

Chapter 22: Diseases of the nervous system

Lecture

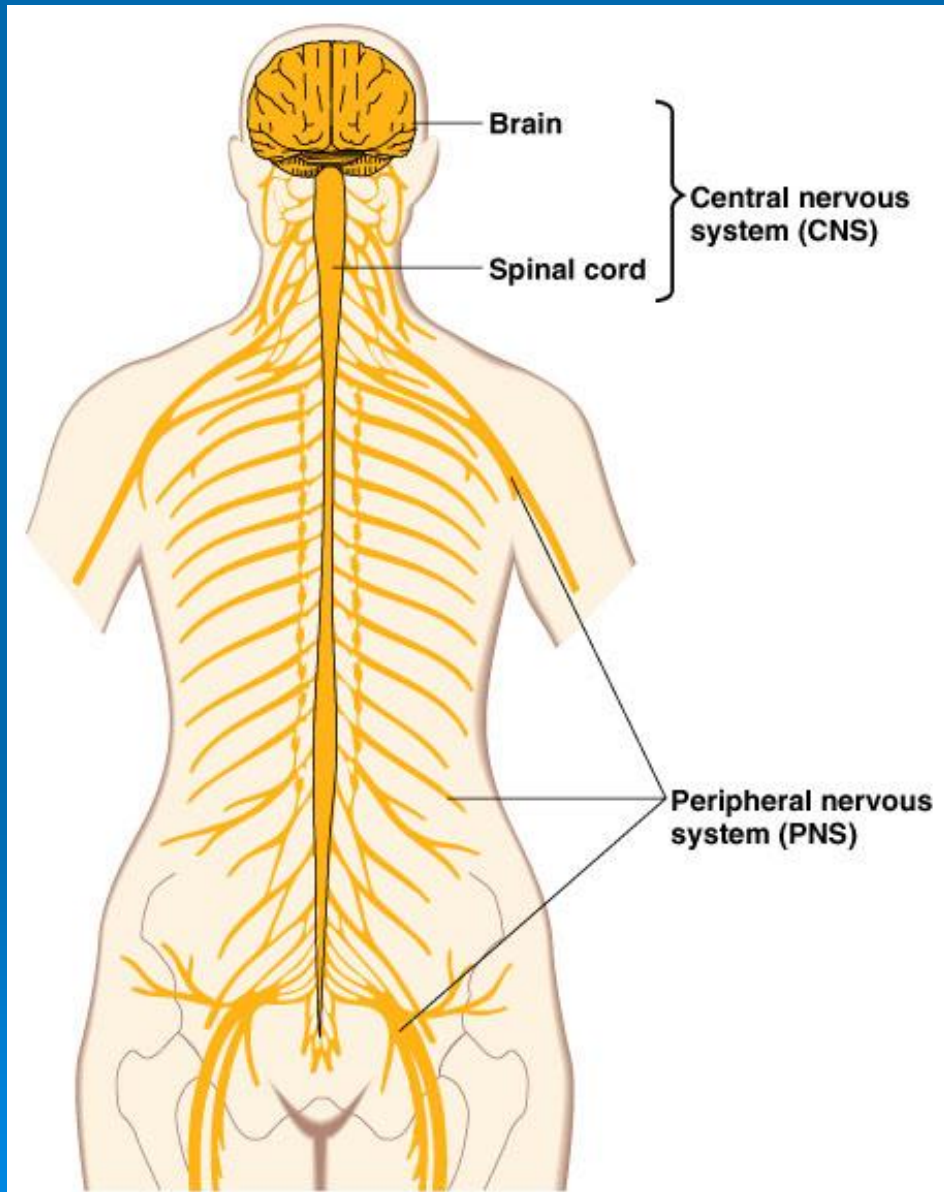
NS overview
Bacterial diseases
Viral diseases
Fungal diseases

Lab

Major Unknown
Dental Microbiology



The nervous system



2 components:

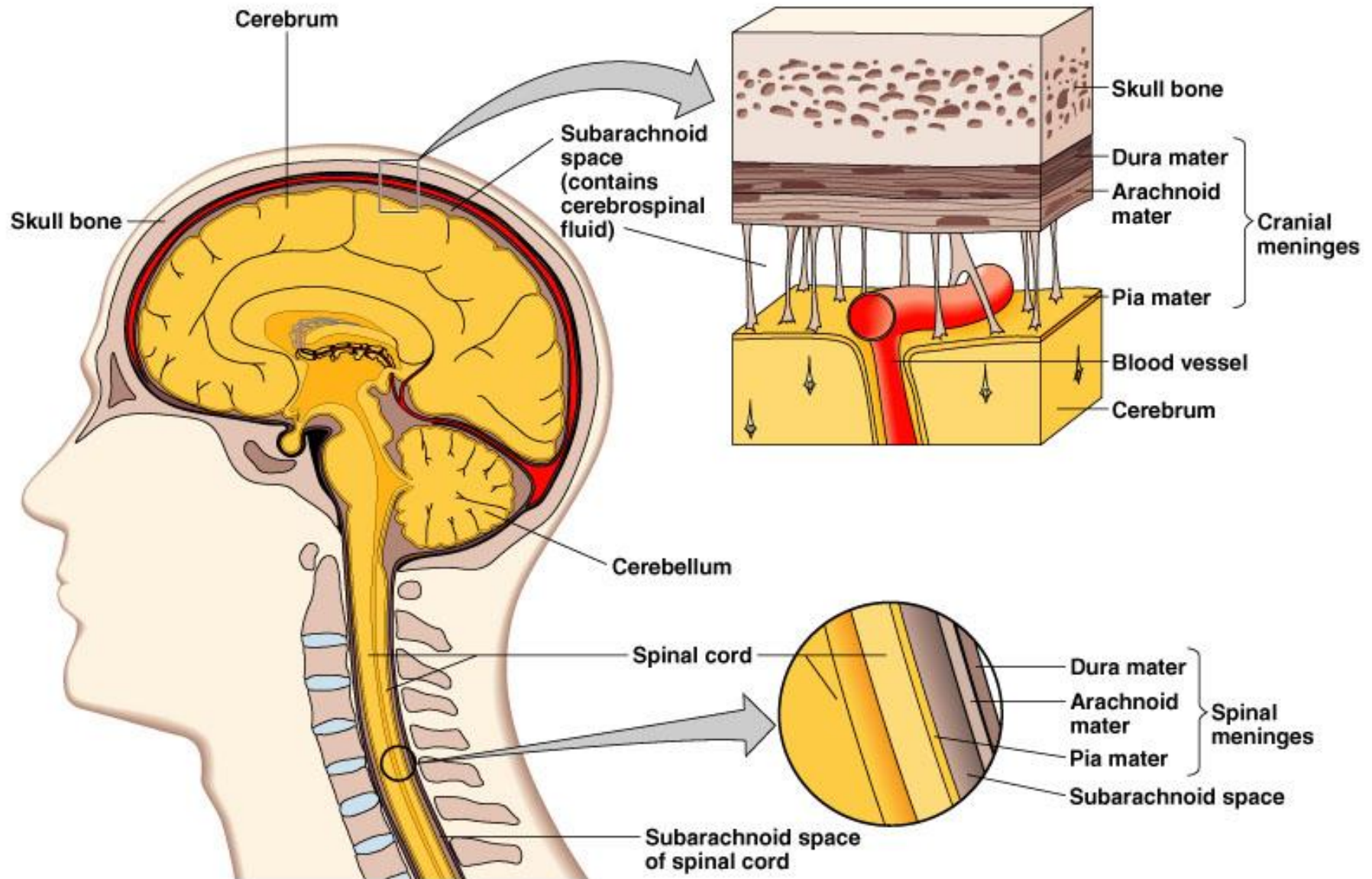
- CNS: brain and spinal cord
- PNS: nerves extending from CNS

