



# Patologia do Sistema Respiratório

*Prof. Raimundo Alberto Tostes*

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## Generalidades

**Aquece e umidifica o ar inspirado**  
**Mecanismo primário de defesa do trato respiratório**

**A limpeza de elementos estranhos ao trato respiratório é dividida entre:**

Vias Resp. Superiores → Via aerógena  
Pulmão → Via hematógena

São mecanismos de proteção do T.R.



**Tosse**  
**Espirros**  
**Limpeza por fagocitose**

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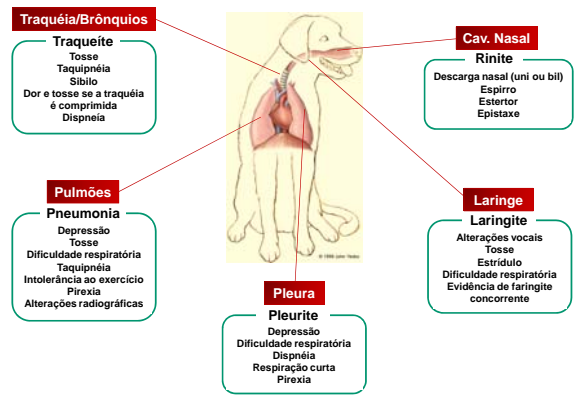
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### Manifestação de Reações Inflamatórias no Trato Respiratório e Pleura




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## Patologia da Cavidade Nasal e Seios Faciais

### Alterações Inflamatórias

#### Virais

Adenovirus  
Morbilivirus 1  
Influenza virus

#### Fungos

*Cryptococcus neoformans*  
*Pneumocystis carinii*

#### Alérgenos

Poeira  
Pólen  
Ácaros  
Insetos  
Corantes  
Outros

## RINITES

#### Bacterianas

*Pasteurella* spp  
*Bordetella bronchiseptica*

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## Patologia da Cavidade Nasal e Seios Faciais

### Alterações Inflamatórias:

### Formas Específicas de Rinite

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**Rinotraqueíte Infecciosa Bovina**

*Herpesvírus Bovino Tipo-1*

**Rinotraqueíte Viral Felina**

*Herpesvírus Felino Tipo-1*

**Rinite Granulomatosa (Fúngica)**

*Aspergillus spp*  
*Cryptococcus neoformans*  
*Rhinosporidium seeberi*

**Rinite Atrófica Suína**

*Bordetella bronchiseptica*  
*Pasteurella multocida*  
Fatores ambientais e/ou nutricionais

**Garrotilho**

*Streptococcus equi* sub *zooepidermicus*

**Mormo**

*Burkholderia mallei*

**Atividade: ler sobre estas formas de rinite**

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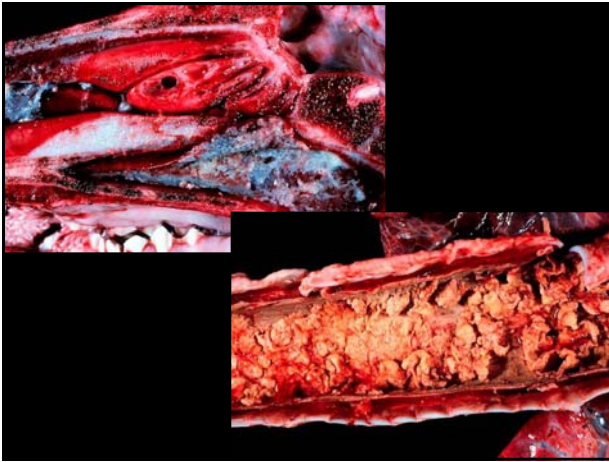
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**Rinite Atrófica Suína**

**Características Epidemiológicas**

**Etiologia**  
*Agentes infecciosos associados*  
*Bordetella bronchiseptica*  
*Pasteurella multocida*

*Fator Nutricional*  
*Fatores Ambientais*

**Morfologia**  
*Classificação em graus*

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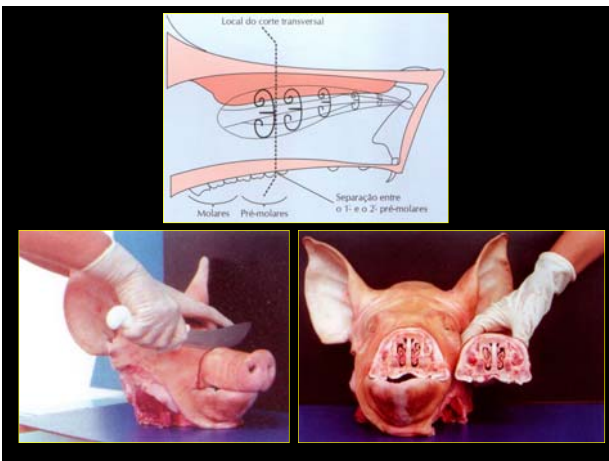
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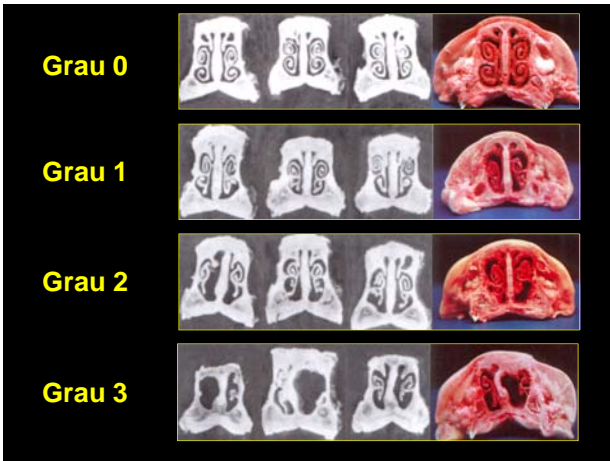
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**Grau de Rinite Atrófica Suína (Segundo Müller e Abbott, 1986)**

		ÁREA AFETADA						
		0% afetado	1-10% afetado	11-20% afetado	21-30% afetado	31-40% afetado	41-50% afetado	50% afetado
GRAUS DE ATROFIA	Grau 0	0	-3%	-8%	-15%	-19%	-24%	-30%
	Grau 1	0	-3%	-8%	-15%	-20%	-24%	-30%
	Grau 2	-3%	-4%	-10%	-17%	-20%	-25%	-32%
	Grau 3	-6%	-8%	-11%	-18%	-23%	-28%	-34%
	Grau 4	-12%	-14%	-17%	-21%	-25%	-30%	-36%
	Grau 5	-17%	-18%	-21%	-25%	-30%	-33%	-40%

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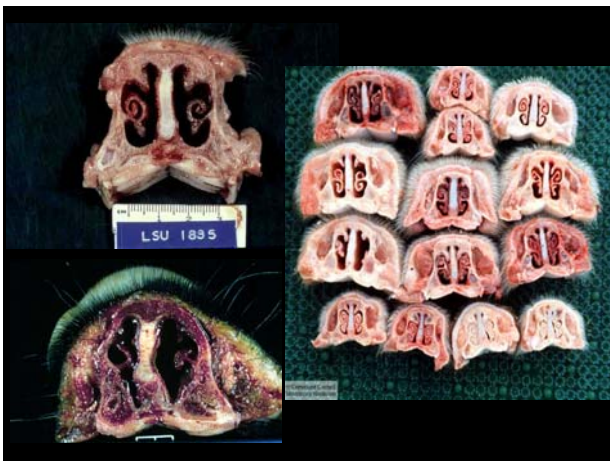
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**Patologia da Cavidade Nasal e Seios Faciais**

