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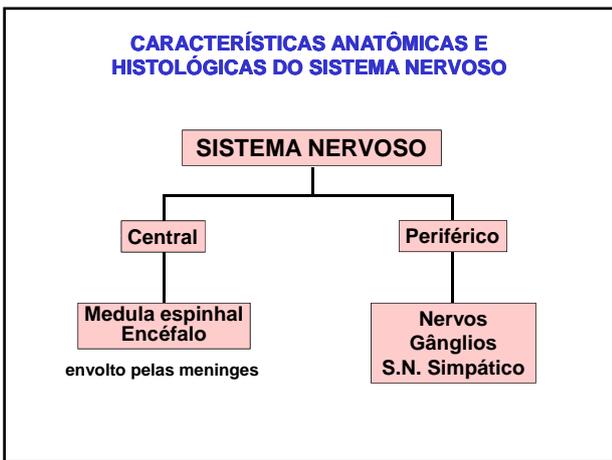
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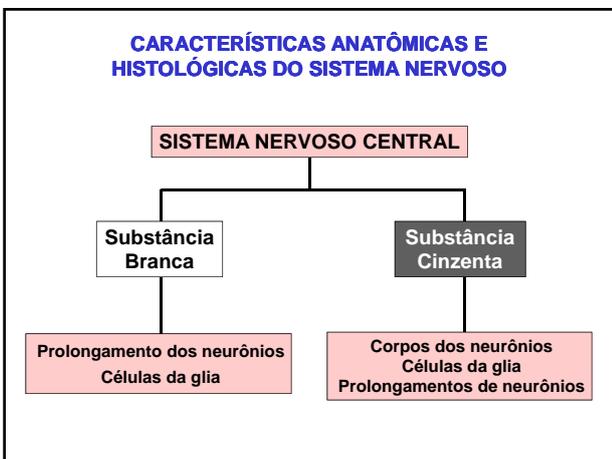
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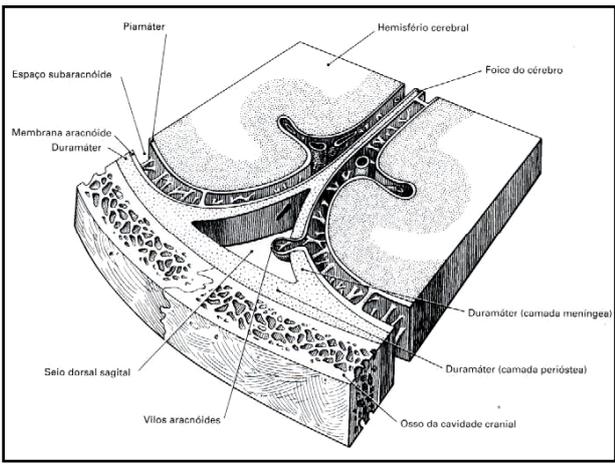
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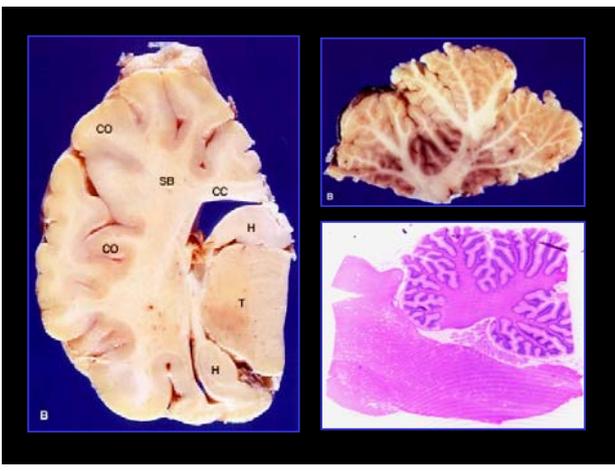
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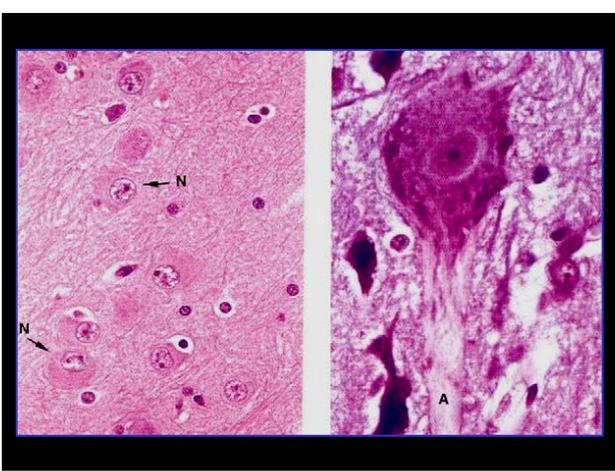
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## Alterações Congênicas

- ↳ Microencefalia
- ↳ Microgiria
- ↳ Disrafias
  - Anencefalia
  - Spina Bífida
- ↳ Hidrocefalia
- ↳ Defeitos Cerebelares

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### Alterações Congênicas

Infecções Virais como causa de anomalias do desenvolvimento:

