY SCLEROSIS

## Treatment

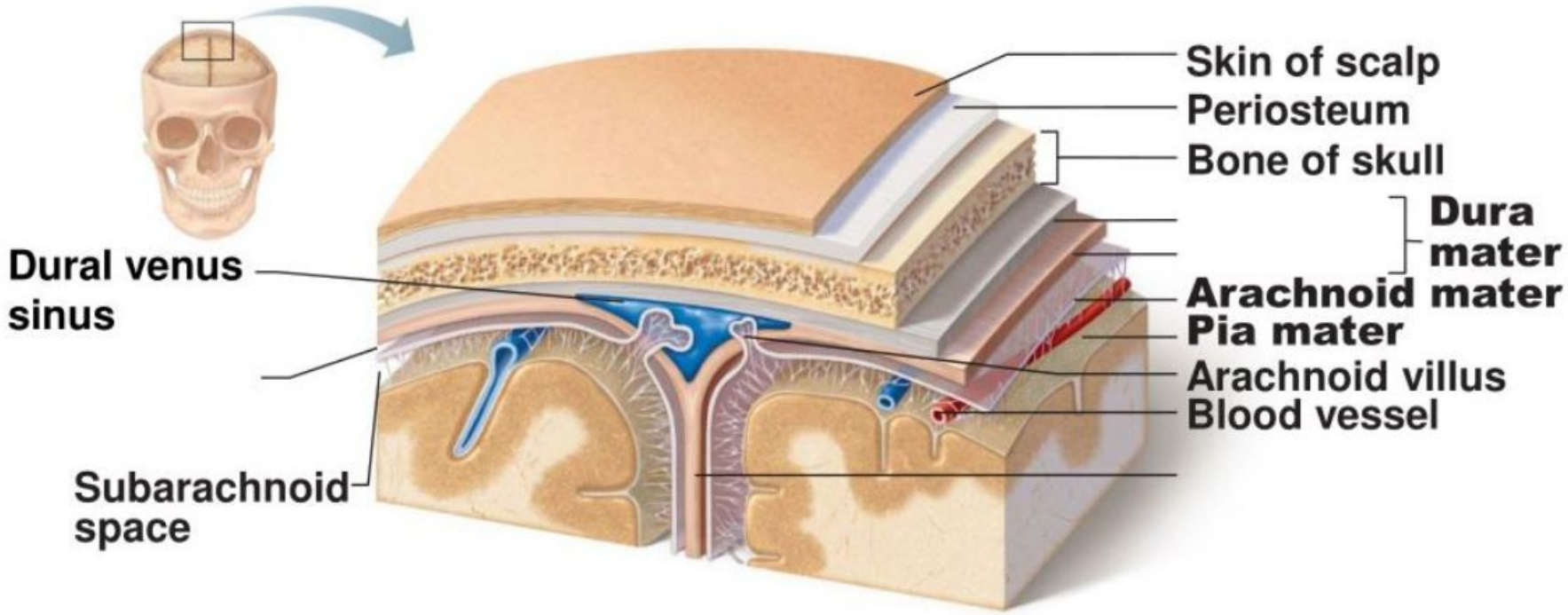
*RRMS*

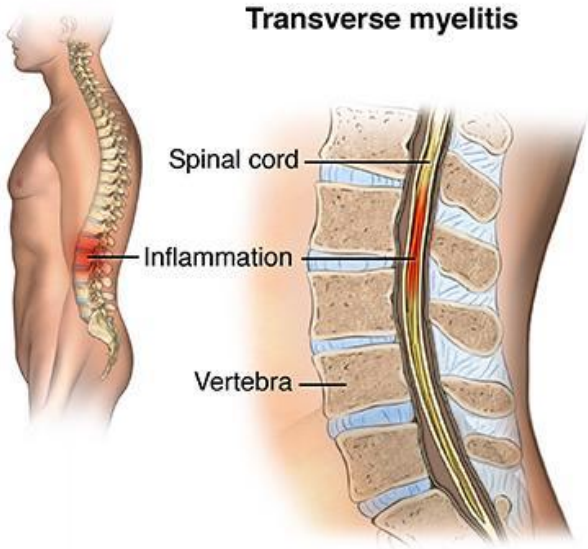
- Corticosteroids, cyclophosphamide, intravenous immunoglobulin
- Plasmapheresis
- Immunosuppressant: recombinant b-IFN