**Alterações Inflamatórias:**

*Sinusites*

**Traumatismo**

**iatrogênica (descorna)**

**Parasitismo (*Oestrus ovis*)**

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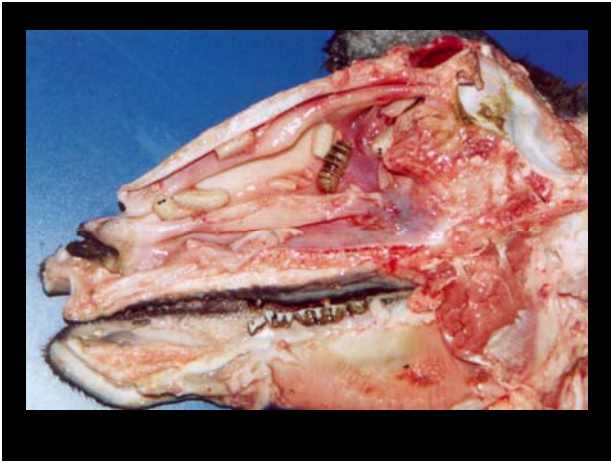
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**Patologia da Cavidade Nasal  
e Seios Faciais**

***Neoplasias***

- Papiloma*
- Adenoma/Adenocarcinoma*
- Condrossarcoma*
- Tumor Etmoidal*
- Carcinoma de Células Escamosas*
- Tumor Venéreo Transmissível*

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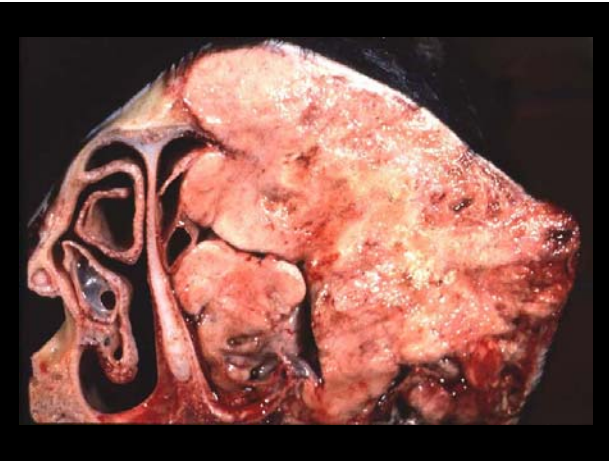
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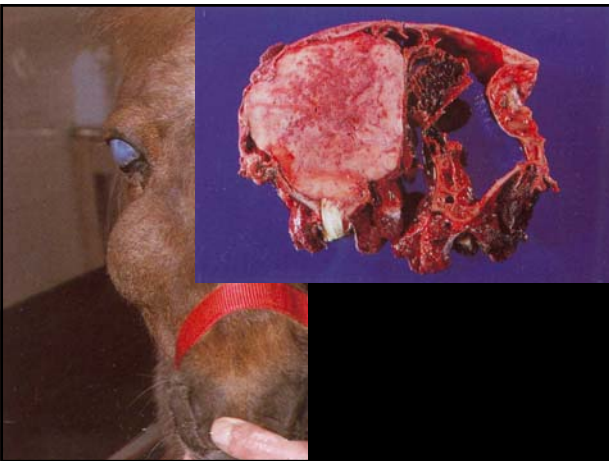
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## Alterações da Laringe

### *Hemiplegia Laringeana Eqüina (Paralisia da Laringe)*

- ⇒ É uma doença característica de eqüinos
- ⇒ Caracterizada por uma lesão no nervo laringo-recorrente, devido a um traumatismo ou compressão
- ⇒ É também conhecida como a doença do cavalo roncador

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### Lesão no N. Laringo-recorrente

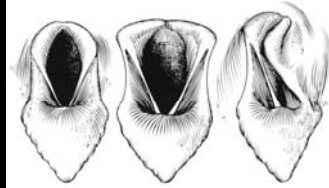
*Na maioria dos casos, do lado esquerdo!*

*Causa: trauma(?), compressão(?)*

**Perda local de inervação**

**Atrofia muscular (m. cricoaritenóideo)**

**Prolapso da corda vocal**



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### *Hemiplegia Laringeana Eqüina*



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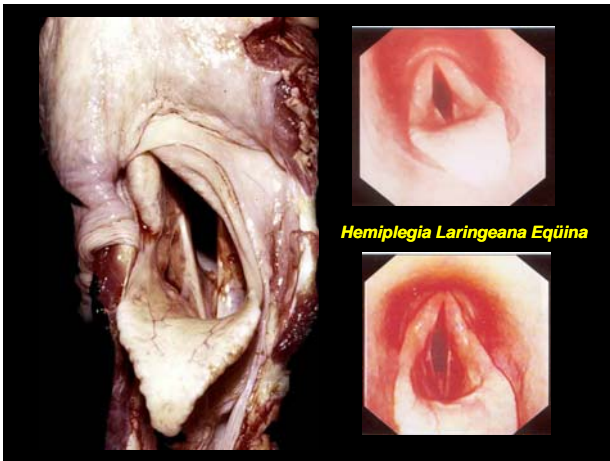
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## Patologia da Traquéia

*Alterações Inflamatórias*

**Traqueíte**  
**Perfurações**

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## Patologia dos Brônquios

*Traqueobronquite Infecciosa Canina*

Agentes:

*Bordetella bronchiseptica*  
**+ Adenovírus Canino Tipo 2**  
**+ Parainfluenza Canino**  
**+ Mycoplasma**

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# Patologia dos Brônquios

## Doença Pulmonar Obstrutiva Crônica

### Sinônimos:

- Bronquite/Bronquiolite Crônica*
- Enfisema Pulmonar Crônico*
- Obstrução Recorrente de Vias Aéreas*

### Causas e Consequências

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**Doença Pulmonar Obstrutiva Crônica**



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**Doença Pulmonar Obstrutiva Crônica**



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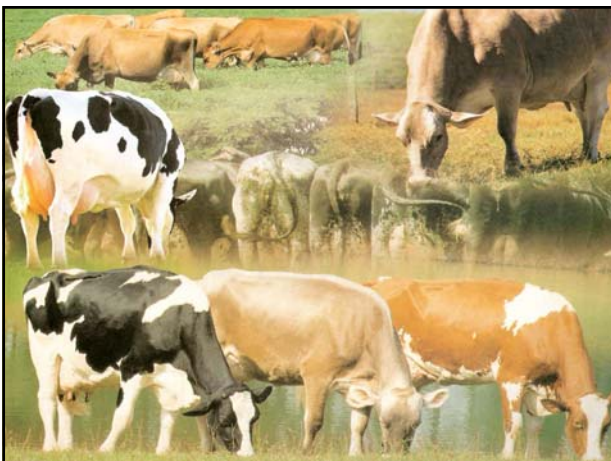
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## **Patologia dos Pulmões**

### **Generalidades:**

Limpeza (*Clearance*) pulmonar  
Drenagem linfática  
Macrófagos alveolares

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## **Patologia dos Pulmões**

### **Pigmentação exógena (Pneumoconiose):**

Antracose

### **Pigmentação endógena:**

Melanose

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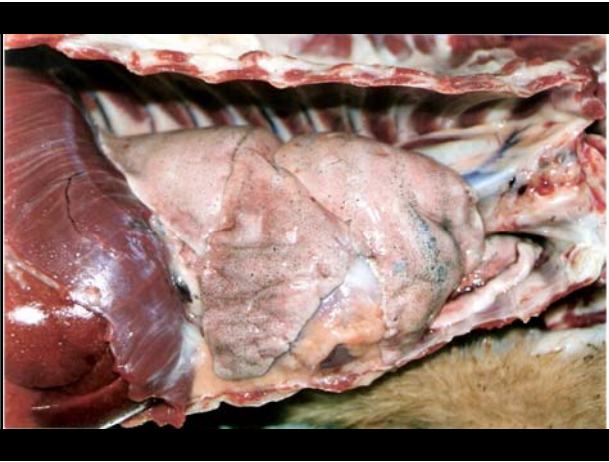
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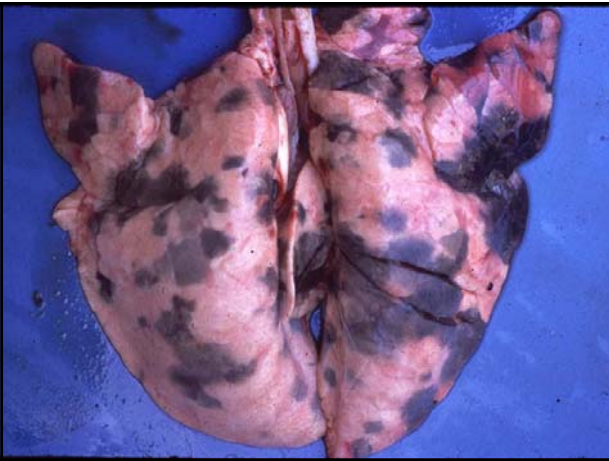
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**Patologia dos Pulmões**

