

THE COUGHING DOG

- DIAGNOSIS
- TREATMENT



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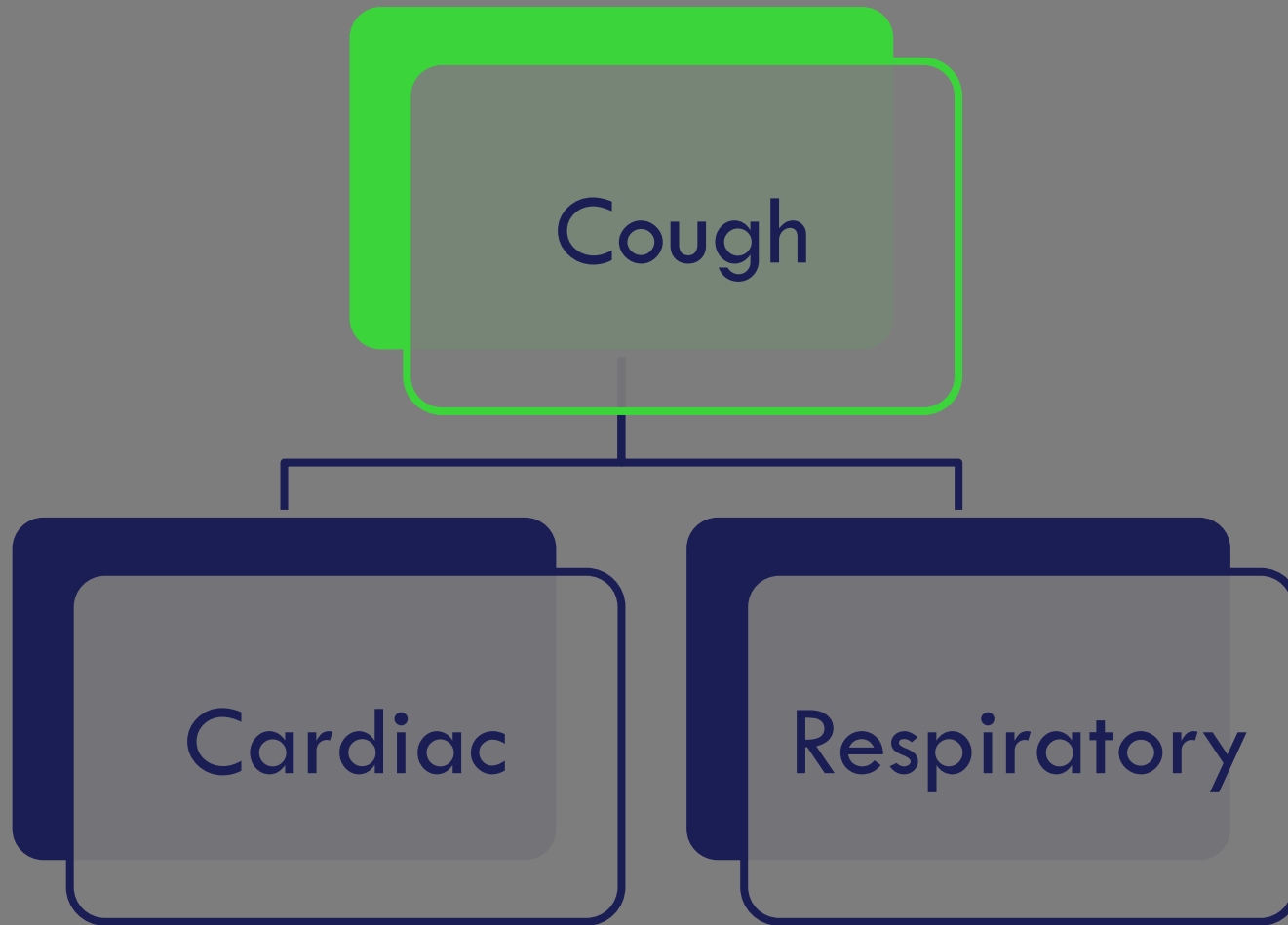
OVERVIEW