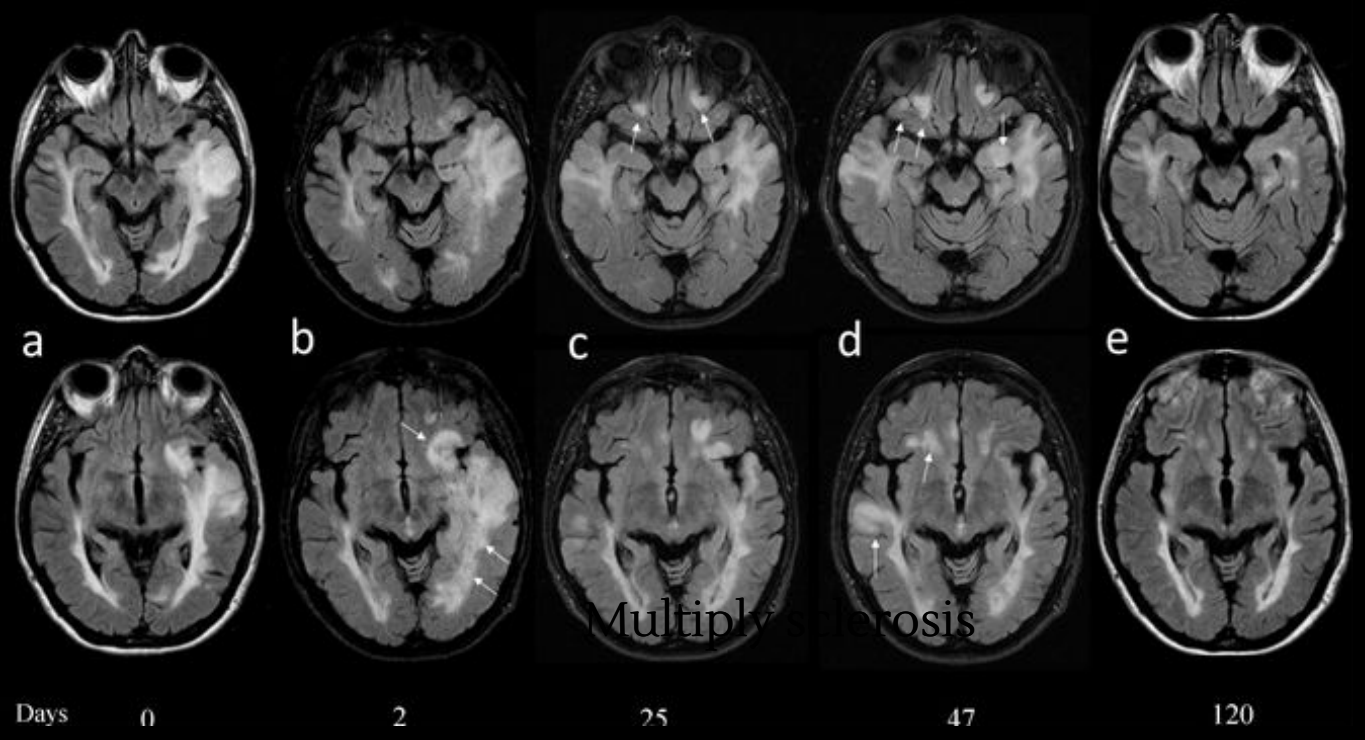
*Progressive MS*

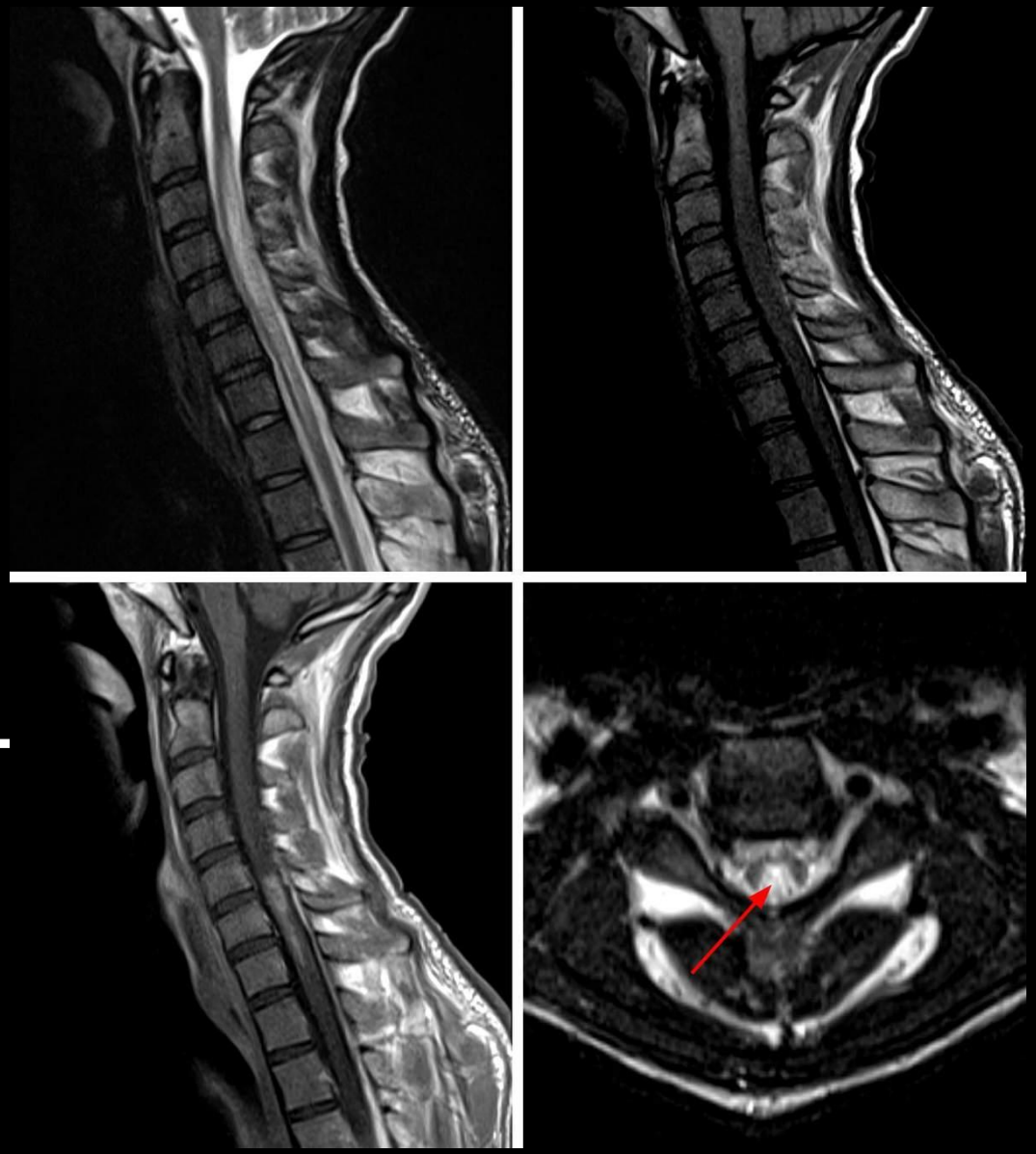
- Manage symptoms
- Physical therapy
- Cognitive rehabilitation therapy

