

INFLAMMATION IN THE CENTRAL NERVOUS SYSTEM

Encephalitis = Inflammation of the brain

Leukoencephalitis / Polioencephalitis

Myelitis = Inflammation of the spinal cord

Encephalomyelitis = Inflammation of the brain and spinal cord

INFLAMMATION IN THE CENTRAL NERVOUS SYSTEM

Ependymitis = Inflammation of the ependyma

Choroiditis = Inflammation of the choroid plexus

Meningitis = Inflammation of the meninges



Leptomeningitis
when it involves the
pia-arachnoid

Pachymeningitis
when it involves the
dura mater

MENINGOENCEPHALOMYELITIS

MENINGOENCEPHALITIS

ENCEPHALOMYELITIS

MENINGITIS

ENCEPHALITIS

MYELITIS

Leptomeningitis

Leukoencephalitis

EPENDYMITIS

Pachymeningitis

Polioencephalitis

CHOROIDITIS

INFECTIOUS AGENTS CAN REACH THE CENTRAL NERVOUS SYSTEM BY,

- **Peripheral nerves**
- **Direct implantation**
- **Invasion from an adjacent tissue**
- **Hematogenic route**

BACTERIAL AND PYOGENIC INFECTIONS OF THE NERVOUS SYSTEM

- **Epidural/subdural abscess and empyema**
- **Leptomeningitis**
 - ✓ Purulent
 - ✓ Serocellular
 - ✓ Hemorrhagic
 - ✓ Fibrinous
 - ✓ Granulomatous
- **Septicemic lesions, septic embolism, and cerebral abscess**

SEPTICEMIC LESIONS, SEPTIC EMBOLISM, AND CEREBRAL ABSCESS

- ✓ **Septic embolism**
- ✓ **Septic thromboemboli and bacterial emboli**
- ✓ **Cerebral abscesses**
- ✓ **Abscesses of hematogenous origin**
- ✓ **Abscesses arising by direct invasion**
- ✓ **Frontal abscesses**
- ✓ **Cerebellopontine abscesses**
- ✓ **Otic infections**

LISTERIOSIS

➤ Bacterial disease with particular affinity for the **CNS**

➤ Seen mainly in **domestic ruminants**

➤ ***L. monocytogenes*,**

Facultative intracellular Gram-positive

bacterium

➤ **Listeriosis behaves as 3 separate diseases;**

I. Infection of the pregnant uterus with abortion

II. Septicemia with military visceral abscesses

III. Encephalitis.

➤ **Additional syndromes of clinical significance in ruminants include conjunctivitis, endocarditis, and mastitis.**

I. Infection of the pregnant uterus with abortion

- ✓ Hematogenous uterine infection
- ✓ Tiny pinpoint yellow foci in the fetal liver →

II. Septicemia with military visceral abscesses

- ✓ Occurs in neonates and young animals
- ✓ Characterized by multifocal multisystemic areas of coagulative necrosis or microabscess formation.
- ✓ Very numerous in the liver, but much less numerous in the heart and other viscera

III. Encephalitis

- ✓ Occurs in adult ruminants
- ✓ Associated with heavy feeding of silage
- ✓ After invading the oral mucosa, the bacteria invade the trigeminal nerves and travel centripetally via axons to the brain
- ✓ Most severe lesions in the medulla and pons

III. Encephalitis

✓ Clinical signs:

Neurologic signs ;

Mental confusion and depression;

head pressing, paralysis of one or more medullary centers.

Deviation of the head to one or other side without rotation of the head;

When such an animal moves, it does so in circles, hence the name "***circling disease***"

Gross lesions are usually absent, but

- ✓ leptomeningeal opacity,
- ✓ foci of yellow-brown discoloration,
- ✓ hemorrhage, necrosis in the terminal brainstem,
- ✓ and cloudy Cerebrospinal fluid can all be observed.

Microscopically,

The characteristic parenchymal lesion is foci of microabscesses formed by predominant neutrophilic accumulations admixed with microglial reaction

HISTOPHILUS SOMNI INFECTIONS IN CATTLE

- *H. somni*, a small **Gram negative bacillus**, causes septicemia in cattle
- It is considered **normal flora** of the bovine nasal cavity
- The CNS form of the disease has been termed

Thrombotic Meningoencephalitis

- The bacterium produces profound damage to **endothelial cells** then **thrombosis** occurs, and tissues undergo **infarction and necrosis**.