- Tracheal collapse
- Eosinophilic bronchopneumopathy
- Heart failure/Mitral valve disease
- Chronic bronchitis
- Idiopathic Pulmonary Fibrosis
- Pneumocystis carinii

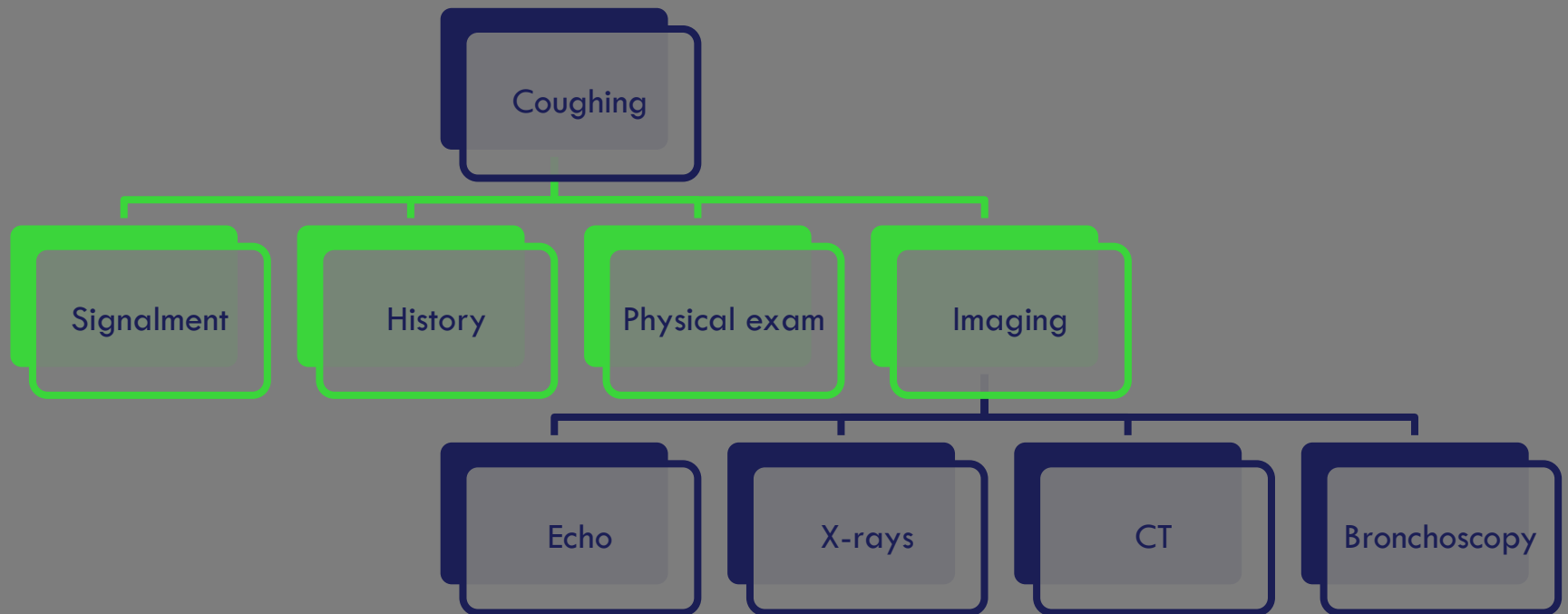
PREFACE...

- Textbook of Veterinary Internal Medicine
 - ▣ 'Coughing is an important component of the defense mechanisms of the respiratory system. Its presence usually indicates an attempt to eliminate foreign material, secretions and irritants from the airways'
- Implications? Treat the cause, not the cough!