**Alterações circulatórias:**

Congestão Passiva:  
I.C.C. Esquerda  
→ edema pulmonar

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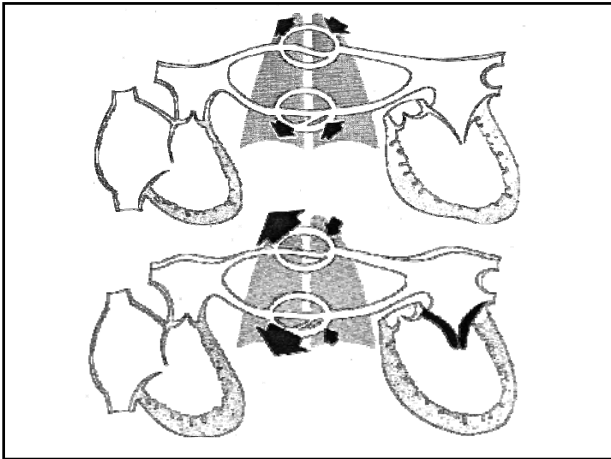
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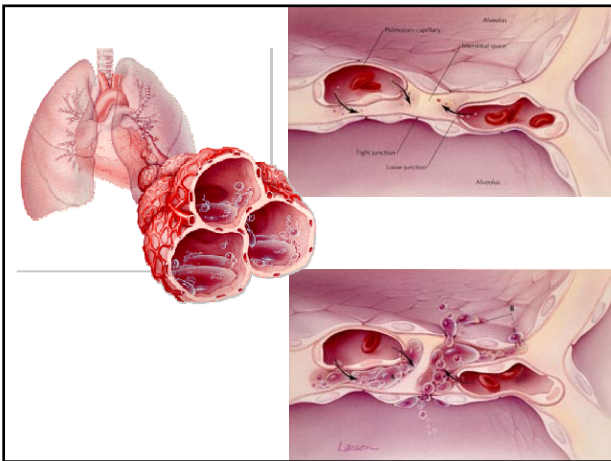
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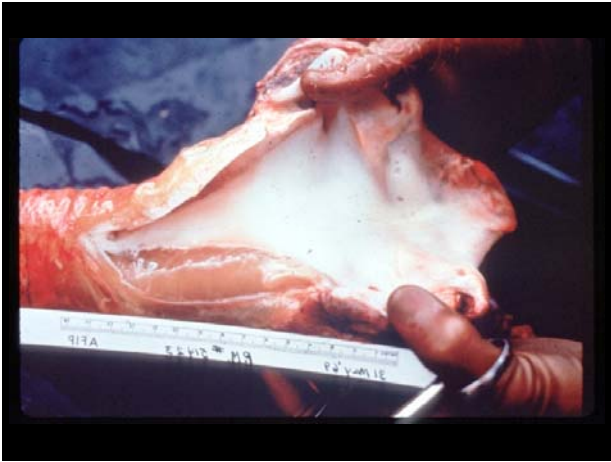
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**Patologia dos Pulmões**

**Alterações circulatórias:**

Hemorragia:  
Trauma  
Diapedese  
Erosão

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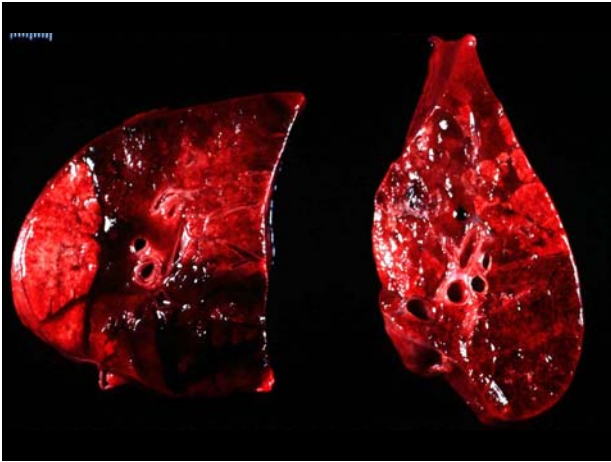
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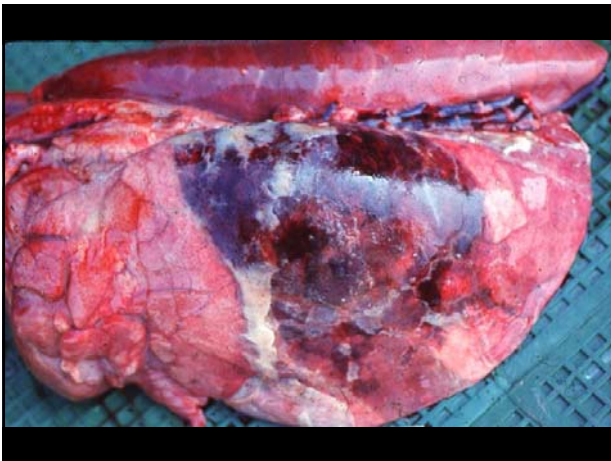
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## **Patologia dos Pulmões**

### **Alterações do Conteúdo Gasoso:**

#### **Atelectasia: Congênita**

*Completa: asfixia 'in utero'  
↓ inspiração no neonato*

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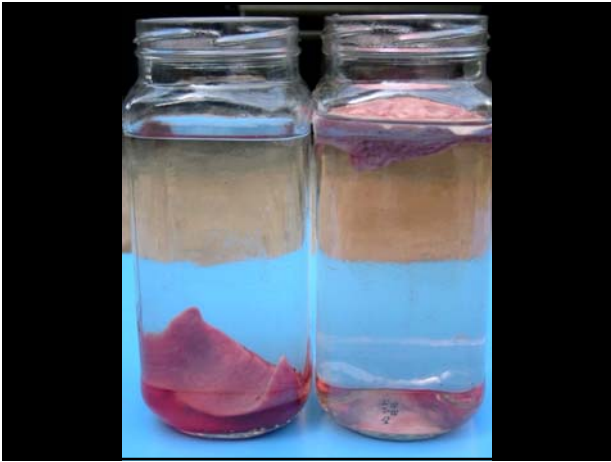
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**Patologia dos Pulmões**

**Alterações do Conteúdo Gasoso:**

**Atelectasia:**  
**Adquirida**  
**Completa ou Parcial**  
**Obstrutiva: neoplasias**  
**Hipostática: decúbito**  
**Maciça: pneumotórax**