# MENINGITIS
# ENCEPHALITIS
# MYELITIS





# ENCEPHALITIS
# MYELITIS

# 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

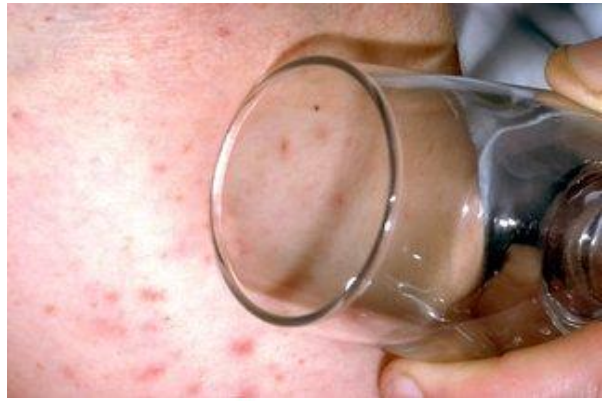
Photophobia and phonophobia

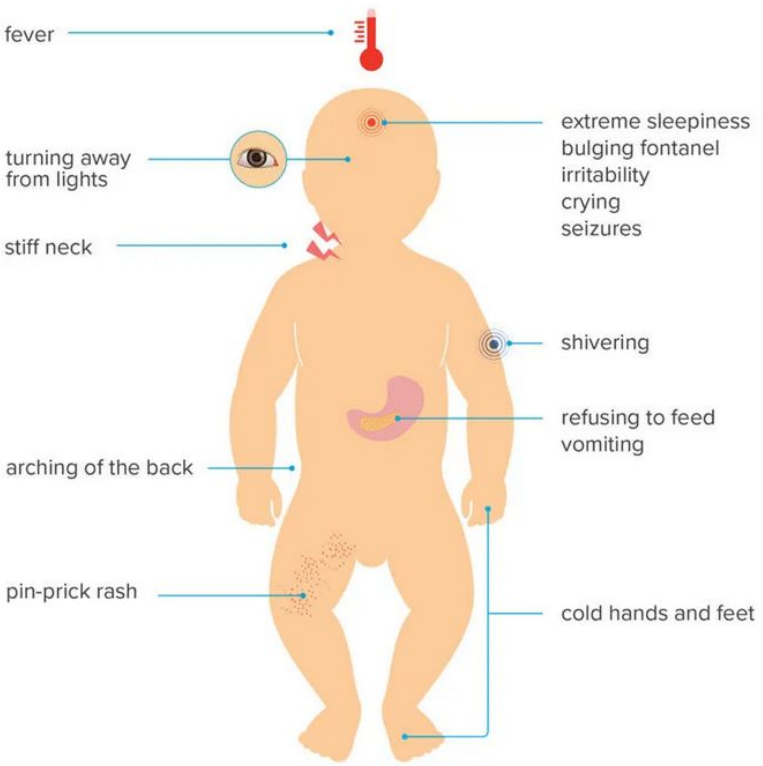
## Encephalitis

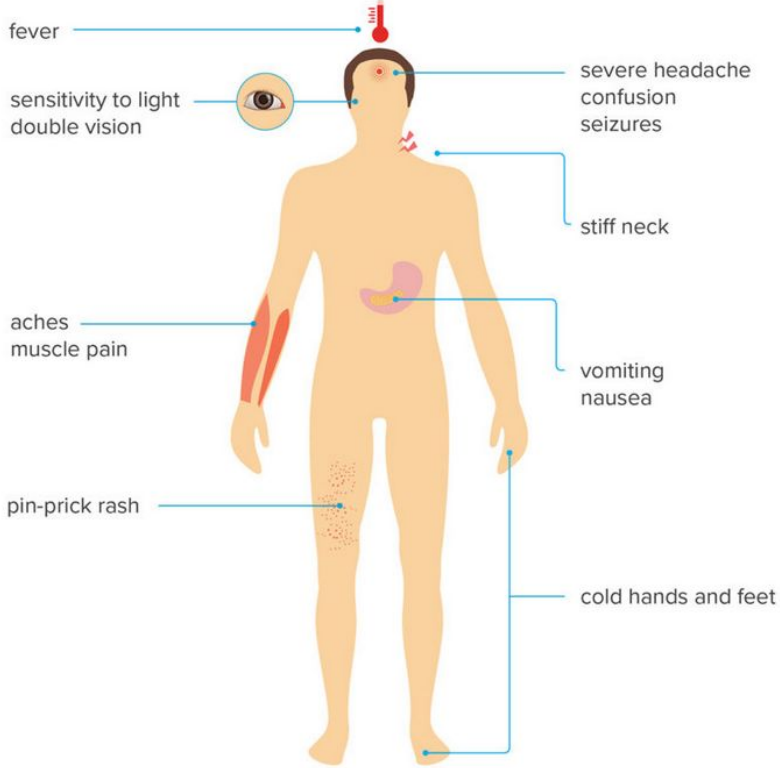
Fever, altered mental status, seizure or focal neurologic symptoms