DIAGNOSIS



DIAGNOSIS



DIAGNOSIS

- History
 - ▣ 2 most important questions
 - Nature: Moist/Wet or Dry?
 - Dyspnoea?
 - ▣ Other questions
 - Previous treatment
 - Exercise/excitement
 - Eating/drinking
 - Productive
 - Exercise intolerance
 - Night/day
 - Other animals affected



DIAGNOSIS

□ Signalment

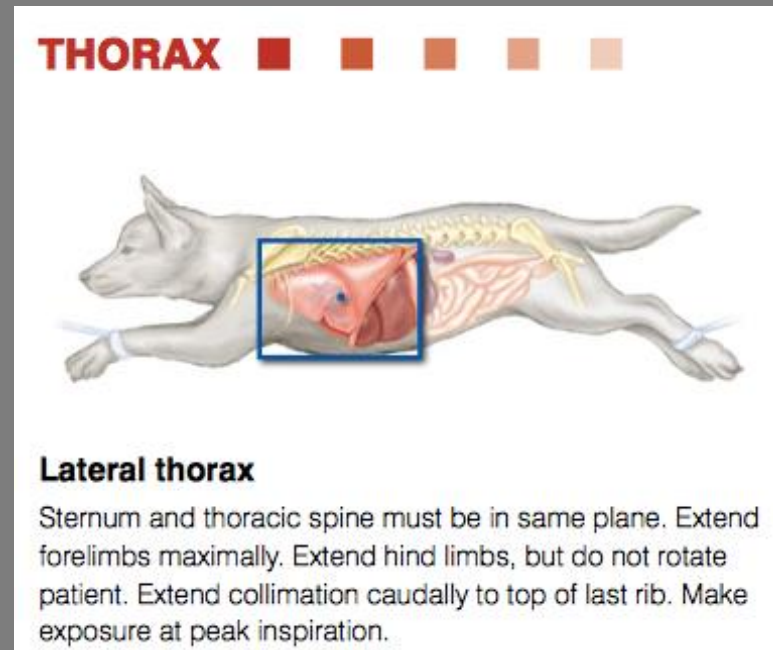


PHYSICAL EXAMINATION

- Auscultate heart: Murmur? L or R? Sinus arrhythmia
- Auscultate lungs: Wheezes, crackles, inspiratory or expiratory
- Breathing pattern
- Hypertrophy of abdominal muscles
- Cachexia
- Elicit cough? At end of consult!
 - ▣ Loud vs Soft