Meningitis- infection of the meninges

Encephalitis- infection of the brain

Protection via **blood-brain barrier**

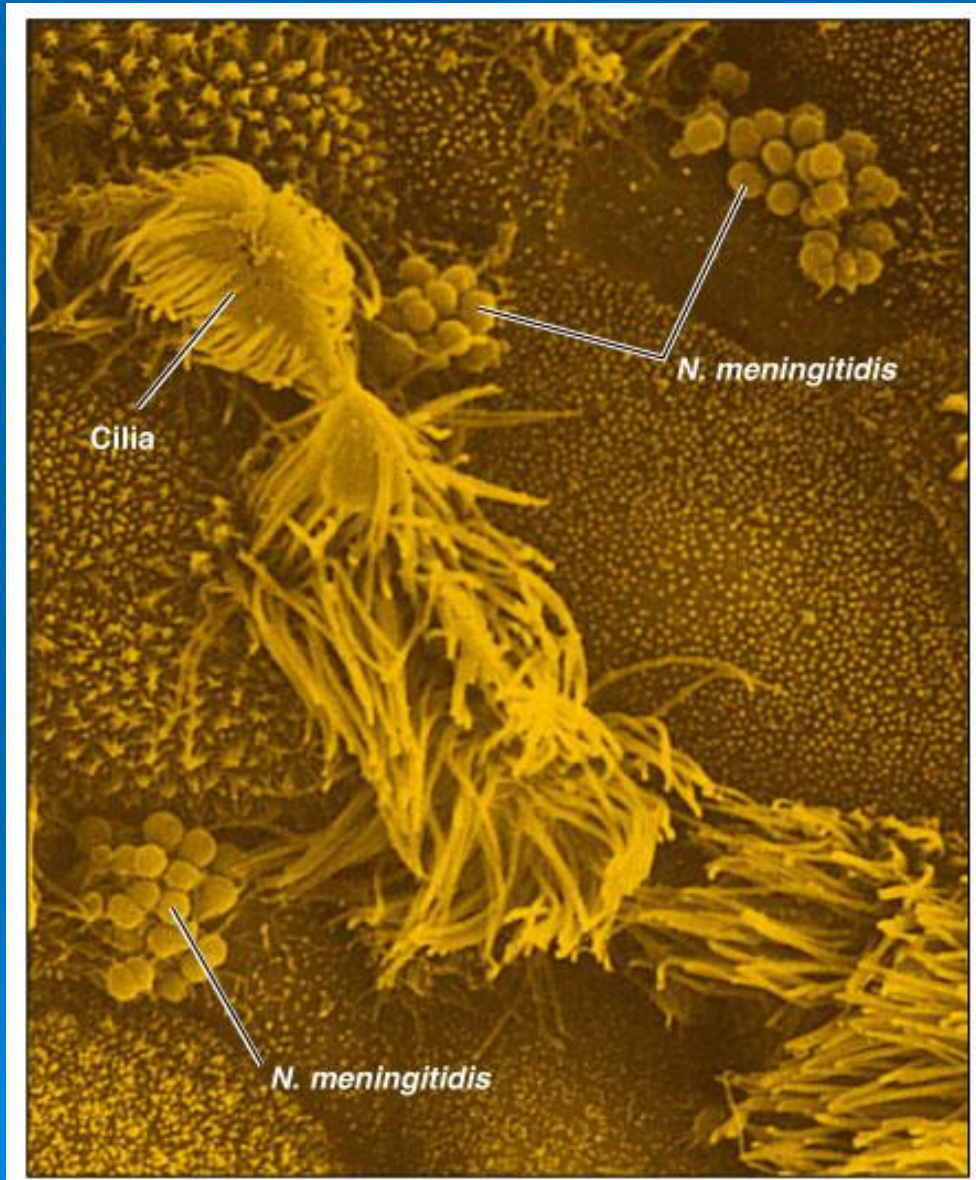
Meninges and cerebrospinal fluid



Etiologies of bacterial meningitis

Bacterium	Percentage of Cases	Fatality Rate
<i>Streptococcus pneumoniae</i>	30–50	19–46
<i>Neisseria meningitidis</i>	15–40	3–17
<i>Haemophilus influenzae</i>	2–7*	3–11
Other bacteria causing meningitis account for 6–8% of cases.		
<i>*Before introduction of Hib vaccine, H. influenzae accounted for about 45% of cases of bacterial meningitis; about 70% of these cases occurred in children under age 5.</i>		
<i>SOURCE: Adapted from E.J. Phillips and A.E. Simor, "Bacterial Meningitis in Children and Adults," Postgraduate Medicine 103 (3):104 (1998).</i>		

Neisseria meningitidis, Meningococcal meningitis



Symptoms

Due to endotoxin
Rash that doesn't fade when
pressed
Throat infection- bacteriemia-
meningitis

Clostridium tetani- tetanus



Symptoms

Due to tetanospasmin toxin
Spastic paralysis

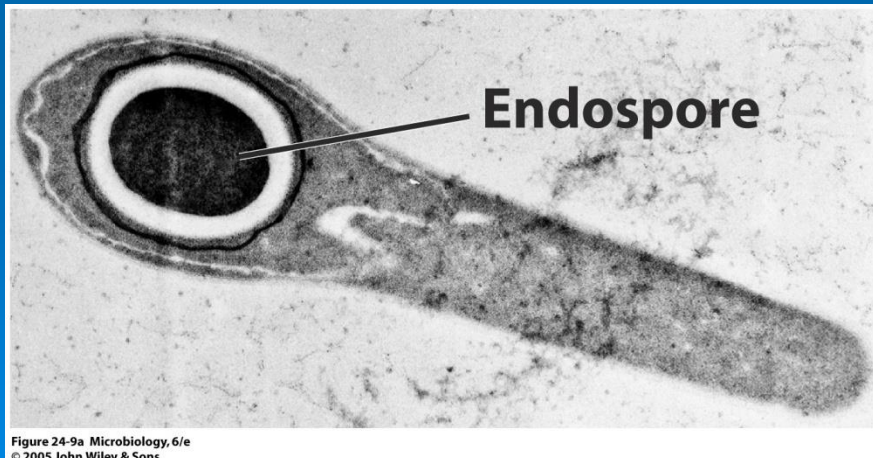


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Clostridium botulinum- botulism

Symptoms

Due to exotoxin
(Types A, B, and C)
Flaccid paralysis
Blurred vision
Nausea, no fever