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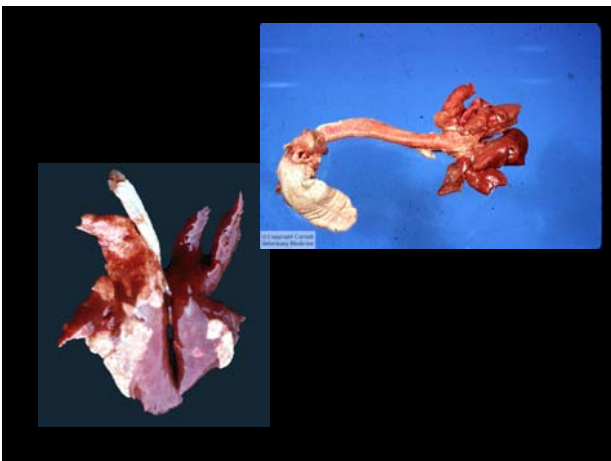
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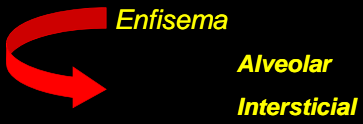
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**Patologia dos Pulmões**

**Alterações do Conteúdo Gasoso:**



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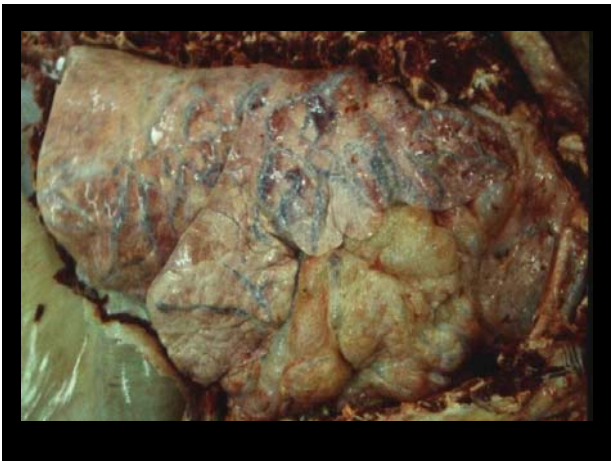
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**Patologia dos Pulmões**

**Pneumonia**

*Etiologia*

*Aspectos clínicos e epidemiológicos*

*Características morfológicas*

*Conseqüências*

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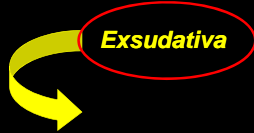
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## Patologia dos Pulmões

### Padrões Anatômicos de Pneumonia

Classificação de acordo com o tipo o exsudato



**Catarral**  
**Fibrinosa**  
**Supurativa**  
**Hemorrágica**  
**Necrótica**

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## Patologia dos Pulmões

### Padrões Anatômicos de Pneumonia

Segundo o local inicial  
e o padrão de disseminação da lesão

**Broncopneumonia (junção bronquíolo-alveolar)**  
**Pneumonia lobar**  
**Pneumonia intersticial (septos interalveolares)**  
**Pneumonia bronco-intersticial**  
**Abcessos/Pneumonia embólica**

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## Classificação das Pneumonias

Tipo	Porta de entrada	Distribuição das Lesões	Consistência do pulmão
Broncopneumonia	aerógena	Consolidação Crânio-ventral	firmes
Lobar	aerógena	Consolidação Crânio-ventral	firmes
Intersticial	Hematógena Principalmente	Consolidação difusa (+ lobos caudais)	elástica
Granulomatosa	Aerógena ou Hematógena	Focal ou Multifocal	firmes nos granulomas
Embólica	Hematógena	Focal ou Multifocal	Dependente do êmbolo

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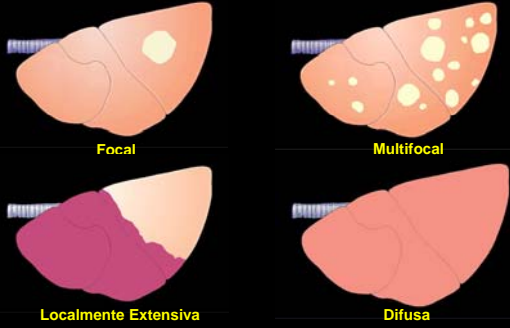
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**Patologia dos Pulmões**

**Pneumonia**

Segundo a distribuição macroscópica das lesões



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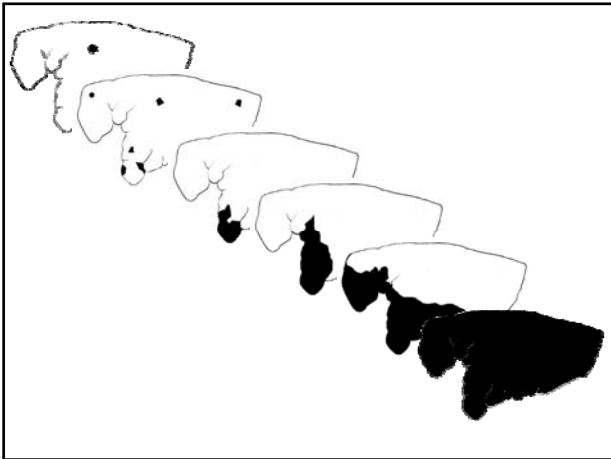
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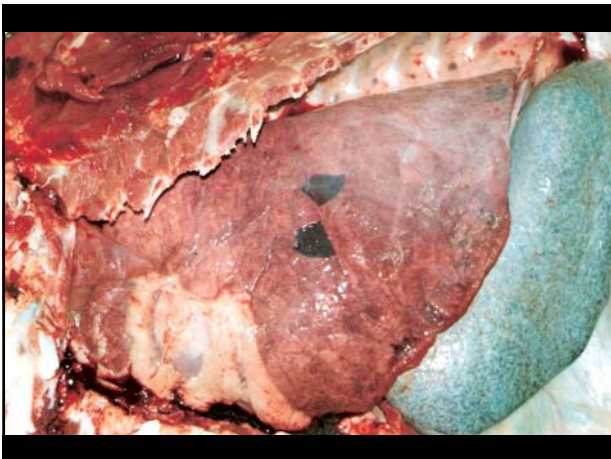
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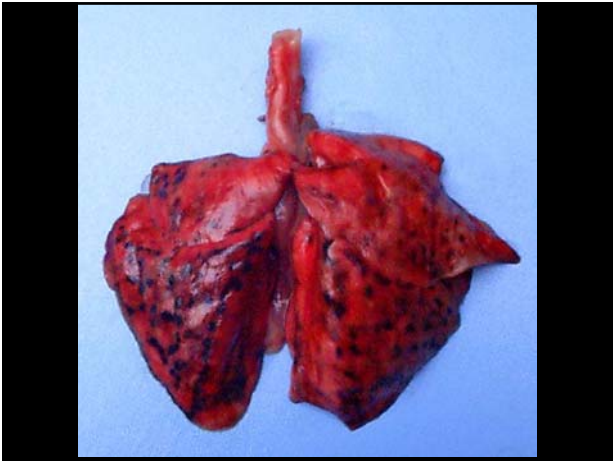
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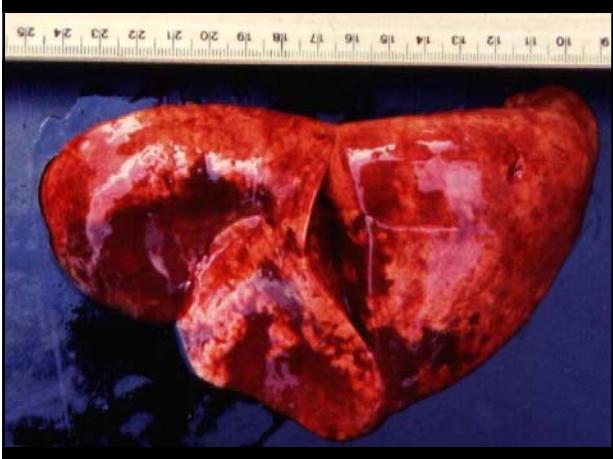
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## Patologia dos Pulmões

**Padrões Anatômicos de Pneumonia**  
Como avaliar morfológicamente uma pneumonia

- Cor**
- Distribuição**
- Tamanho e forma**
- Peso**
- Consistência**
- Contorno**