## Myelitis

Flaccid paralysis and sensory loss

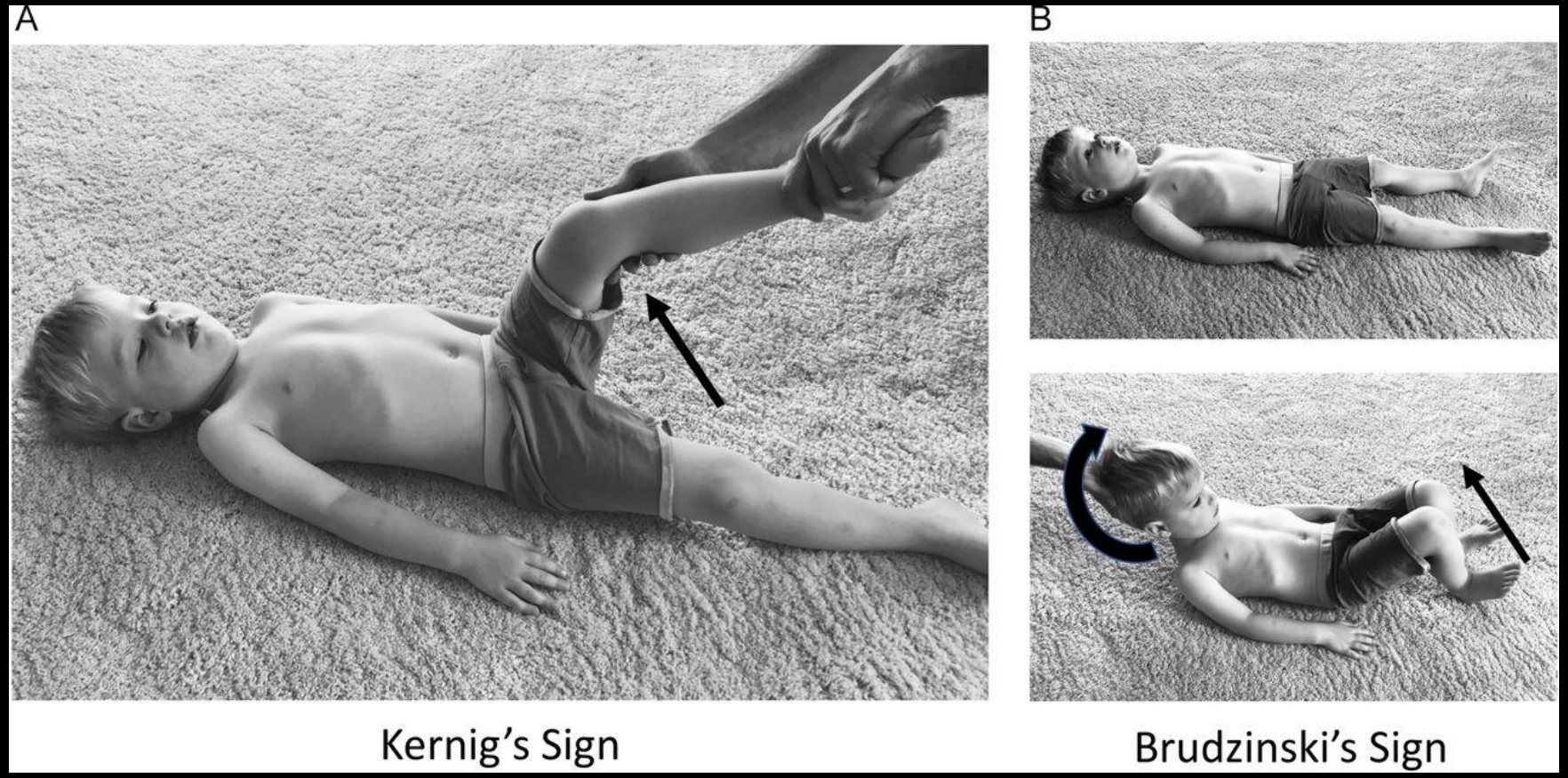




# DIAGNOSIS

OF MENINGITIS



# DIAGNOSIS

Lumbar puncture

PCR

Western blot

Thin blood swear

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

# TREATMENT

Bacterial: Steroids and antibiotics

Antivirals, antibacterial, antifungals, antiparasitic

Prevention vaccine: Neisseria Meningitidis, Disseminated tuberculosis

# BRAIN ABSCESS

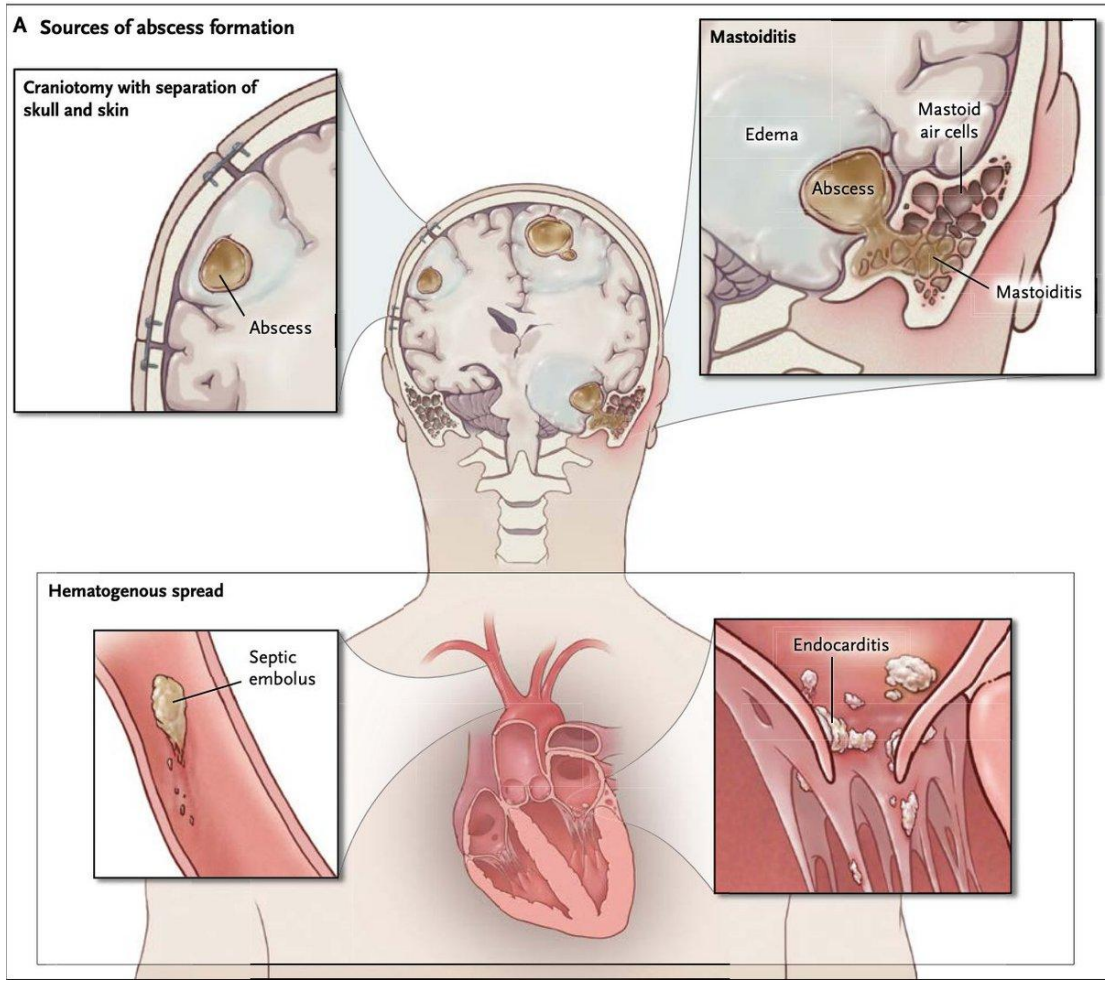
## Direct spread

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)