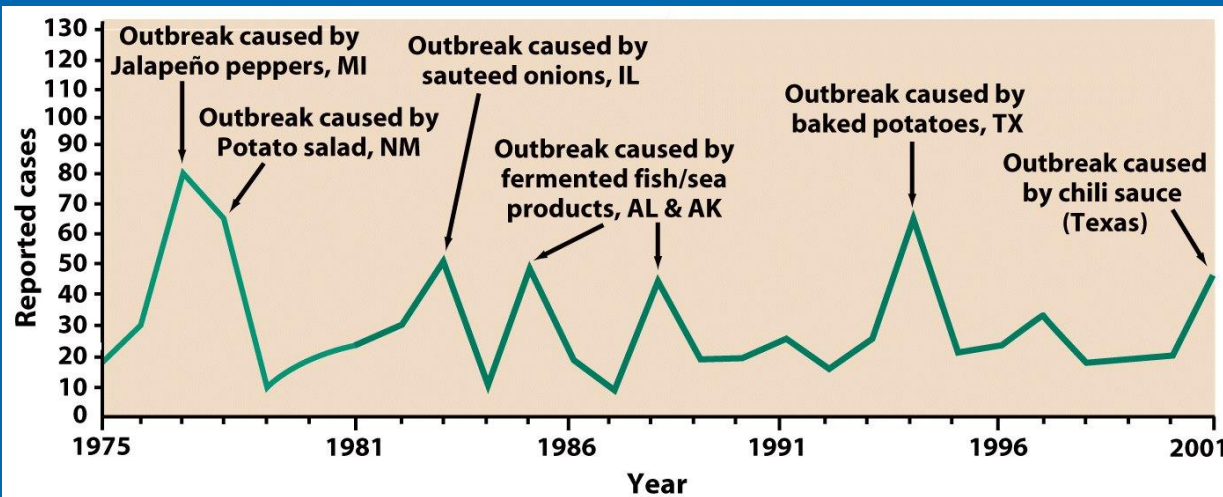


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Mycobacterium leprae- Hansen's Disease or leprosy