#### Diarréia Viral Bovina (B.V.D.) – Pestivírus

**Lesões:** Atrofia/hipoplasia cerebelar como lesões primárias podendo apresentar também porencefalia-hidranencefalia

#### Peste Suína Clássica - Pestivírus

**Lesões:** Hipomielinogênese, hipoplasia cerebelar

#### Panleucopenia Felina - Parvovírus

**Lesões:** hipoplasia cerebelar

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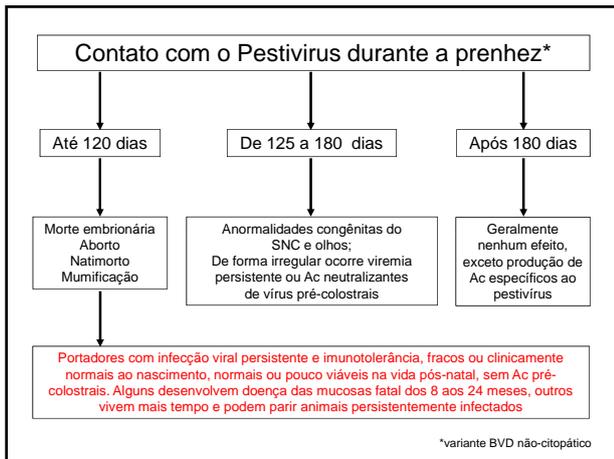
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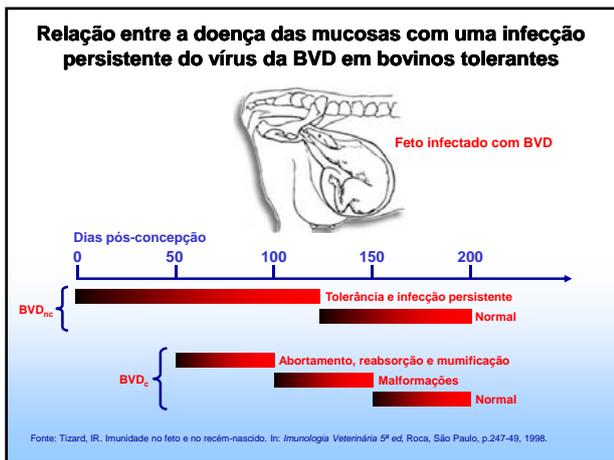
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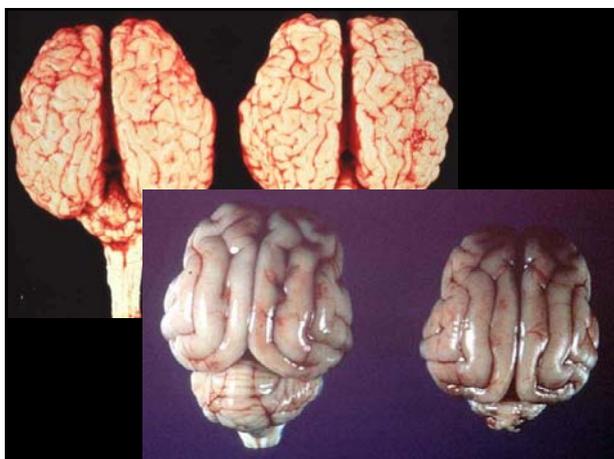
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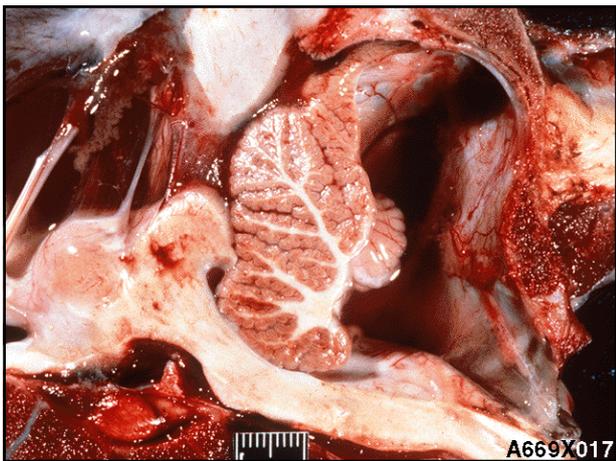
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**Alterações Congênitas**

**Hidrocefalia**

<b>Comunicante</b> (não obstrutiva)	<b>Não Comunicante</b> (obstrutiva)
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**Indícios da Doença Cerebelar**

**Ataxia**

**Dismetria:**  
Hipometria  
Hipermetria

**Tremor Intencional**

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## Indícios da Doença Vestibular

Ataxia

Inclinação da  
Cabeça

Nistagmo

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## Indícios da Doença Medular Espinhal

**Paresia**

**Plegia**

**Paralisia**

*Paraparesia*

*Paraplegia*

*Tetraparesia*

*Tetraplegia*

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## Outras Condições

Quadros de encefalite podem ter como seqüela o desenvolvimento de hidrocefalia

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## Outras Condições

### Doenças do Armazenamento Lisossômico

- Lipofuscinose ceróide
- Gangliosidose GM1 e GM2
- Leucodistrofia das Células Globóides
- Glicogenose
- Manosidose

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## Distúrbios Hidrodinâmicos

- ↪ Edema e Tumefação Cerebral
- ↪ Aumento da Pressão Intracraniana

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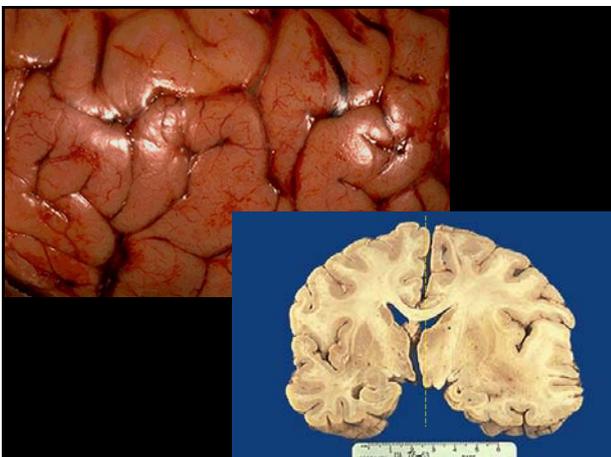
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## Distúrbios Hemodinâmicos

Lesões Isquêmicas  
Lesões hemorrágicas  
Lesões Microcirculatórias

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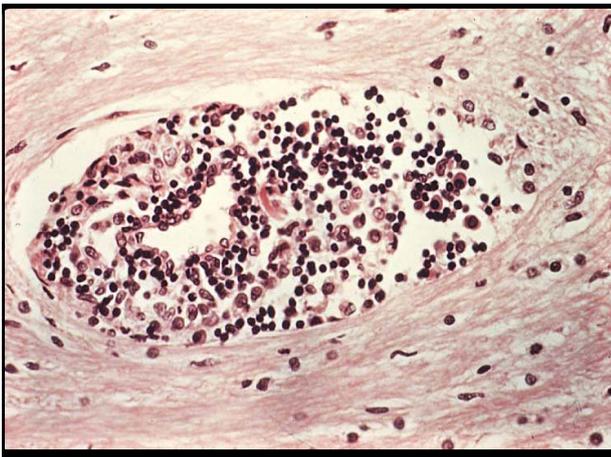
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## Lesões Traumáticas no Cérebro

↳ **Concussão** — Agressão Encefálica Difusa  
Perda temporária da consciência com posterior recuperação, geralmente, sem lesões estruturais.

Forças



- cisalhamento
- esticamento
- compressão

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## Lesões Traumáticas no Cérebro

### ↳ Contusão – Agressão Encefálica Focal

Lesões estruturais do tecido em grau e intensidades variáveis, geralmente acompanhadas de perda da consciência.

Contusão de golpe  
Contusão de contragolpe

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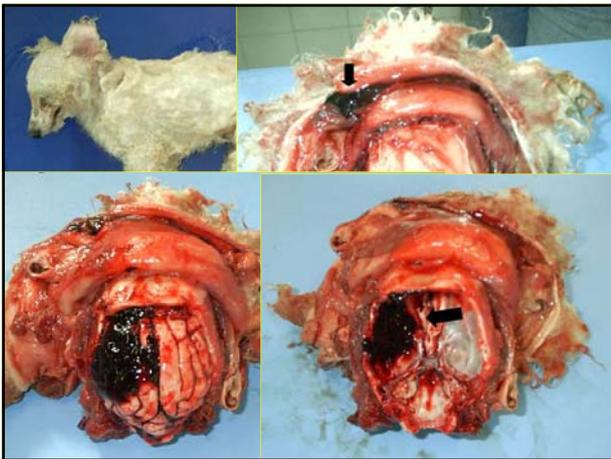
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## Lesões Traumáticas no Cérebro

### ↳ Laceração

Lesões estruturais graves acompanhada de exposição de tecido e perda imediata da consciência.

