


NERVOUS SYSTEM (L-2)

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TETANUS

- The disease is produced by the **toxin** of *Clostridium tetani* characterized by **hyperaesthesia, tetany** and **convulsions**.
- Spores can survive many years and are resistant to most disinfectants.
- Present in soil, especially soil containing mammalian faeces.
- Temperature above 115°C for 20 minutes – spores are destroyed
- Disease results when spores enter the body, usually following a wound and the provision of an **anaerobic environment** in the tissues.
- Disease is Known since days of **Hippocrates**


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TETANUS

- Gram +, Multiple antigenic types
- Toxins - **Tetanolysin** and **Tetanospasmin** (most important)
- Reported case in man following pecking by a hen.
- **Solipeds** and **man** are highly susceptible. Next are sheep, cattle and swine.
- Disease is rare in the dog and cat.
- Extremely rare in poultry.

PATHOPHYSIOLOGY

- **spores enter the body**, usually following a wound and the provision of an anaerobic environment in the tissues.
- Spores **vegetate, produce their toxin** -- affinity for nervous tissue
- Transported within nerve **axons to the CNS**.
- The **BACTERIA DO NOT MOVE** from the site of original infection.




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TETANUS

PATHOPHYSIOLOGY

- Tetanus usually occurs **sporadically – occasional outbreaks**
- Outbreaks – about 1 week after **marking**
- May affect **1-5% of lambs**, rarely more.
- Enter wounds castration and tail docking
but also shearing, dehorning,
after lambing.
- Lambs under 6 months old -- most commonly affected.
- Older animals often have natural protective antibodies



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TETANUS**CLINICAL SIGNS**

- Muscular stiffness, spasms and tremors,
- prolapse of the nictitating membrane.
- Hyperaesthetic, -- noise or touch precipitates tetany.
- On walking -- stiff-legged and turn without flexing their spines.
- Ultimately, they cannot walk and lie in lateral recumbence with legs out stiffly and head extended back.
- Rectal temperature is raised by muscular activity.

DIAGNOSIS

- Clinical signs are usually diagnostic
- The history and presence of a recent wound.



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**COENURUS CEREBRALIS INFECTION
(Gid, Sturdy)**

- Coenurosis is a disease of the brain and spinal cord caused by the intermediate stage of *Taenia multiceps (tape worm)* which inhabits the intestine of dogs, cats and wild carnivores.
- Clinical disease occurs in **sheep** and rarely in **cattle**.

Life cycle

- Eggs expelled with **dog feces** are ingested by the intermediate host (sheep).
- Larvae hatch in the **intestine** and pass with the **blood stream** towards **different organs**.
- Larvae which reach the **brain and spinal cord** grow to the **coenurus stage**.
- *Coenurus cerebralis* - mature in the **brain and spinal cord**.



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Gid, Sturdy**Clinical Findings**

- During migration of larval stage
 - Blindness
 - Muscular tremor and in-coordination
 - Excitability and collapse
- Infection with the fully developed larval stage
 - Salivation
 - Wild expressions
 - Crazy running and convulsion
 - Deviation of eye and head
 - Dullness
 - Incomplete mastication
 - Head pressing
 - Incomplete paralysis and in spinal cord involvement, inability to rise



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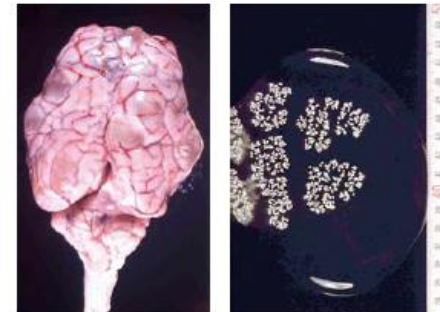
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Gid, Sturdy**Postmortem findings**

- Thin walled **cyst in the brain**
- Lesion in the **lumbar region and rarely, in the cervical area of the spine**

*Gid – Coenuris cerebralis***Diagnosis**

- Clinical Signs
- Postmortem findings



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LOUPING ILL

(Ovine Encephalomyelitis, Infectious Encephalomyelitis of Sheep, Trembling-ill)

- Acute tick-transmitted (*Ixodes ricinus*) **viral disease** primarily of CNS infecting **sheep**, characterized by
 - **biphasic fever 107°F** (second rise occur 5th day of first signs)
 - depression,
 - ataxia,
 - muscular in-coordination,
 - tremors,
 - posterior paralysis,
 - coma, and death.



Etiology and Transmission

- Caused by a neurotropic **ssRNA virus** — *Flavivirus*
- Louping-ill is **endemic** in rough upland areas in **Scotland, Northern England, Wales and Ireland**.
- A similar disease in sheep has been reported in Bulgaria, Turkey, Spain and Norway.
- **Incubation period** — **6 to 18 days**.

Clinical Signs

- sheep are often **hypersensitive** to noise and touch and will go into convulsive spasms if disturbed.
- Affected animals exhibit **head-pressing, paraplegia, convulsions, opisthotonos and coma**.
- In many cases, **death** supervenes after a clinical course ranging from **7 to 12 days**.
- Animals that survive never regain full health and display residual central nervous system deficits of variable severity.



LOUPING ILL

- lambs born of immune dams are passively protected in their first year of life but then become susceptible.
- **Mortality** rates as high as **60% in young stock**
 - in mature sheep is usually low
- the **prevalence** of infection may be as high as **60%**,
- the case fatality rate is low and uncommonly exceeds **15%**.

Lesions

- With the exception of **congestion of meningeal vessels**, there is no pathognomonic gross lesion.



LOUPING ILL

Diagnosis

- signs of central nervous system disturbance
- history of tick-infested pastures
- Heparinized blood — during the first 3 to 4 days after the onset of fever
- virus isolation
- RT-PCR
- ELISA

Differential Diagnosis

- scrapie, pregnancy toxemia, hypocalcemia, tetanus, listeriosis, tick pyemia, rabies, hydatid disease, and various plant poisons.
- in cattle must be differentiated from MCF, listeriosis, pseudorabies, BSE, rabies, hypomagnesemia, hypocalcemia, acute lead poisoning, and certain plant poisons.