(a) Tuberculoid (neural) leprosy



(b) Lepromatous (progressive) leprosy

Symptoms

Tuberculoid

PNS infected

Skin shows immune reactions

Lepromatous

Skin cells infected

Disfiguring nodules

Less immune response

Tissue necrosis

Polio virus- Poliomyelitis

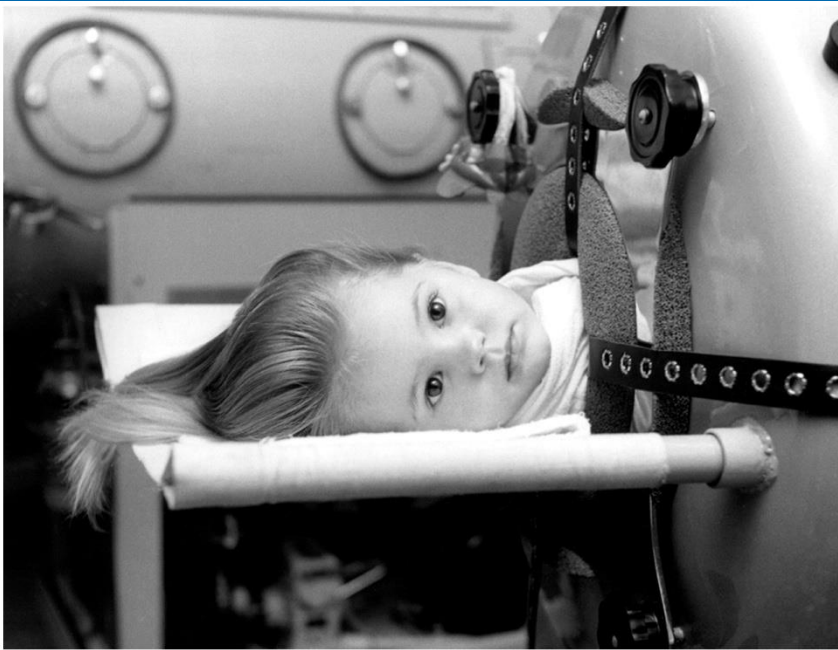


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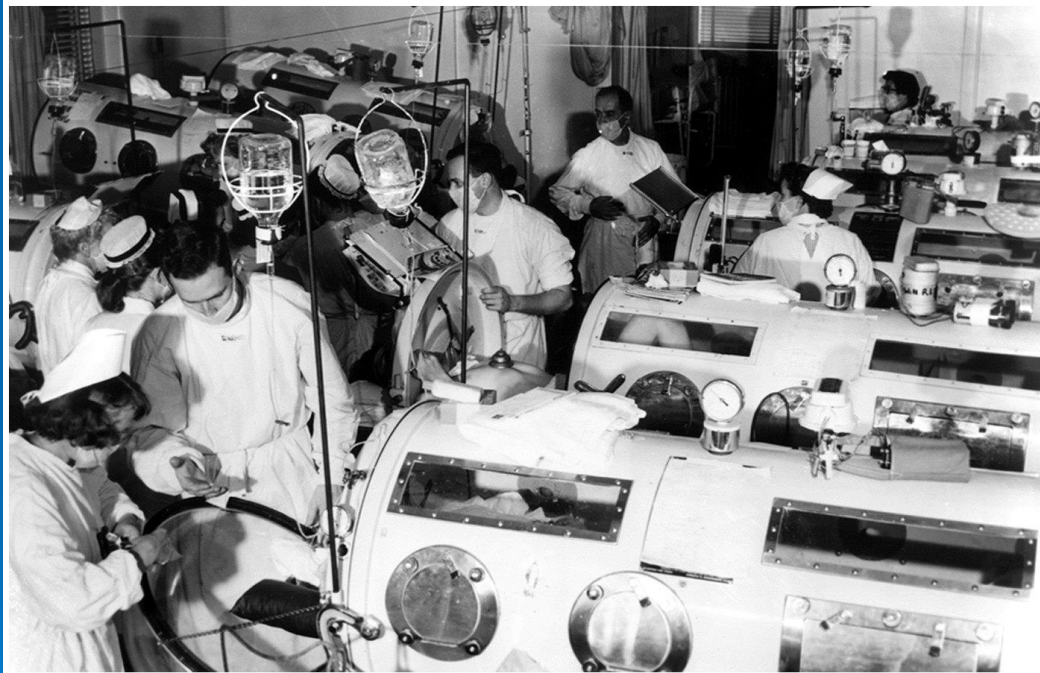
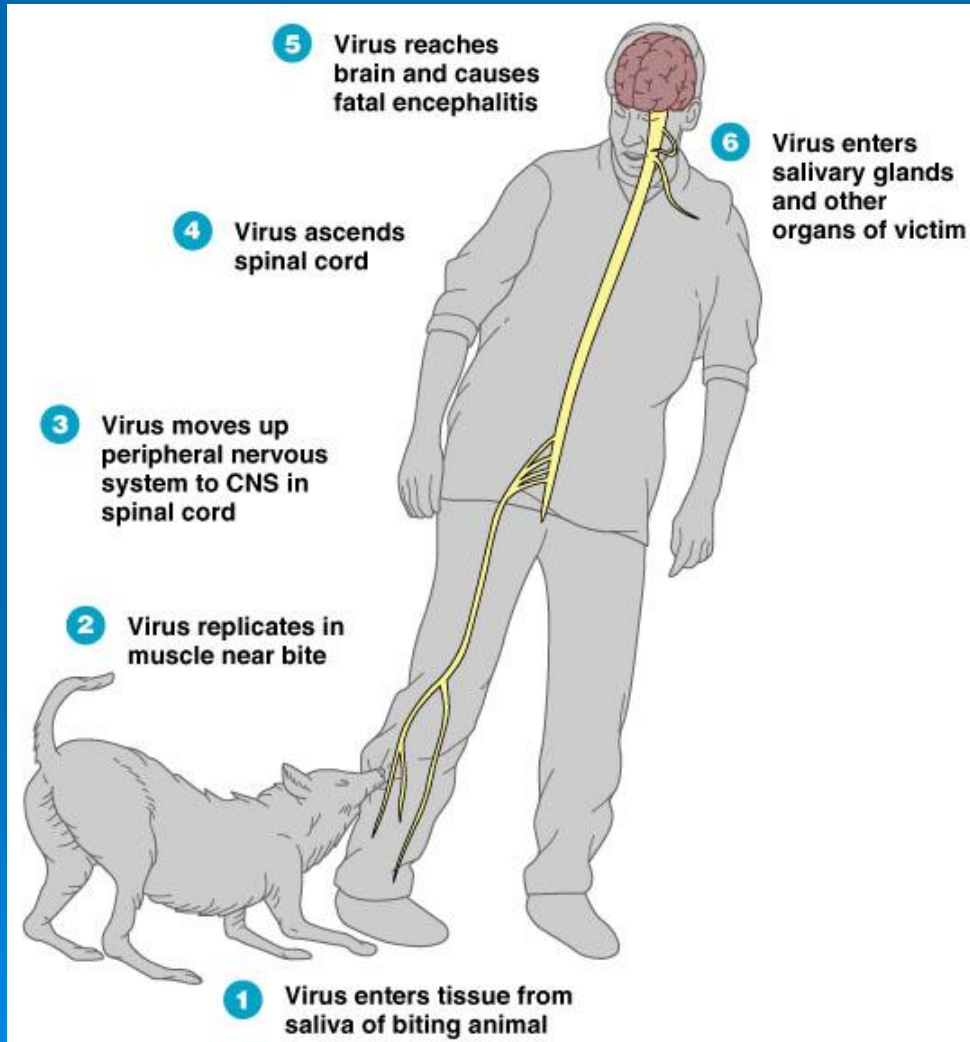