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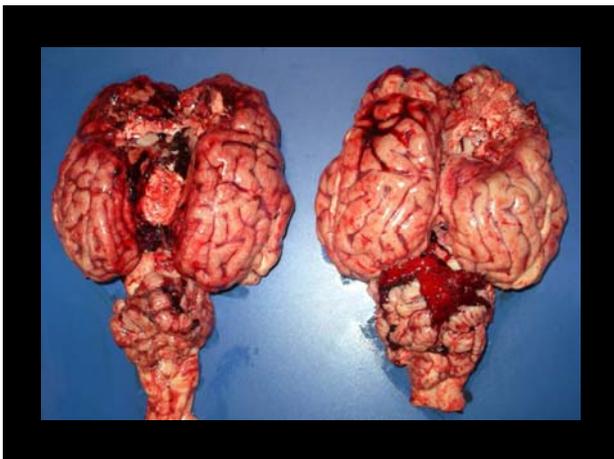
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## Lesões Traumáticas no Cérebro

### ↳ Hemorragias

- Epidural
- Subdural
- Leptomeningeana (espaço sub-aracnóide e pia-máter)
- Parênquima encefálico

Extensão e morfologia variáveis

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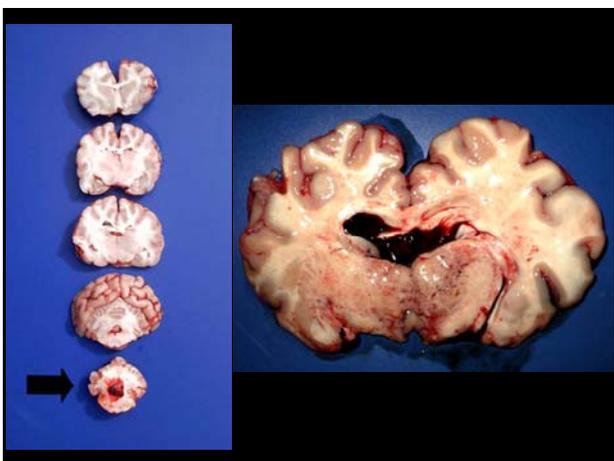
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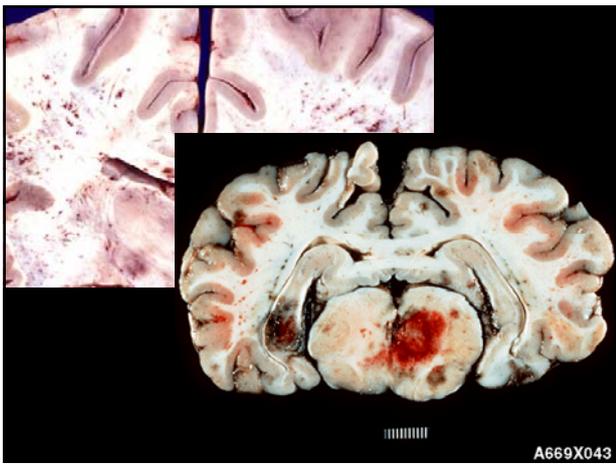
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**Lesões Traumáticas na Medula**

- ↗ Concussão
- ↗ Contusão
- ↗ Hemorragia
- ↗ Laceração e Transecção
- ↗ Compressão

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## Lesões Traumáticas na Medula

### ↔ **Compressão**

↑ **Pressão Intramedular**

↑ **Pressão Extramedular**

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## Lesões Traumáticas da Medula Espinhal

### **Compressão**

**Mielopatia Estenótica Cervical – Síndrome de Wobbler**

*É caracterizada por estenose do canal vertebral cervical causando trauma compressivo sobre a medula espinhal cervical.*



**Estenose Estática cervical**

*Animais de 1 a 4 anos – afeta C5- C7*

**Instabilidade Cervical Vertebral**

*Animais de 8 a 18 meses – afetando C3-C5*

**Comum em Equinos**

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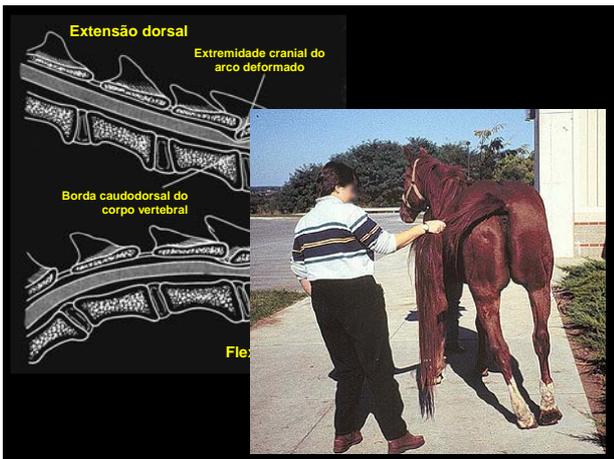
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## Alterações Degenerativas do S.N.C.

### ↪ Encefalomalácia

#### Intoxicação por Sal

Mais comum nos suínos

Origem: privação hídrica prolongada

Característica:

*Meningoencefalite eosinofílica*

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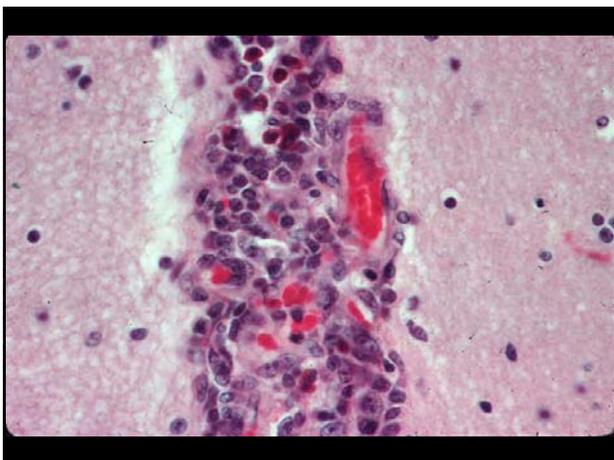
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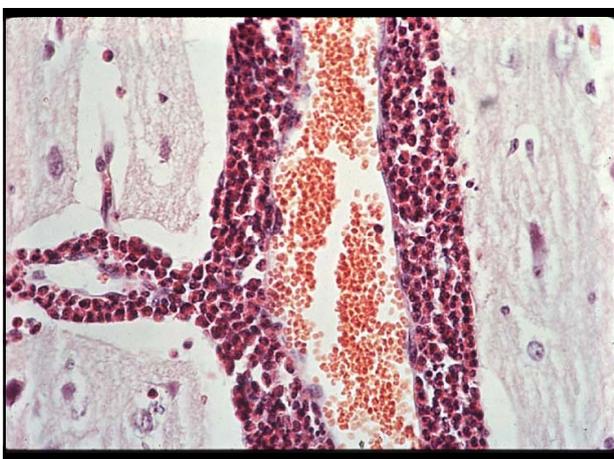
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**ALTERAÇÕES DEGENERATIVAS DO S.N.C.**