# BRAIN ABSCESS

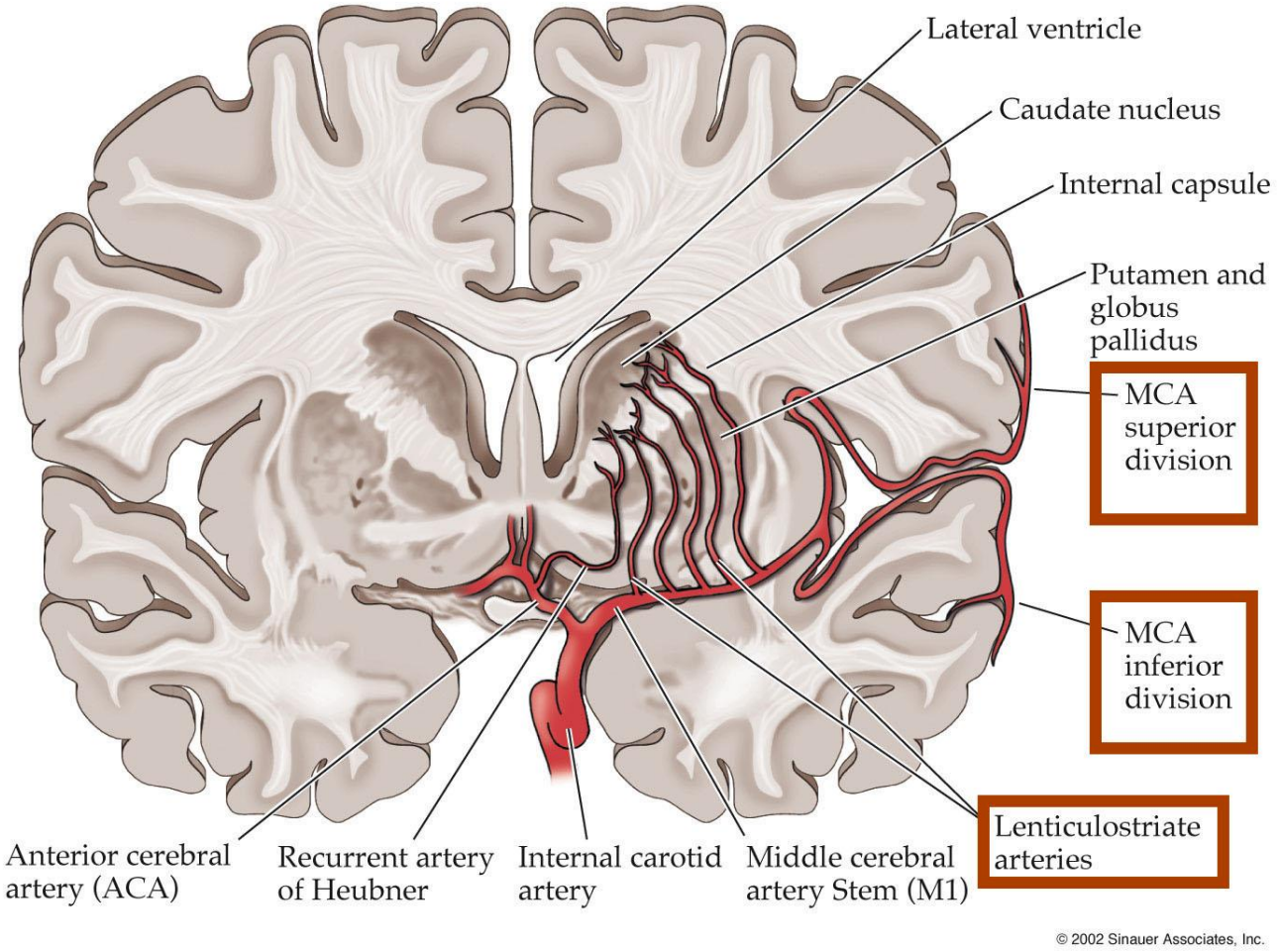
## Hematogenous spread

Usually multiply abscess

Most commonly located in the distribution of the middle cerebral artery

Sources:

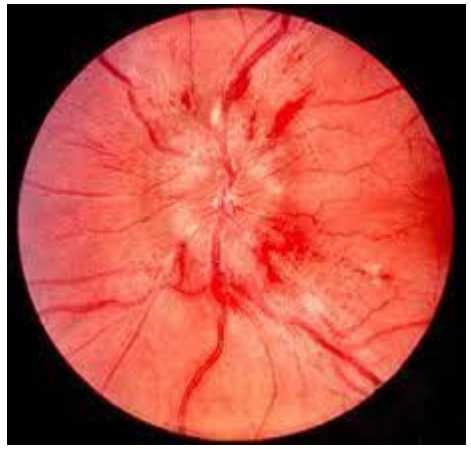
Skin infection, pelvic infection, intraabdominal infection, esophageal dilation, bacterial endocarditis, cyanotic congenital heart disease