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Rhabdoviridae- rabies



Symptoms

First stage

Mild and varied

CNS infected

Hydrophobia

Mouth/pharyngeal spasms

Meningitis/ encephalitis

Transmissible spongiform encephalopathies- Creutzfeldt-Jakob Disease

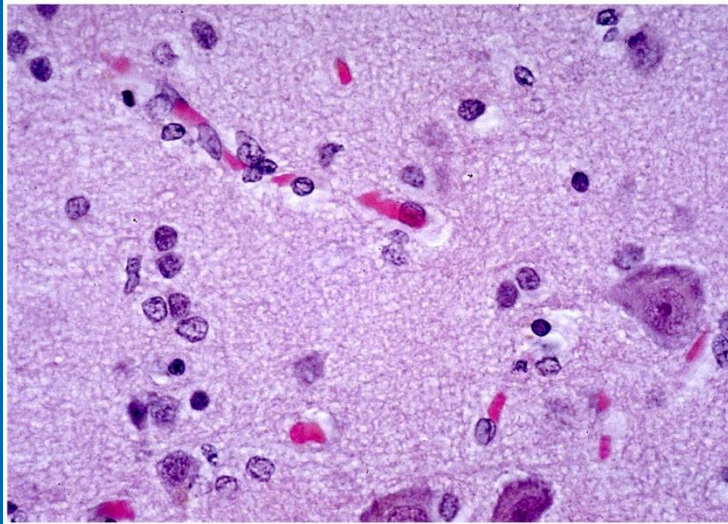


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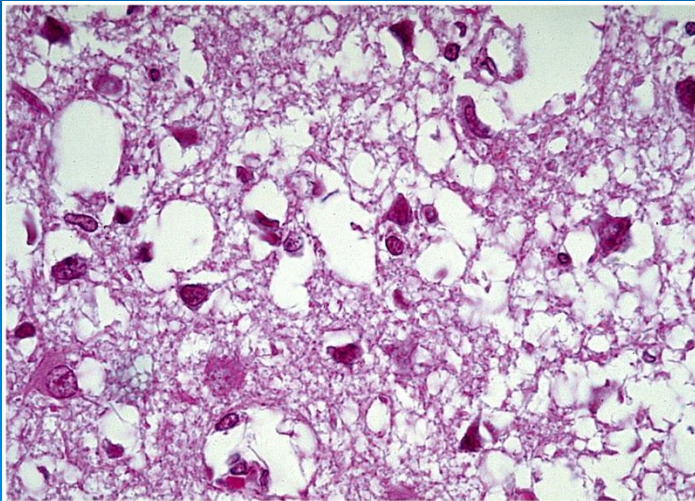


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Symptoms

Prion disease
Loss of motor control
Death

Transmissible spongiform encephalopathies- kuru



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