**↳ Leucoencefalomalácia**

**Necrose da Substância Branca Cerebral nos Equinos**

Agente: *Fusarium moniliforme* (fumonisina B<sub>1</sub>)

Ingestão de milho mofado



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**POLIOENCEFALOMALÁCIA dos RUMINANTES**

**Necrose da Substância Cinzenta do Cérebro**

É uma enfermidade neurológica, não infecciosa, dos ruminantes

alterações no metabolismo da tiamina,  
diets ↑ em concentrados → acidose clínica ou subclínica → ↓ microrganismos que sintetizam tiamina → bactérias ↑ tiaminase;

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**POLIOENCEFALOMALÁCIA dos RUMINANTES**

**Necrose da Substância Cinzenta do Cérebro**

é uma enfermidade neurológica, não infecciosa, dos ruminantes

causada por:

- ⇒ ingestão de vegetais contendo tiaminases;
- ⇒ intoxicação por enxofre;
- ⇒ privação de água e/ou intoxicação por cloreto de sódio;
- ⇒ e intoxicação por chumbo

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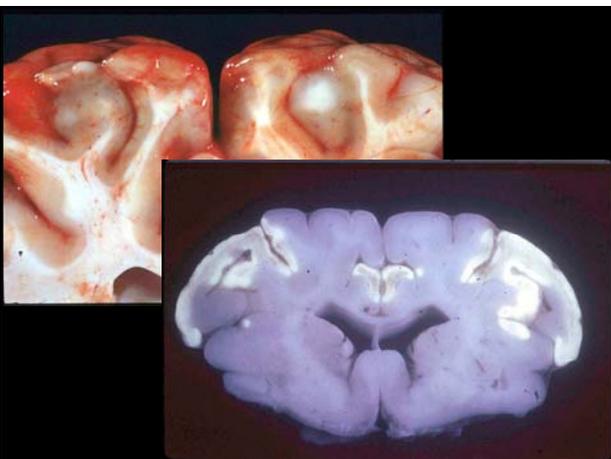
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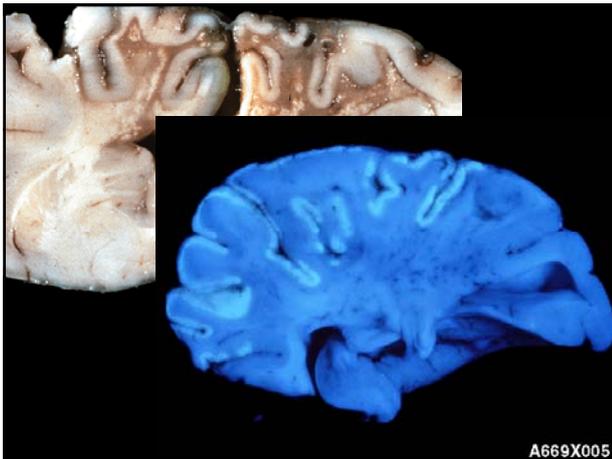
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## Doenças Neurodegenerativas

- Envenenamento por Organofosforados
- Intoxicação por Chumbo
- Doenças do Armazenamento Lisossomal
- Encefalopatias Espongiformes  
**B.S.E. (Doença da Vaca Louca)**

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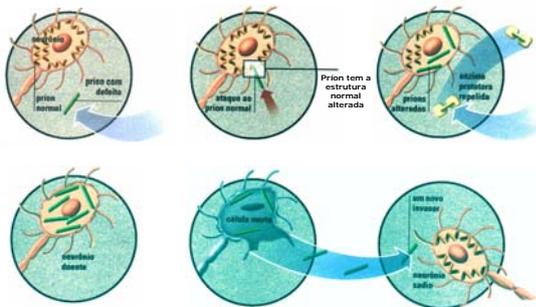
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### Patogênese e Progressão dos Príons no Encéfalo



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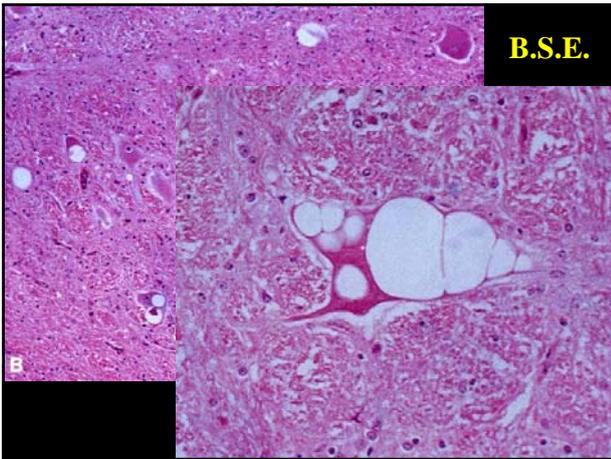
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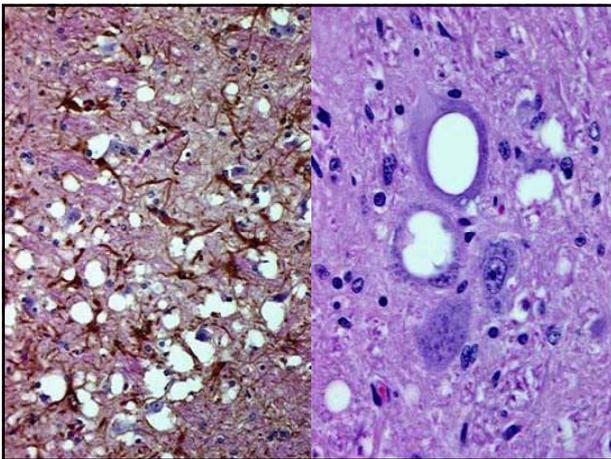
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**Doenças que atingem o Sistema Nervoso  
(geralmente) sem provocar  
alterações estruturais**

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- ↪ **Botulismo**  
    > *Clostridium botulinum*
- ↪ **Tétano**  
    > *Clostridium tetani*
- ↪ **Raiva**  
    > Lyssavirus

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**Botulismo**

➤ *Clostridium botulinum*

**Toxinas**

- **potência**
- **distribuição**
- **antigenicidade**
- **destruídas a 100°C, 20 min.**
- **Oito tipos: A, B, Ca, Cb, D, E, F, G**
  - bovinos - B, C e D
  - ovinos - C
  - cavalos - B e C

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**BOTULISMO**

- **EPIDEMIOLOGIA**
  - Esporos resistentes
  - Germinação e produção de toxina em anaerobiose
  - carne, peixe, vegetais, carcaças e silagem
  - propriedades com deficiência mineral
  - aves aquáticas, ruminantes, cavalos e frangos
  - carnívoros relativamente resistentes
  - quase sempre é fatal