Basic plan for a coughing walk in

1. X-rays

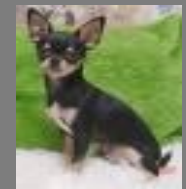


1. NT-proBNP

TRACHEAL COLLAPSE

Clues

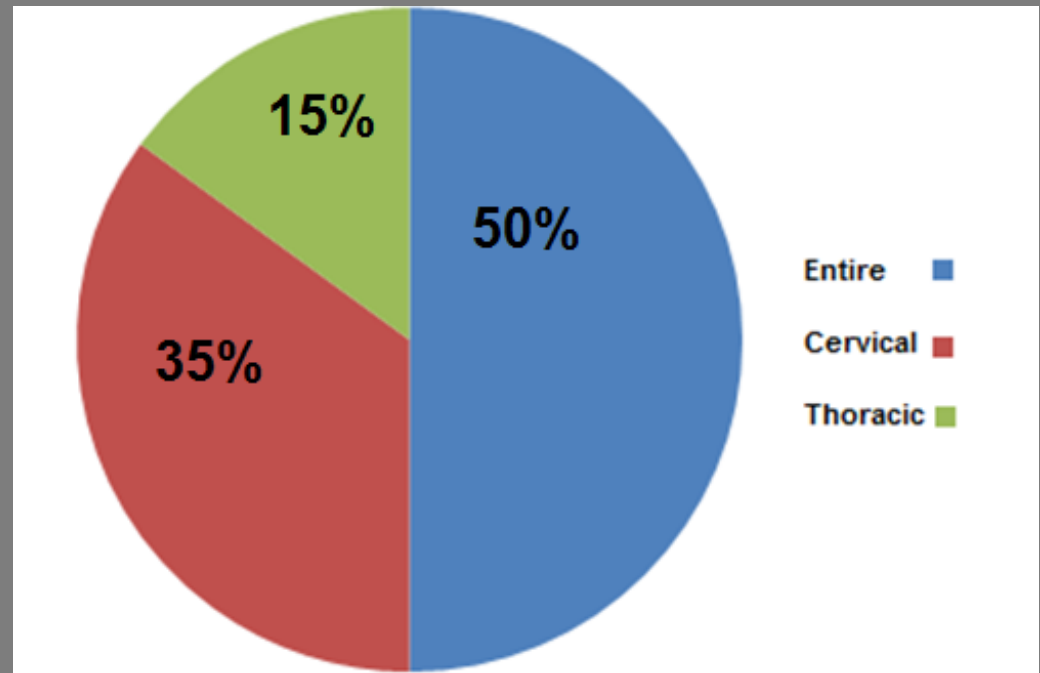
- Signalment
 - ▣ Middle aged (6+ years)
 - ▣ Small/toy breed
- History
 - ▣ Exacerbated by excitement or pulling on collars
 - ▣ Goose honk cough
- Physical exam
 - ▣ Intrathoracic: Expiratory
 - ▣ Extrathoracic: Inspiratory
 - ▣ Not a fan of inducing coughing when unnecessary
 - ▣ Prominent dorsolateral edges to rings