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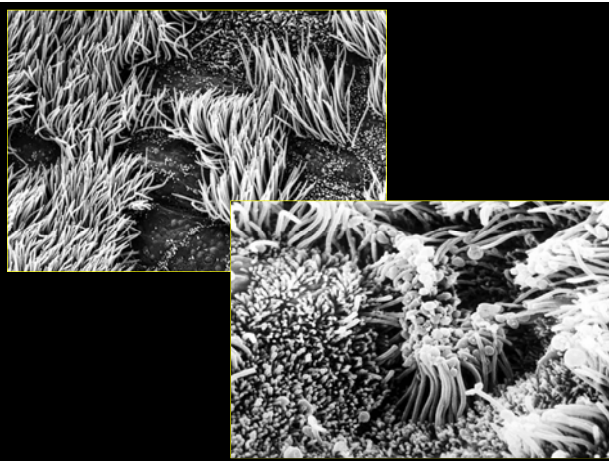
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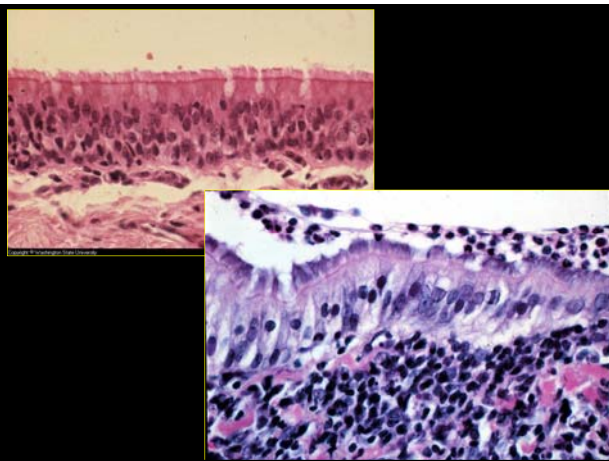
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## **Patologia dos Pulmões**

### **Padrões Anatômicos de Pneumonia**

#### **Formas Especiais**

*Pneumonia gangrenosa*

*Pneumonia por aspiração*

*Pneumonia urêmica*

*Pneumonia granulomatosa*



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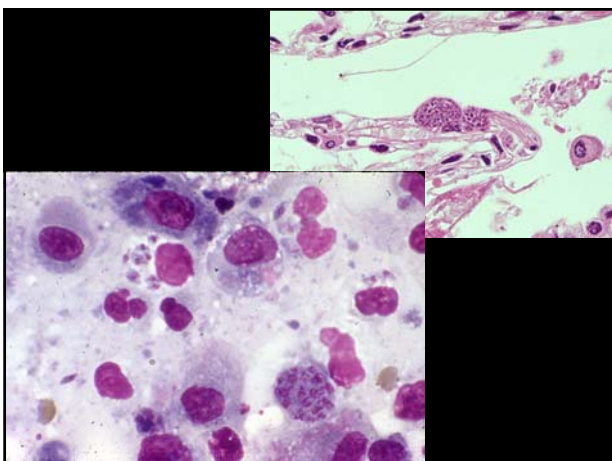


## Patologia dos Pulmões

### Pneumonias Infecciosas Específicas Doenças Virais

Parainfluenza (*Paramyxovirus* Tipo 3): Bov/Equinos  
predispõe à *Mannheimia haemolytica* = Shipping-fever

Cinomose (carnívoros) – *Morbillivirus* Tipo 1  
predispõe ao *Toxoplasma gondii*



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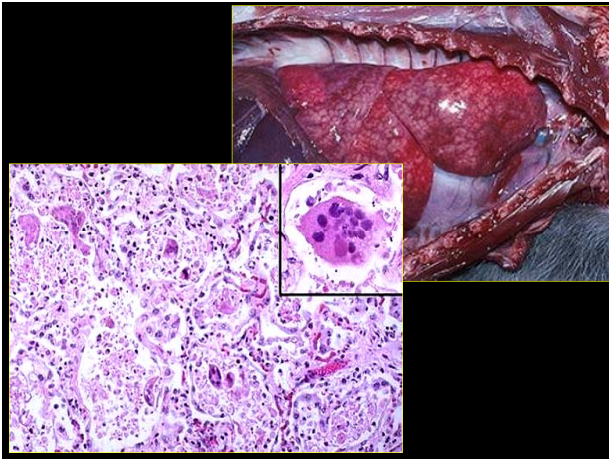
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## **Patologia dos Pulmões**

### **Pneumonias Infecciosas Específicas Doenças Virais**

#### **Adenovirus**

- Cães: +*Bordetella* = Traqueobronquite Infecciosa
- Equinos: Bronquiolite necrotizante
- +imunodeficiência combinada do potro árabe

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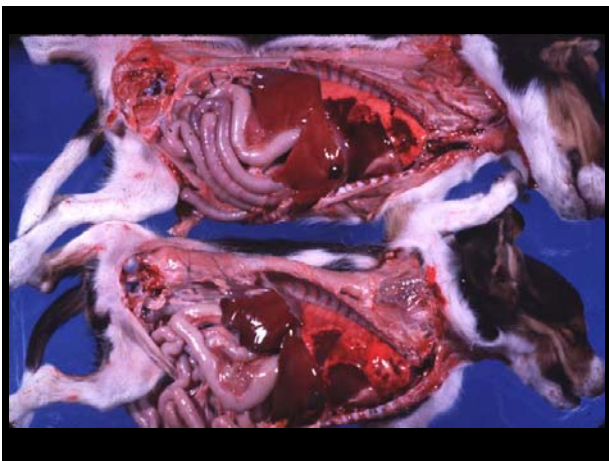
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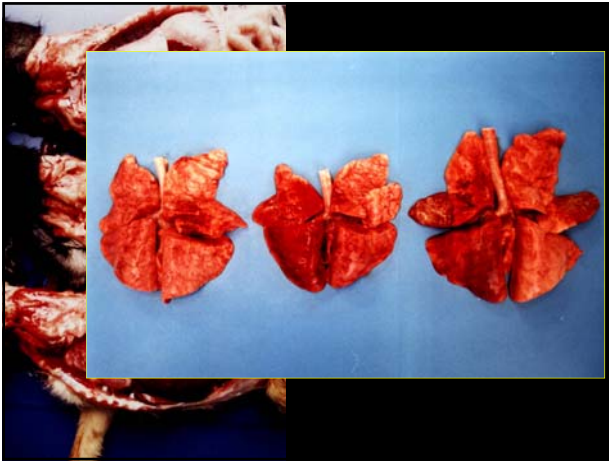
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**Patologia dos Pulmões**

**Pneumonias Infecciosas Específicas  
Doenças Virais**

**Herpesvírus**

- Cães: infecção neonatal**
- Bovinos: I.B.R./F.C.M.**
- Felinos: R.V.F.**

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Distribuição da frequência de amostras de soro bovino, positivas e negativas para anticorpos anti-HVB-1, identificadas pelo teste de ELISA, Brasil, 1998

ESTADO	ELISA		TOTAL
	POS (%)	NEG (%)	
PR	2.236 (54.3)	1.881 (45.7)	4.117
RS	164 (44.4)	205 (55.6)	369
MG	45 (84.9)	8 (15.1)	53
SP	277 (74.9)	93 (25.1)	370
RJ	17 (70.8)	7 (29.2)	24
RO	52 (91.2)	5 (8.8)	57
MS	930 (75.8)	296 (24.2)	1.226
MT	535 (75.7)	172 (24.3)	707
SC	63 (42.3)	86 (57.7)	149
GO	675 (73.8)	239 (26.2)	914
<b>TOTAL</b>	<b>4.994 (62.5)</b>	<b>2.992 (37.5)</b>	<b>7.986</b>

Fonte: Lab. de Virologia – UEL, 1999.