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# BOTULISMO

- **PATOGENIA** (1mg = 120 X 10<sup>6</sup>DLcamundongos)
  - **intoxicação**
  - **toxina pré-formada em alimentos (pré-toxina)**
    - crescimento no TGI
    - contaminação de feridas
  - **células nervosas periféricas (terminações nervosas)**
  - **impede liberação da acetilcolina**
    - junção mioneural
  - **paralisia flácida**

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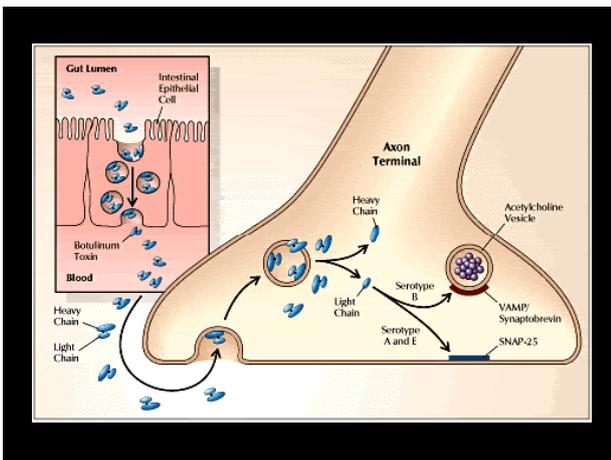
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# BOTULISMO

- **SINAIS CLÍNICOS**
  - **incubação 24 horas a 7 dias**
  - **fatal se não tratado**
  - **hipotonia de musculatura esquelética**
    - *debilidade generalizada progressiva e ataxia*
  - **progressão rápida**
    - *paralisia de língua*
    - *atonía vesical*
    - *paralisia respiratória*
    - *megaesôfago secundário (carnívoros)*

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## BOTULISMO

### • DIAGNÓSTICO

- histórico
- sinais clínicos
- identificação de toxina em soro
  - inoculação IP camundongos
  - cintura de vespa
- isolar agente/toxina da fonte
- necrópsia, hematologia, bioquímico e líquor sem alterações

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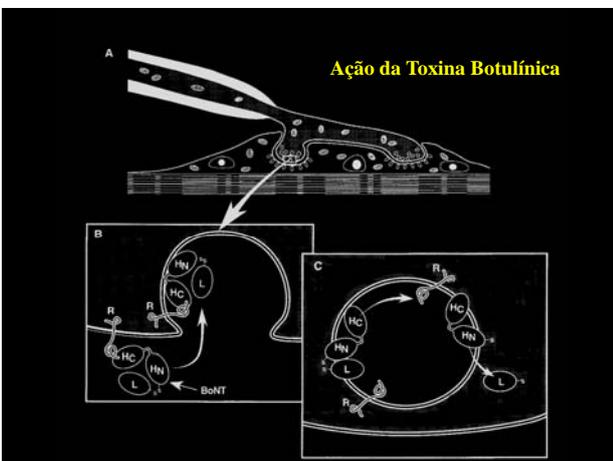
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# TÉTANO

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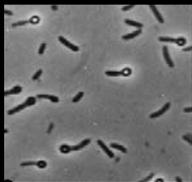
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## TÉTANO

### • ETIOLOGIA

- *Clostridium tetani*
- esporo terminal (palito de fósforo)
- neurotoxina antigenicamente semelhante
- DL homem = 0,0001mg



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## TÉTANO

### • EPIDEMIOLOGIA

- doença telúrica
- fezes de animais (eqüinos)
- ocorrência individual
  - eqüinos
  - suínos, ovinos caprinos
  - bovinos e carnívoros
  - pássaros são refratários
- feridas; parto (bovinos); castração (suínos); castração tosa e amputação cauda (carneiros)

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# TÉTANO

## • EPIDEMIOLOGIA

- feridas;
- parto (bovinos);
- castração (suínos);
- castração tosa e amputação cauda (carneiros)

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# TÉTANO

## • PATOGENIA

- introdução de esporos em ferimento
- queda teor O<sub>2</sub> (contaminação)
- germinação esporos
- produção toxinas:
  - tetanolisina: diminui O<sub>2</sub>
  - tetanospasmina: via nervos periféricos e sangue
    - gânglios nervos motores
    - corno ventral ME
    - bloqueio da inibição sináptica (glicina)
    - paralisia espástica

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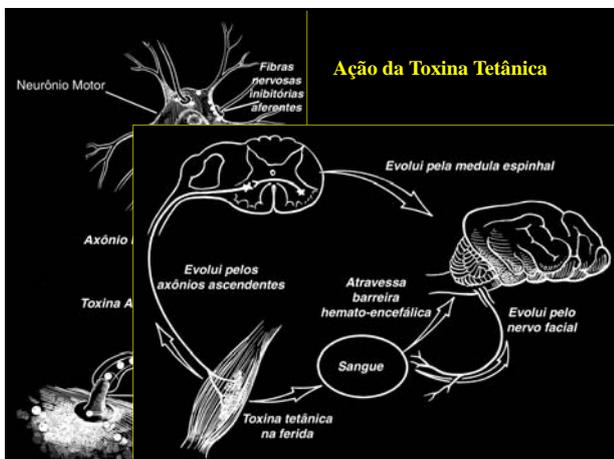
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# TÉTANO

- SINAIS CLÍNICOS

- **incubação variável (2 sem a 1 mês)**
  - tamanho da lesão
  - teor O<sub>2</sub>
  - quantidade e sorogrupo do *C. tetani*
  - quantidade de toxina produzida
- **espasticidade muscular**
  - localizada com generalização
- **postura de cavalete, orelhas em tesoura, protrusão de terceira pálpebra, trismo mandibular e cauda em bandeira**
- **hipertermia, sudorese e acidose metabólica**