# 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%)

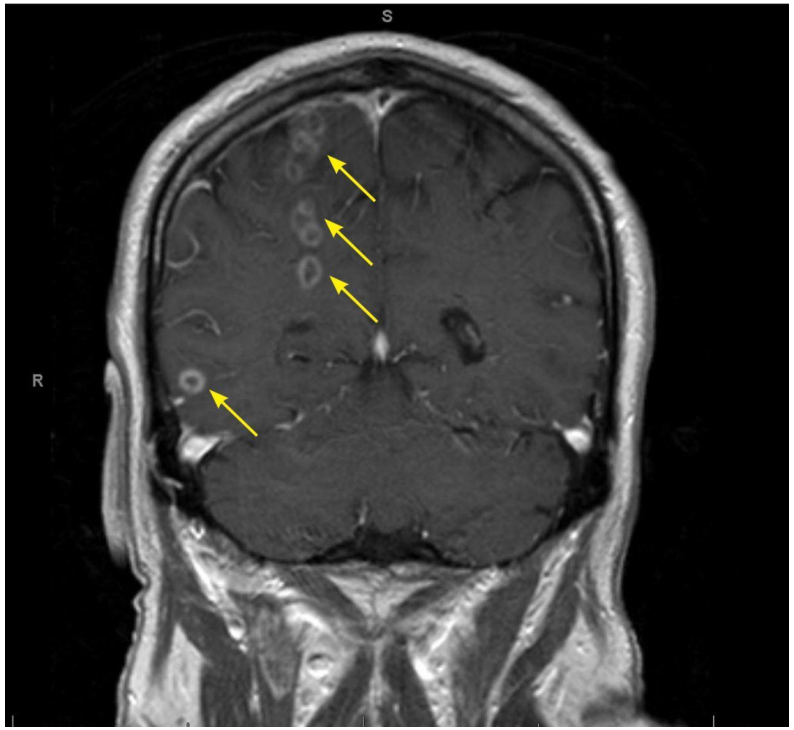


## Diagnosis

Clinical: focal symptoms and signs

Papilledema

MRI



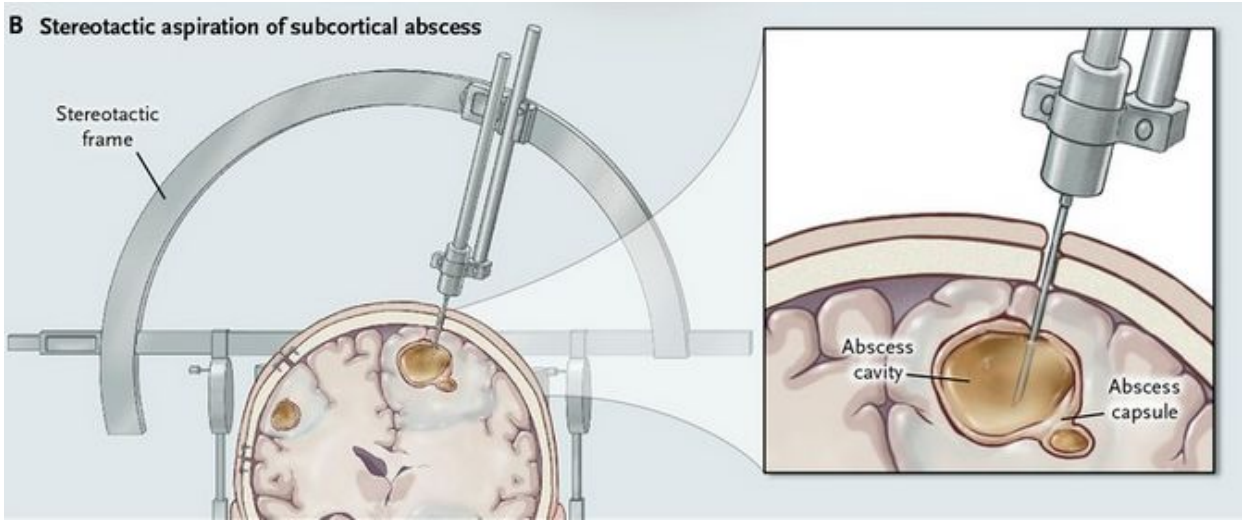
# BRAIN ABSCESS

## Treatment

- IV antibiotic: PenG + Chloramphenicol or Metronidazole

For MSSA: Nafcillin or Oxacillin

- Surgery
- Aspiration
- Glucocorticoids: dexamethasone

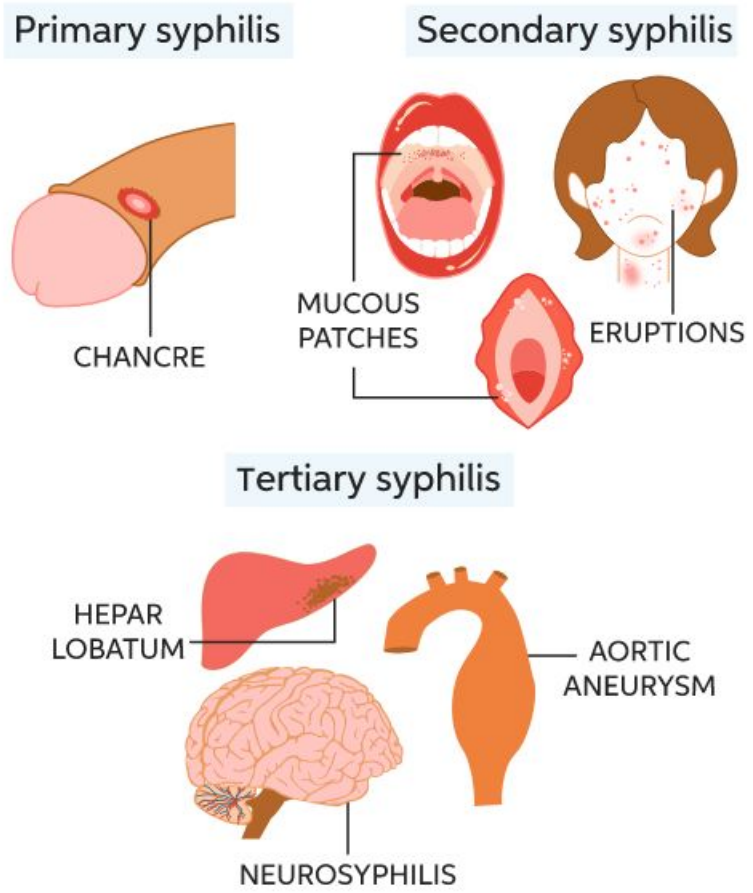


# NEUROSYPHILIS

Neurosyphilis is caused by *Treponema pallidum*

There are different forms of neurosyphilis:

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



# NEUROSIPHYLIS

## 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

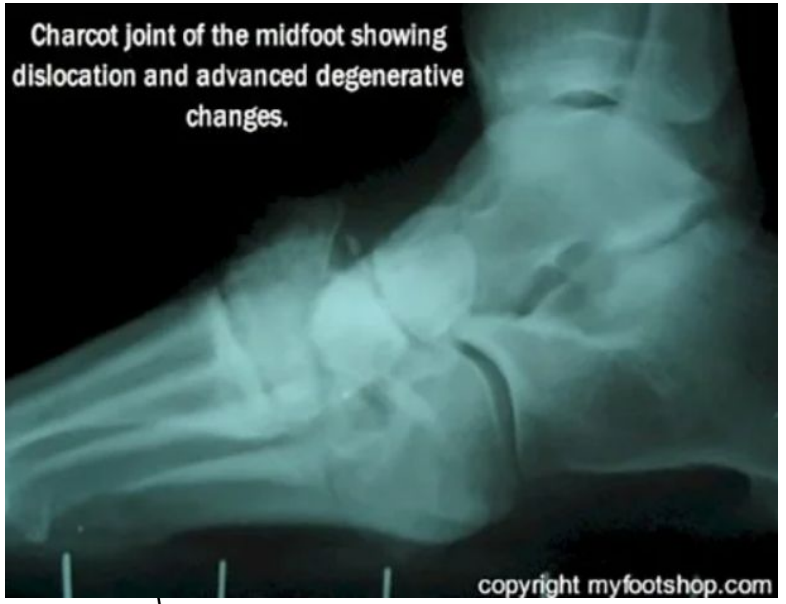
15-20 years after infection

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

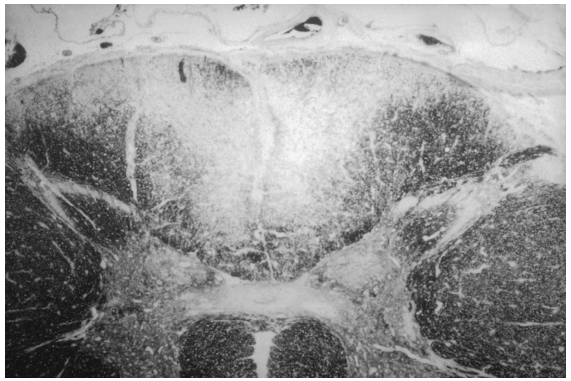
# NEUROSYPHILIS

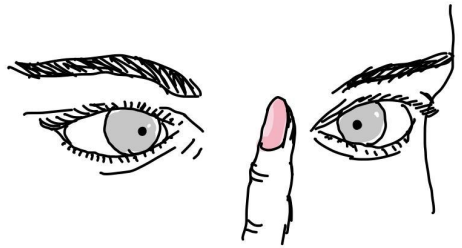
**Tabes Dorsalis morphology:**

**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”)

# NEUROSYPHILIS

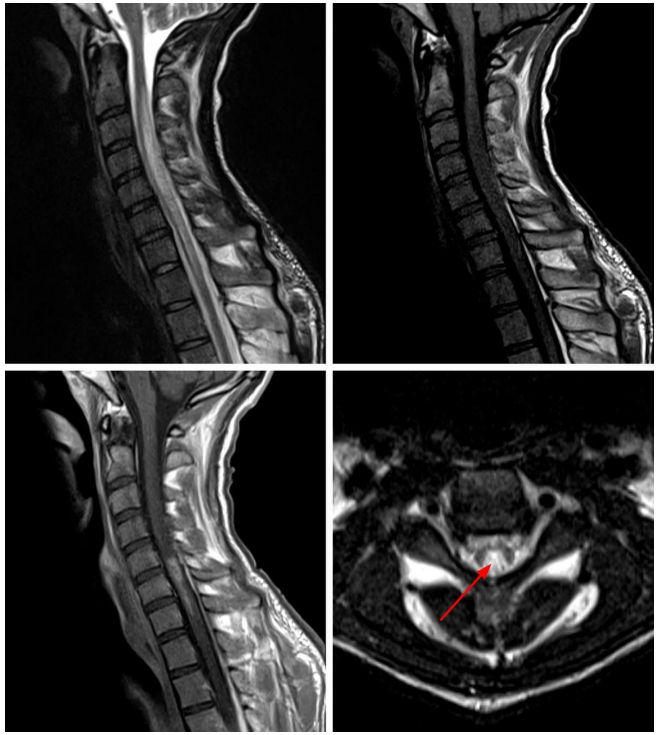
## Diagnosis

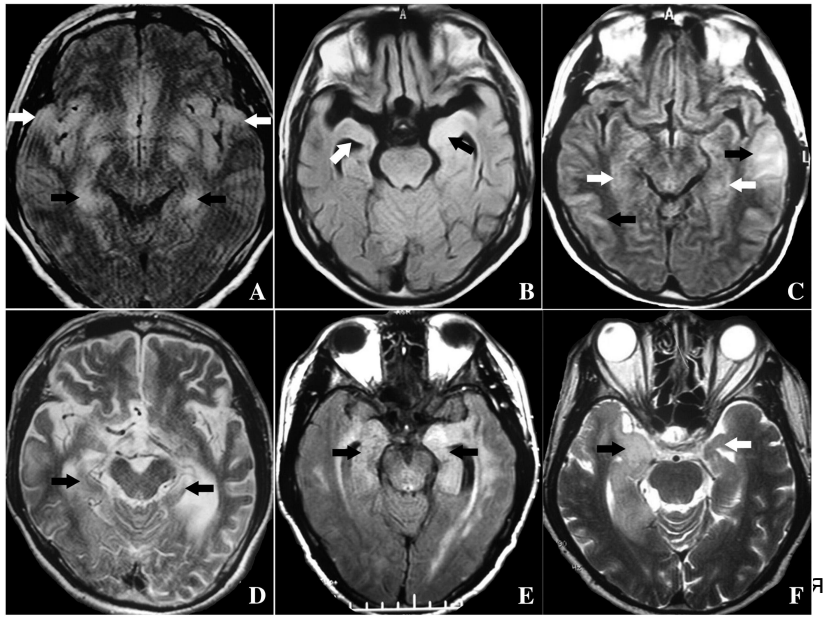
- Serum nontreponemal tests : RPR, VDRL

Nonreactive in late neurosyphilis

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

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





# 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

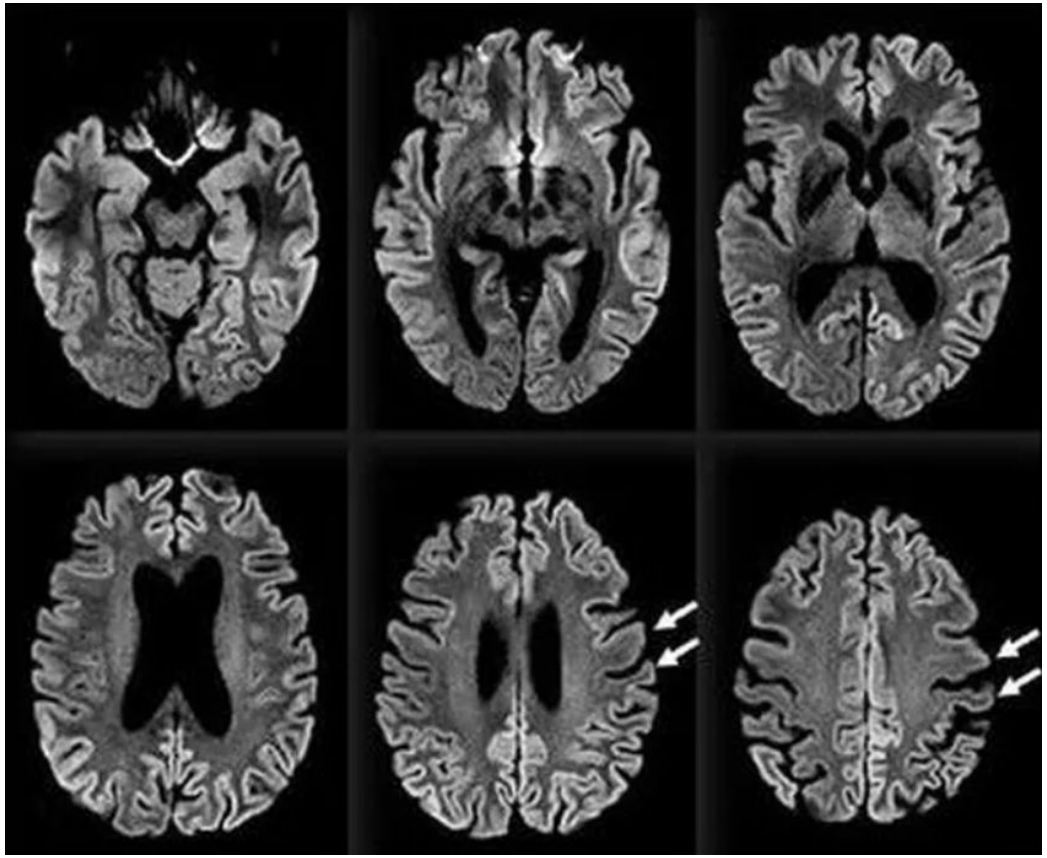
- Procaine penicillin G (2.4 million units intramuscular [IM] once daily) plus probenecid (500 mg orally four times a day), both for 10 to 14 days