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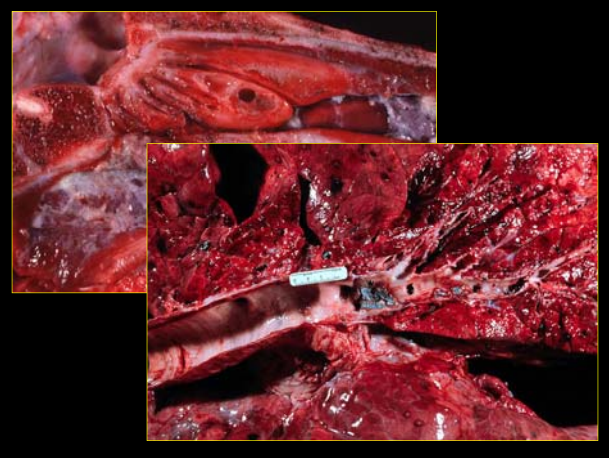
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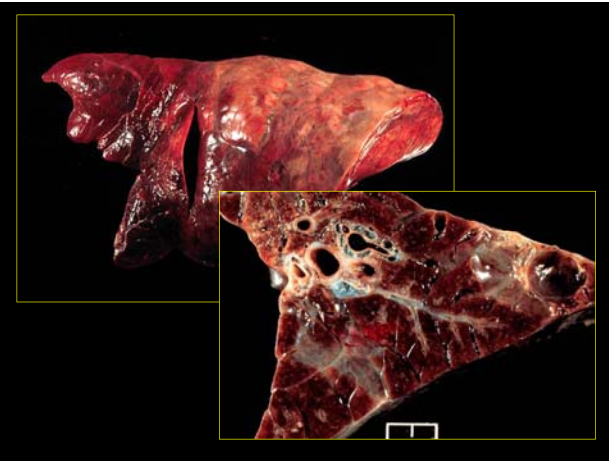
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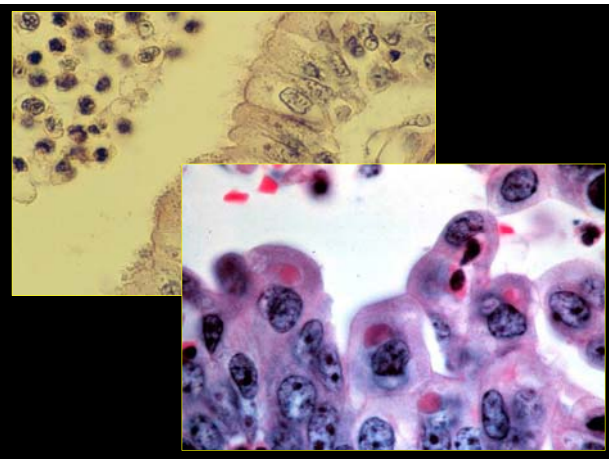
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**Patologia dos Pulmões**

**Pneumonias Infecciosas Específicas**  
**Doenças Virais**

**Pneumovírus**  
**Bovinos (Vírus Respiratório Sincicial)**

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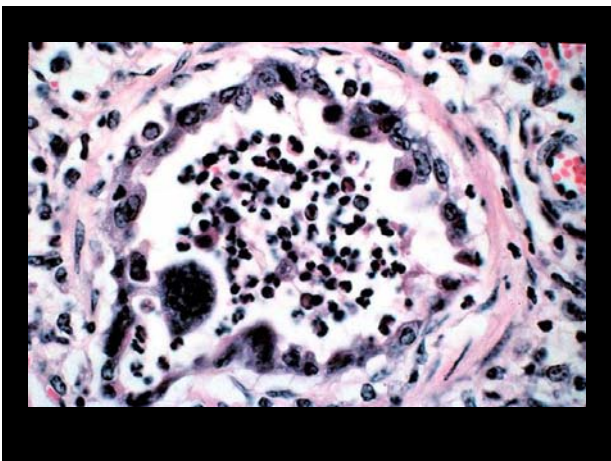
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## Patologia dos Pulmões

Papel dos vírus na depressão dos mecanismos pulmonares de defesa

### 1. IBR, PI3, BRSV

infectam macrófagos  
+ células epiteliais ciliadas

### 2. Efeitos transitórios no transporte mucociliar

### 3. Principais efeitos sobre macrófagos alveolares

↓ fagocitose  
inibem a fusão fagossomo-lisossomo  
inibem a morte intracelular de bactérias

### 4. Efeitos máximos 6-7 dias após a infecção



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## Patologia dos Pulmões

### Pneumonias Infecciosas Específicas Doenças Bacterianas

**Pasteurelose** (*Mannheimia haemolytica*/*Pasteurella multocida*)  
Septicemia hemorrágica/P. Pneumônica (bovinos)  
+ imunodeficiência combinada do potro árabe

*Actinobacillus (Haemophilus) pleuropneumoniae* (suínos)

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## Patologia dos Pulmões



*Mannheimia haemolytica*  
*Pasteurella multocida*

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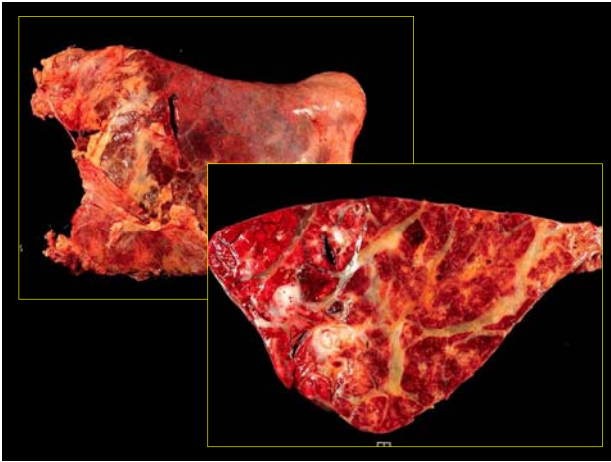
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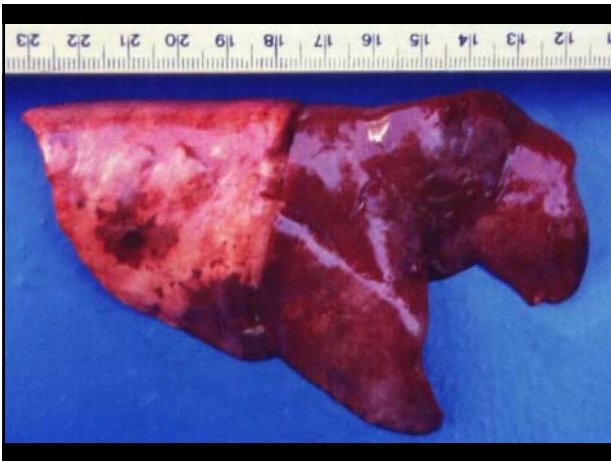
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**Patologia dos Pulmões**

**Pneumonias Infecciosas Específicas**  
**Doenças Bacterianas**

Bordetelose (*Bordetella bronchiseptica*)

Suínos: +*Pasteurella* = Rinite Atrófica

Cães: +*Adenovirus* = Traqueobronquite Infecciosa

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**Patologia dos Pulmões**

**Pneumonias Infecciosas Específicas**  
**Doenças Bacterianas**

**Tuberculose**

*Mycobacterium bovis*

*Mycobacterium tuberculosis*

*Mycobacterium avium*

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### Prevalência da Tuberculose Bovina no Brasil determinada através da prova da tuberculina