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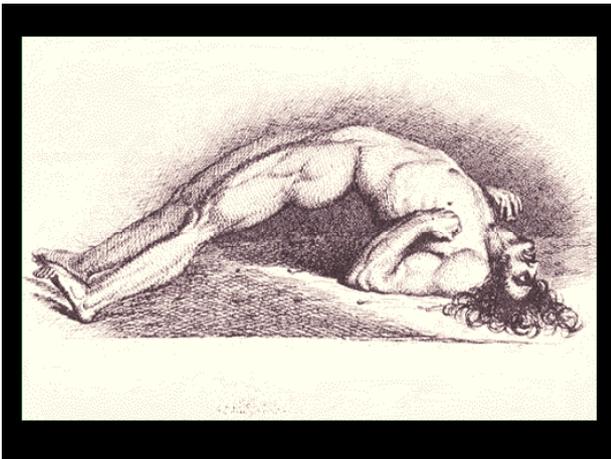
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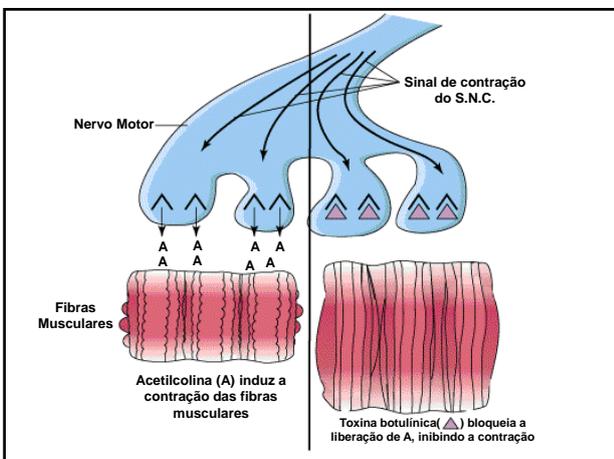
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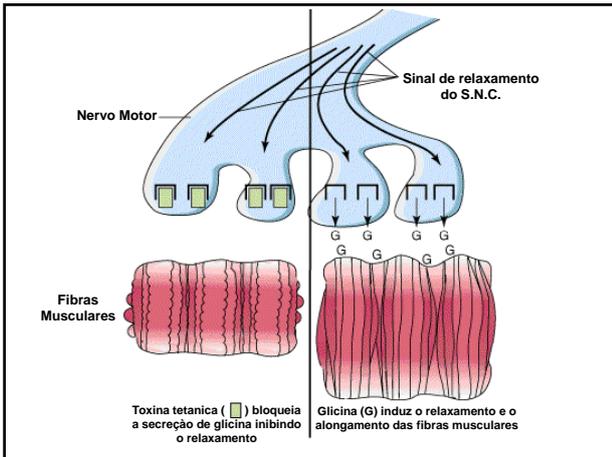
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## ALTERAÇÕES INFLAMATÓRIAS

↳ Encefalites e Meningites Supurativas

- Lesões Septicêmicas
- Êmbolos Sépticos
- Listeriose  
*Listeria monocytogenes*
- Encefalite Tromboembólica (TEME)  
*Haemophilus somnus*

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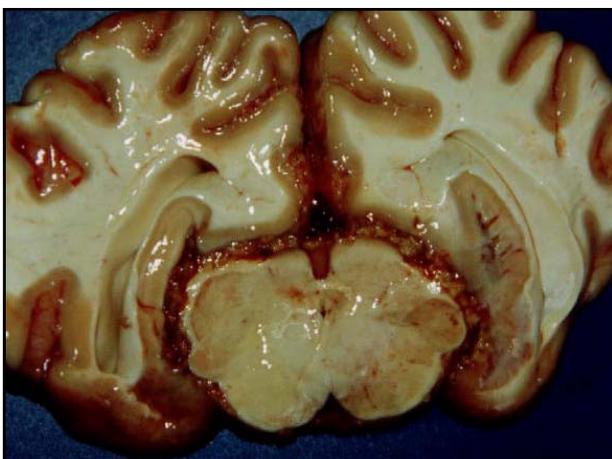
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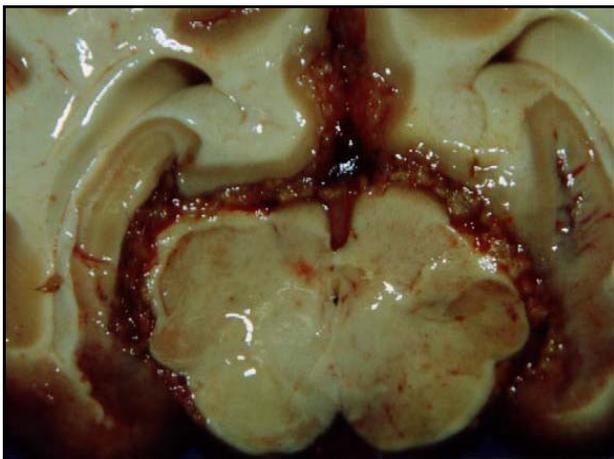
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**ALTERAÇÕES INFLAMATÓRIAS**