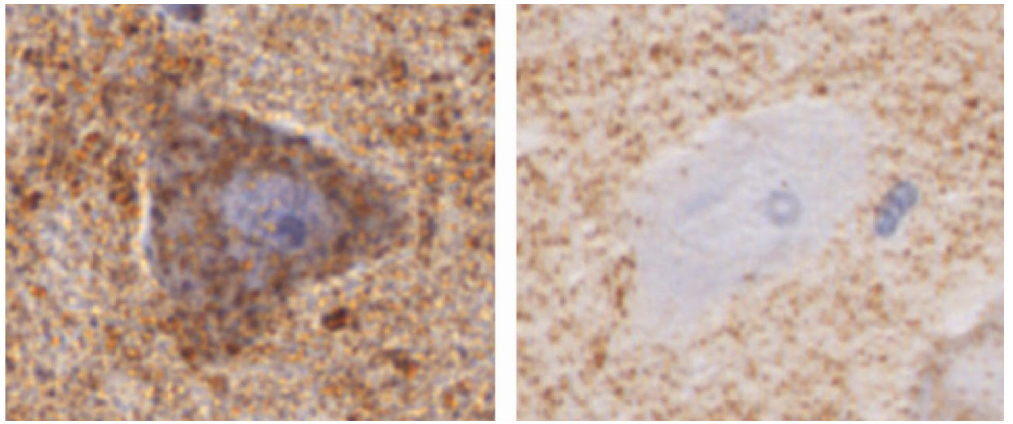
- Ceftriaxone 2 g IV daily 10-12 days

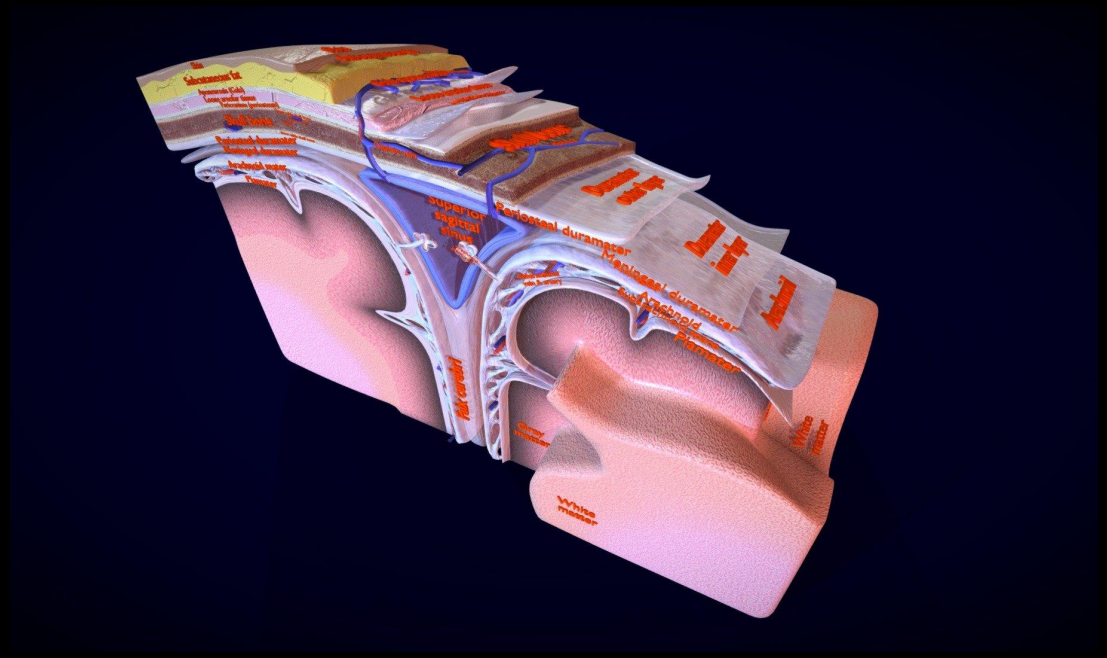
# CREUTZFELDT-JAKOB DISEASE

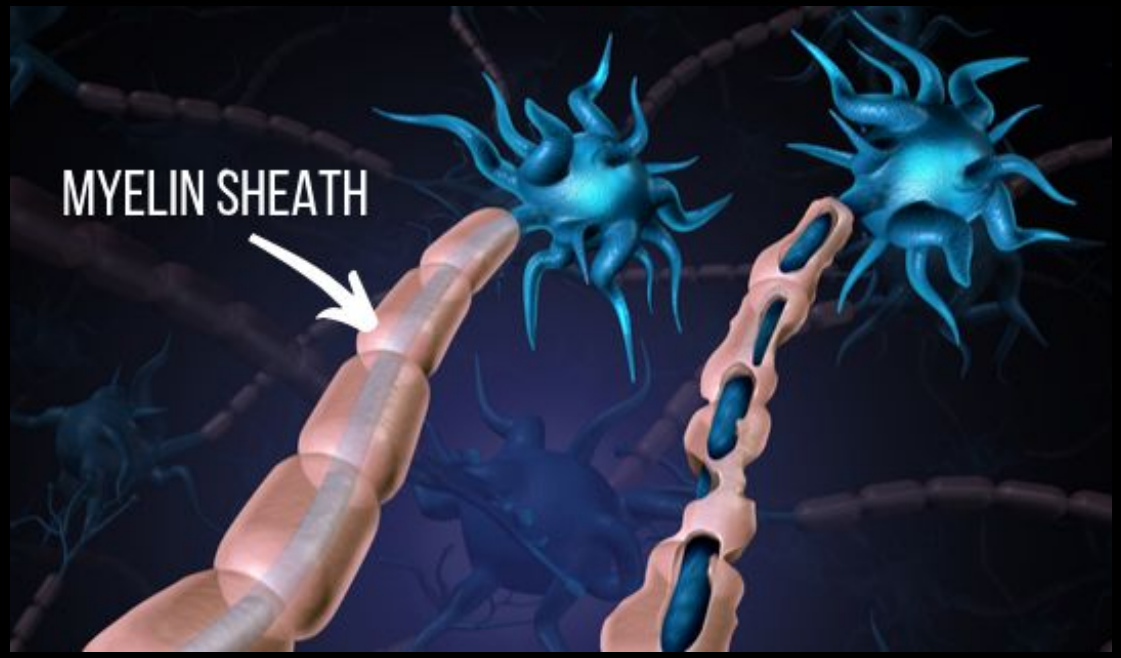
- CJD is a neurodegenerative disease with a rapid onset characterized by progressive dementia, myoclonus and also cerebellar, pyramidal and extrapyramidal signs.
- Abnormal prion protein accumulate in the brain and it can cause irreversible damage. It lead to brain atrophy or wasting; cytoplasmic vacuoles 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

# CREUTZFELDT-JAKOB DISEASE










# THANK YOU