LANGENEGGER, J. et al. Tratamento massal da tuberculose bovina com isoniazida. <i>Pesquisa Veterinária Brasileira</i> , v.11, p.23-22, 1991.	Rio Grande do Norte	409 em 932 (43,9%)
COELHO, H.E. et al. Tuberculose em bovinos diagnosticada em Uberlândia-MG durante 10 anos (1986-1995). <i>Higiene Alimentar</i> , v.11, p.9-10, 1997.	Minas Gerais	65 em 1.131 (5,0%)
WANDERLEY, M.S. Produtores e técnicos controlam tuberculose e deixam lição de como enfrentá-la. <i>Balde Branco</i> , p.38-41, Janeiro, 1999.	São Paulo	4.388 em 6.770 (64,8%)
LILLENBAUM, W. et al. Tuberculose bovina. Prevalência e estudo epidemiológico em três propriedades de diferentes sistemas de produção na região dos topes do Estado do Rio de Janeiro. <i>Revista Brasileira de Medicina Veterinária</i> , v.20, p.120-122, 1998.	Rio de Janeiro	207 em 1.632 (12,7%)
LEITE, R.M. & LAGE, A.P. Controle da tuberculose bovina em bovinos da raça Sind pelo tratamento com isoniazida: avaliação e análise de custo. <i>Ciência Veterinária nos Trópicos</i> , v.2, p.21-28, 1999.	Paraíba	27 em 107 (25,2%)

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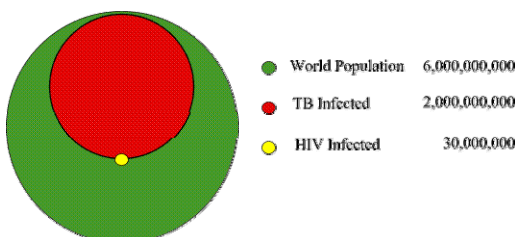
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### A Tuberculose como Zoonose



2,9 milhões óbitos/ano

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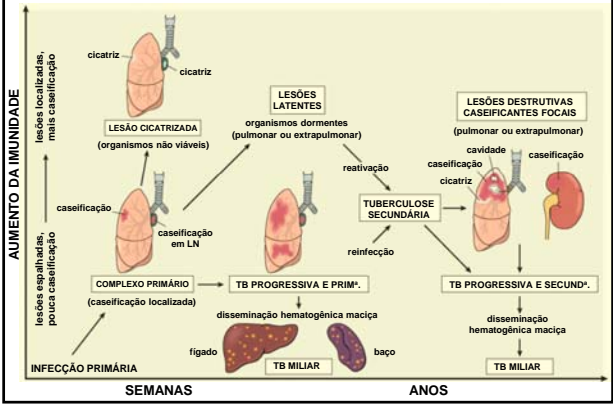
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### Tuberculose




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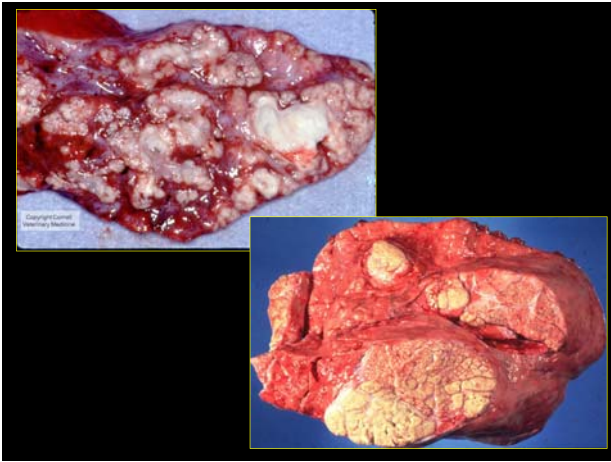
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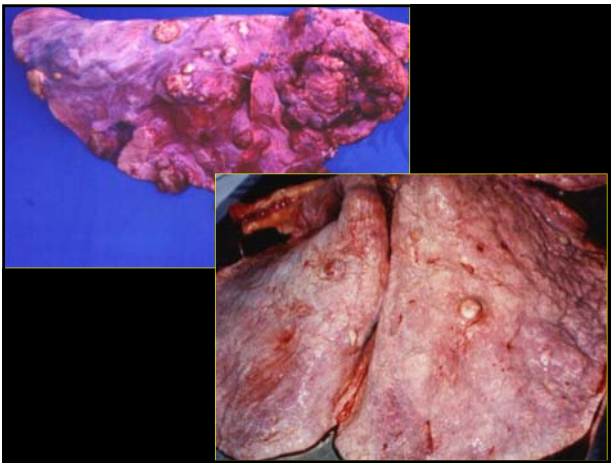
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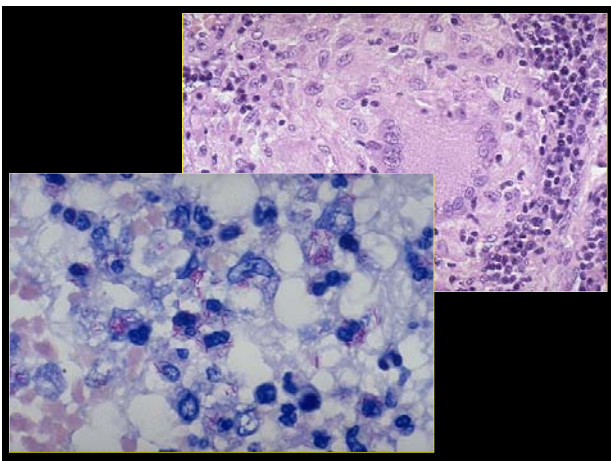
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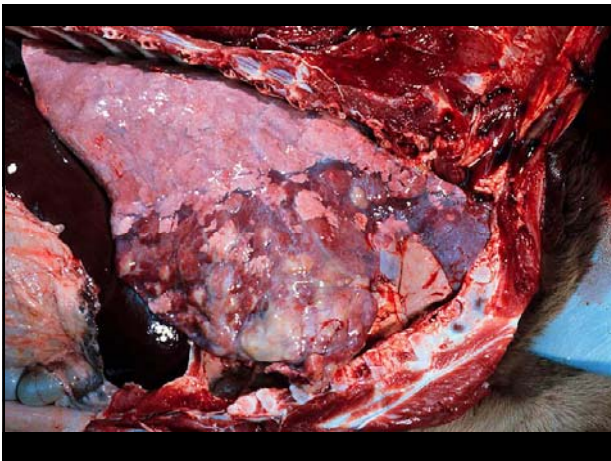
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**Patologia dos Pulmões**

**Pneumonias Infecciosas Específicas**  
**Doenças Bacterianas**

**Pneumonia dos Potros**

*Rhodococcus (Corynebacterium) equi*



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**Patologia dos Pulmões**

**Pneumonias Infecciosas Específicas**  
**Doenças Bacterianas**

Pleuropneumonia contagiosa caprina

Pleuropneumonia contagiosa bovina

Pneumonia enzoótica bovina

Pneumonia enzoótica suína

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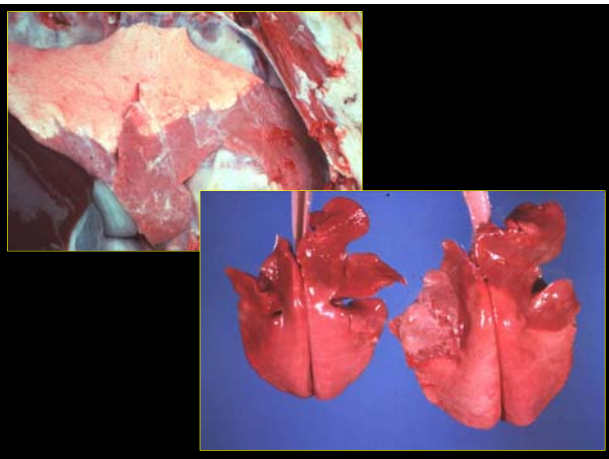
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**Patologia dos Pulmões**