↳ Encefalites e Meningites Não Supurativas

**Em todas as espécies:**

**RAIVA**  
Agente: **Lyssavirus**

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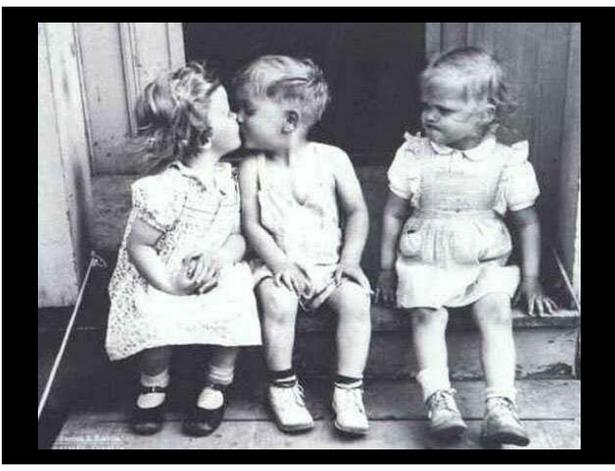
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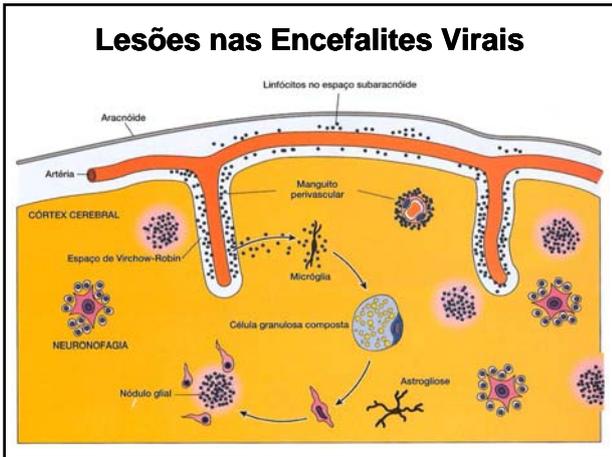
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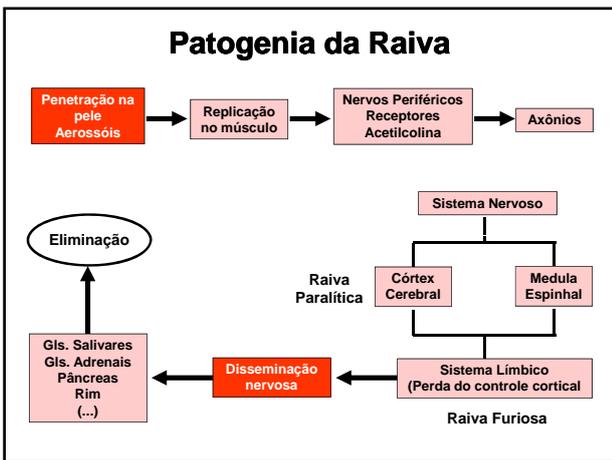
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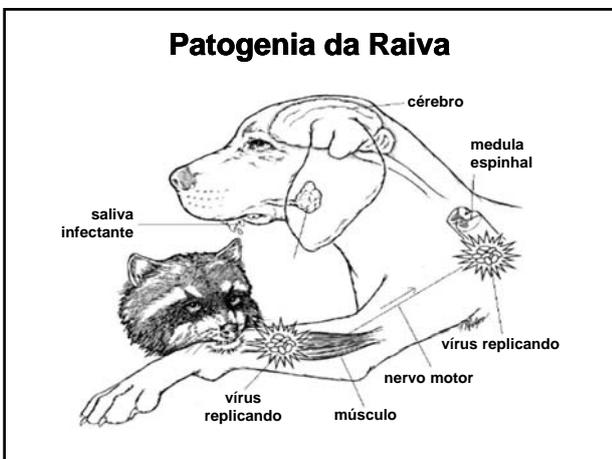
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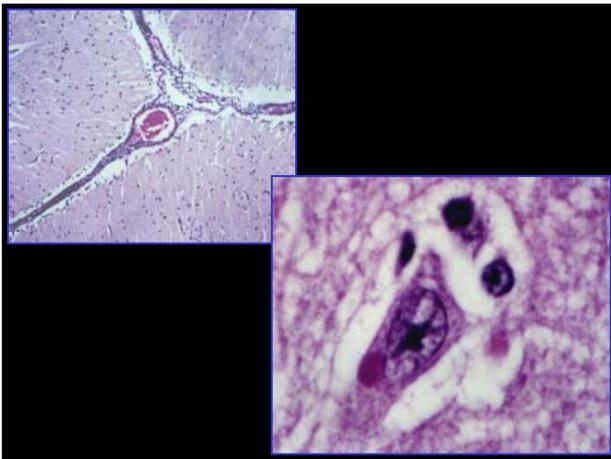
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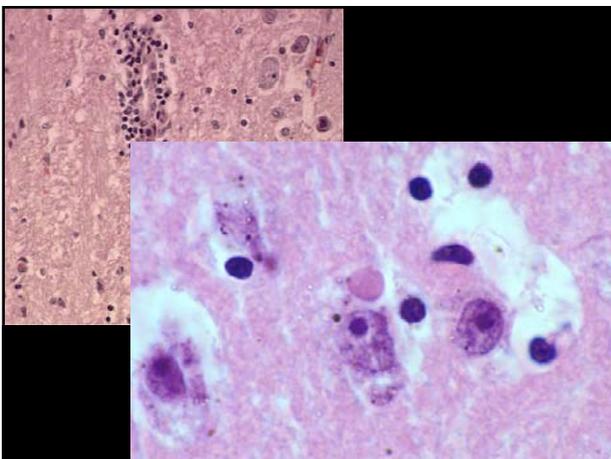
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## ALTERAÇÕES INFLAMATÓRIAS

### ↳ Encefalites e Meningites Não Supurativas

#### ↳ Em Caninos:

- Cinomose (Morbillivirus)  
[Encefalite do Cão Velho]
- Herpesvirus

#### ↳ Em Felinos:

- Panleucopenia Felina  
(Parvovirus)

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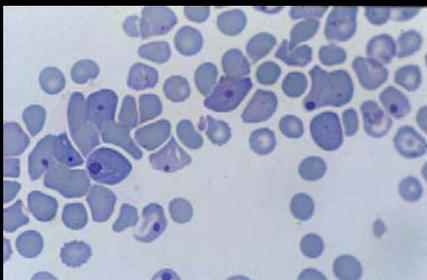
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INCLUSÕES DE LUTZ

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**Encefalomielite Equina**

➤ **Agente etiológico: Alphavirus**

**Tipo Leste (EEE) – *Culiseta melanura***  
*Mortalidade 90%*

**Tipo Oeste (WEE) – *Culex tarsalis***  
*Mortalidade 50%*

**Tipo Venezuela (VEE) – *Mansonia titilans***  
*Mortalidade 50 a 80%*

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↪ **Encefalites e Meningites Não Supurativas**

**Em Eqüinos:**

➤ **Herpesvirus Eqüino (EHV-1)**

**HVE-1**  
*abortos, problemas respiratórios, encefalite*

**HVE-2**  
*pouco significativo; eventualmente faringite crônica*

**HVE-3**  
*exantema coital (pouco significativo), vesículas nos genitais.*

**HVE-4**  
*doenças respiratórias.*

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**ALTERAÇÕES INFLAMATÓRIAS**

↪ **Encefalites e Meningites Não Supurativas**

↪ **Em Grandes Ruminantes:**

➤ **Rinotraqueíte Infecciosa Bovina (I.B.R.)**  
**[BHV-1]**

➤ **Febre Catarral Maligna**  
**Herpesvirus**

➤ **Herpesvírus Bovino Tipo 5**

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### Artrite Encefalite Caprina

- ↳ Encefalites e Meningites Não Supurativas
- ↳ Em Pequenos Ruminantes:
  - Artrite-Encefalite dos Caprinos (Lentivirus)
  - Complexo Maedi/Visna nos Ovinos (Lentivirus)

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### ALTERAÇÕES INFLAMATÓRIAS

- ↳ Em Suínos:
  - Doença de Aujeszky (Pseudo-Raiva) (Herpesvirus Suino Tipo 1)

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### Doença de Aujeszky



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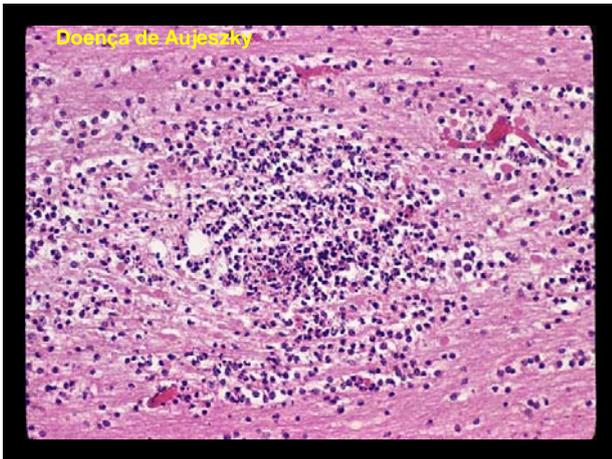
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**INFESTAÇÕES PARASITÁRIAS**

↪ **Neurocisticercose**

↪ Larva

<i>Cysticercus tenuicollis</i>	[ <i>Taenia hidatigera</i> ]
<i>Cysticercus bovis</i>	[ <i>Taenia saginata</i> ]
<i>Cysticercus cellulosae</i>	[ <i>Taenia solium</i> ]
<i>Coenurus cerebralis</i>	[ <i>Multiceps multiceps</i> ]

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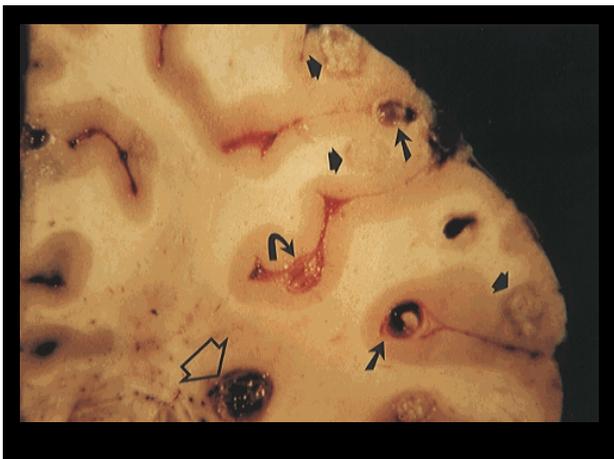
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## INFESTAÇÕES PARASITÁRIAS

### ↳ **Encefalomielite Protozoária Eqüina**

- *Sarcocystis neurona*
- *Toxoplasma gondii* (?)

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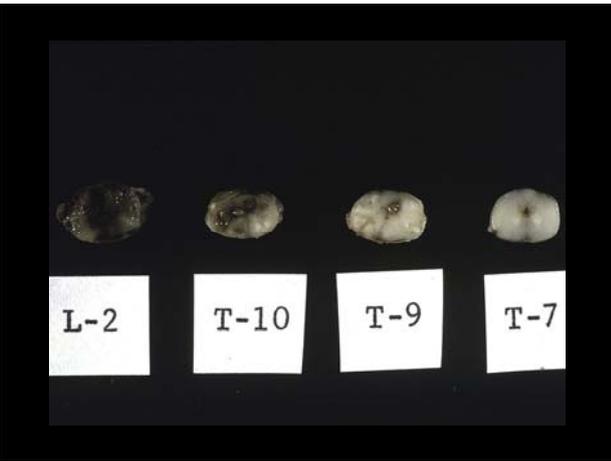
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## INFESTAÇÕES PARASITÁRIAS

### ↳ Encefalites Parasitárias em Cães

- Toxoplasmose (*Toxoplasma gondii*)
- Neosporose (*Neospora caninum*)
- Babesiose (*Babesia canis*)

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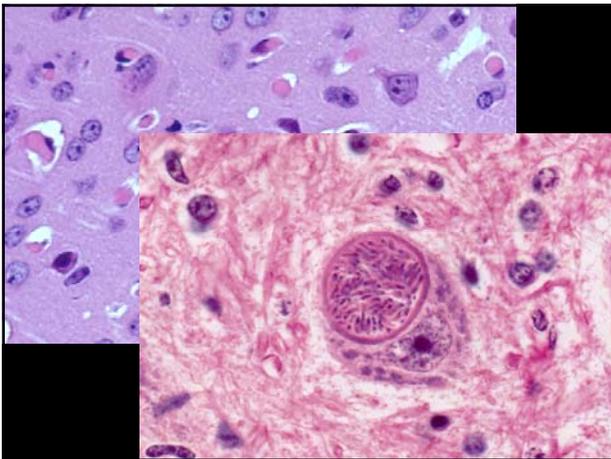
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## INFESTAÇÕES PARASITÁRIAS

### Encefalite Protozoária em Bovinos *Babesia bovis*

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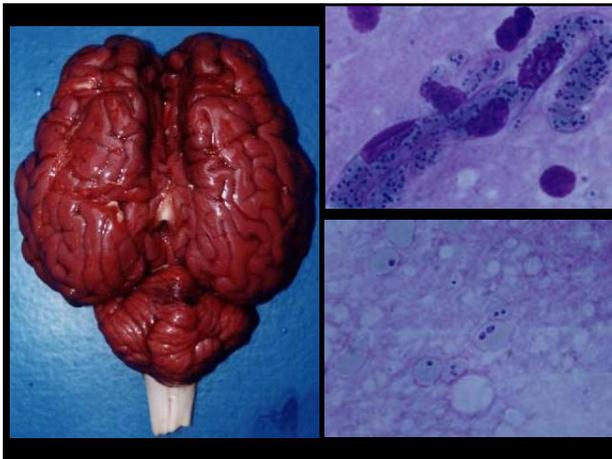
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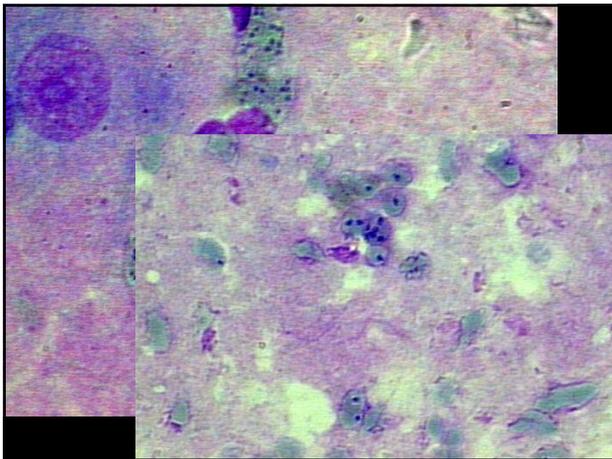
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## Neoplasias

- ↳ **Tumores Mesodérmicos**
  - Meningiomas
- ↳ **Tumores Vasculares**
  - Hemangiomas/Hemangiossarcomas
- ↳ **Tumores de Origem Neural Duvidosa**
  - Melanoma
  - Demais neoplasias: Metástases
    - T.V.T
    - Linfoma
    - Mastocitoma

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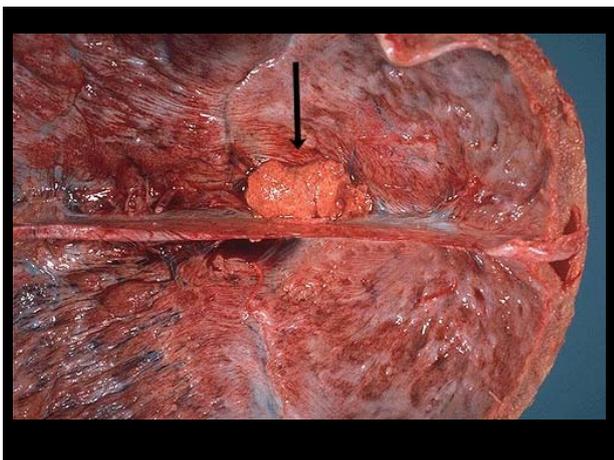
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**NEOPLASIAS**

- ↳ **Tumores Neurogliais**
  - ↳ Astrocitoma
  - ↳ Ependimoma
  - ↳ Neuroblastoma
- ↳ **Tumores Derivados das Células de Schwann**
  - ↳ Schwannoma
  - ↳ Neurofibroma

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