**Pneumonias Infecciosas Específicas**  
**Doenças Bacterianas**

**Clamidiose (*Chlamydia psitacci*)**

**Complexo Respiratório Felino**  
**+Calicivirus**  
**+Herpesvirus**

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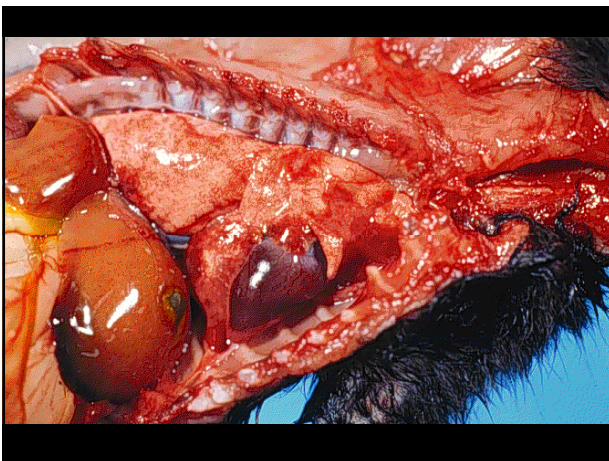
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## Patologia dos Pulmões

Fatores que contribuem para a depressão dos mecanismos pulmonares de defesa anti-bacteriana



1. Infecção viral
2. Estresse
3. ↓ qualidade do ar com ↑ concentração de partículas
4. Temperaturas extremas
5. Desidratação
6. Doença pulmonar intercorrente

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## Patologia dos Pulmões

### Pneumonias Infecciosas Específicas Doenças Fúngicas

**Aspergilose**  
*Aspergillus*

**Criptococose**  
*Criptococcus neoformans*

**Pneumocitose**  
*Pneumocystis carinii*

**Histoplasmose**  
*Histoplasma capsulatum*

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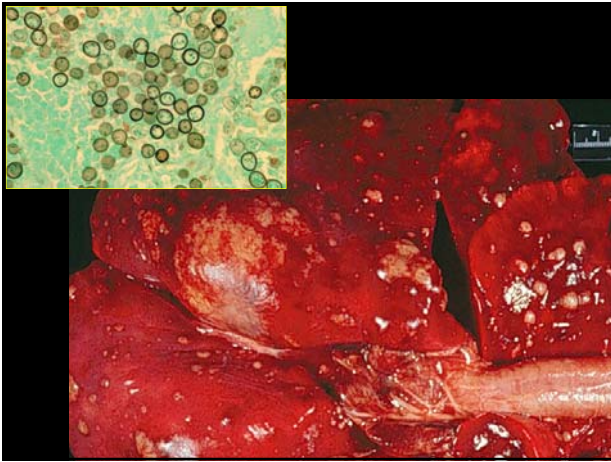
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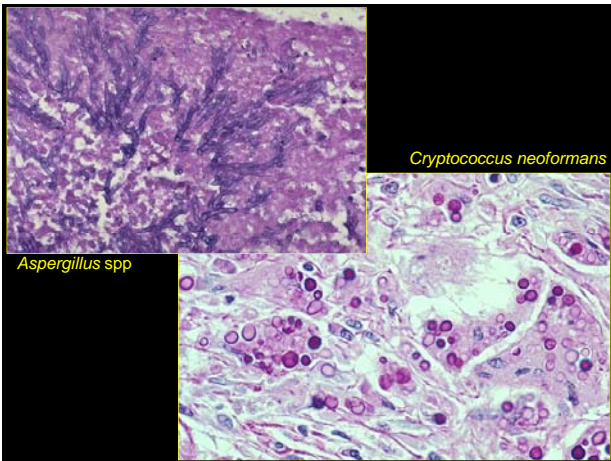
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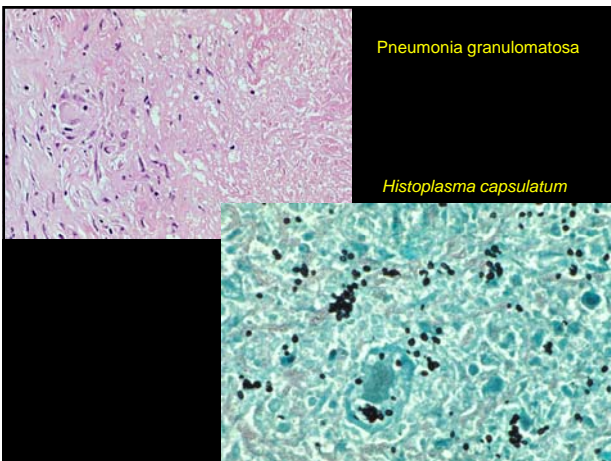
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## Patologia dos Pulmões

### Parasitoses

#### Dictiocaulose

*Dictiocaulus viviparus* – bovinos

*D. arnfieldi* – eqüinos

*D. filaria* – ovinos

#### Hidatidose

*Echinococcus granulosus*

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**Patologia dos Pulmões**

**Neoplasias**

**Primária**

*Carcinoma broncogênico*

**Metástases**

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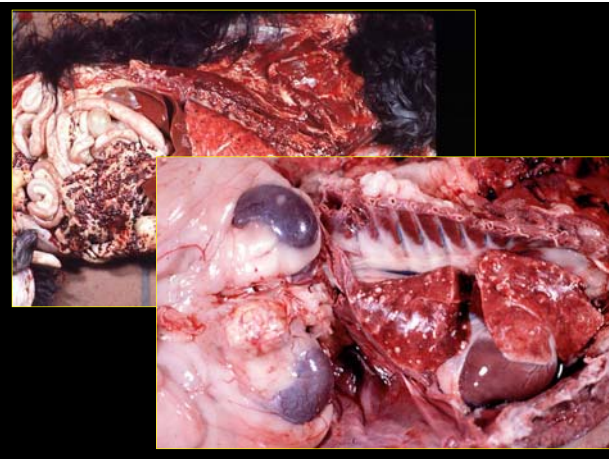
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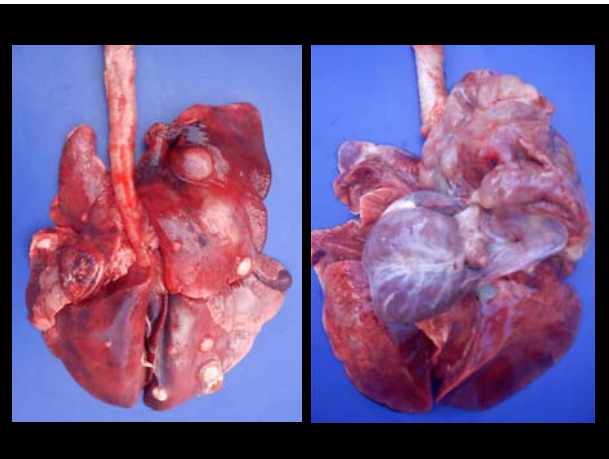
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**Patologia da Pleura**

**Alterações e Efusões**

**Hidrotórax/Quilotórax**

**Inflamação**

**Pleurite**

**Piotórax**

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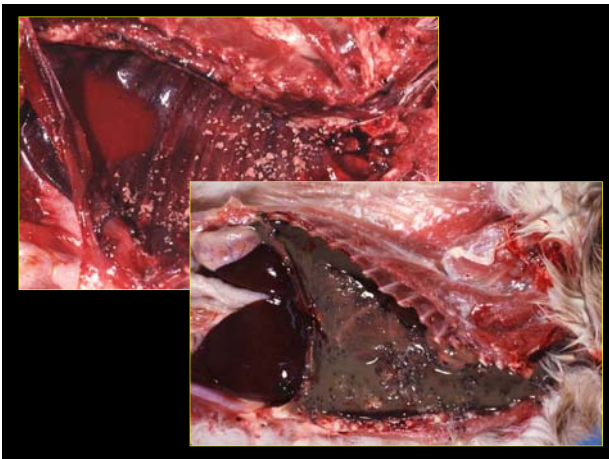
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**Patologia da Pleura**

**Neoplasias**

**Primária**

**Mesotelioma**

**Metástases**

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