TRACHEAL COLLAPSE

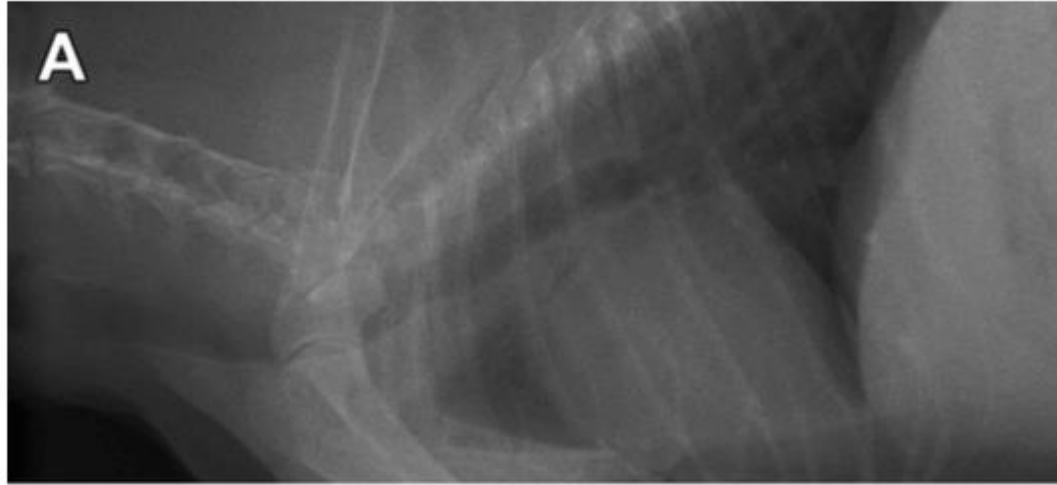
Diagnosis

- ❑ Chest x-rays
- ❑ Fluoroscopy
- ❑ Bronchoscopy



TRACHEAL COLLAPSE

Xrays



TRACHEAL COLLAPSE

Fluoroscopy

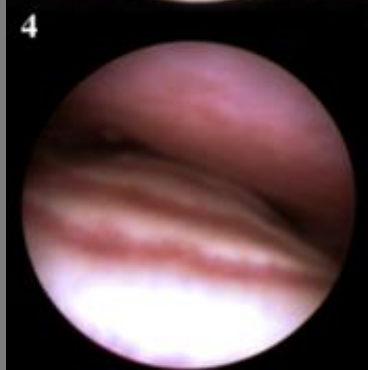
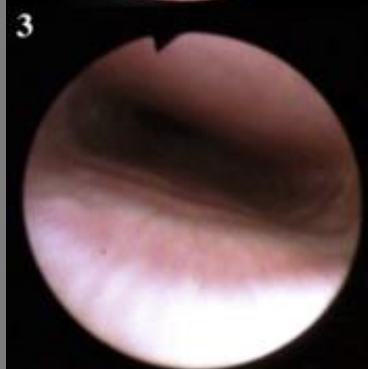
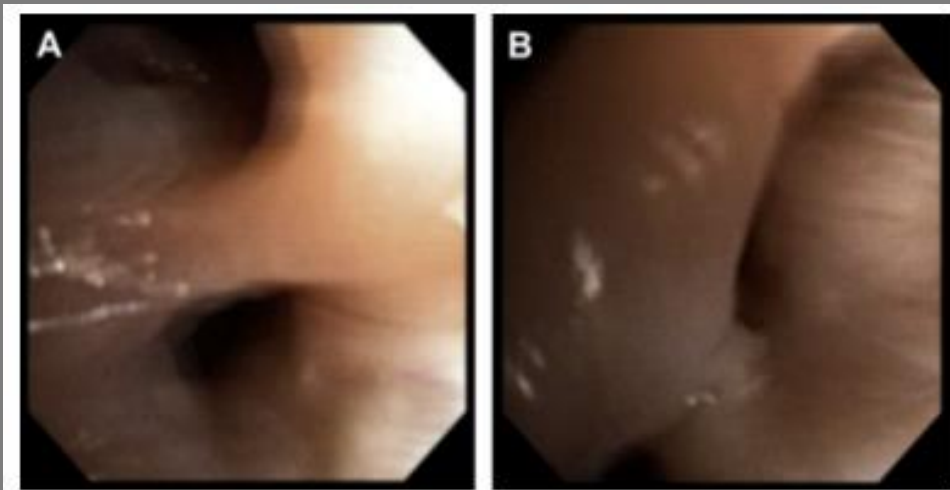
- Ideal test
 - ▣ Dynamic
 - ▣ Coughing
 - ▣ No GA
 - ▣ Bronchial collapse
- Fluoro vs X-ray



TRACHEAL COLLAPSE

Bronchoscopy

- Gold standard
 - ▣ Larynx and bronchi
 - ▣ Grade
 - ▣ Concurrent disease: Lung wash
- Anaesthetic risk



TRACHEAL COLLAPSE

Medical management

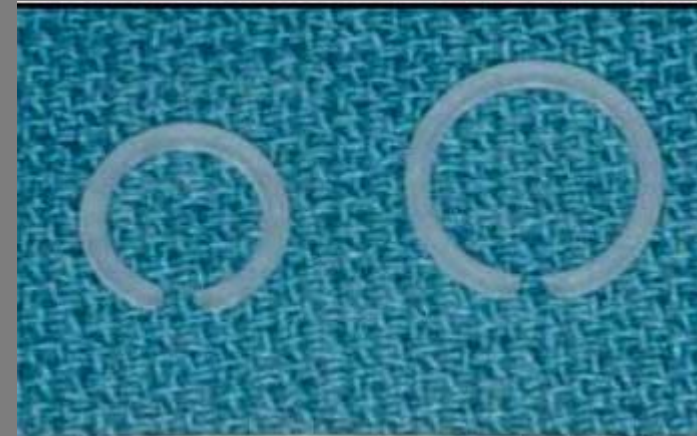
- Medical vs surgical/interventional
- Improvement vs resolution
- 70% success rate >12 months
 - Anti-tussives
 - Corticosteroids
 - Lomotil
 - Antibiotics
 - Bronchodilators
 - Cartrophen?



TRACHEAL COLLAPSE

Surgical management

- ❑ Indications and choosing appropriate candidate
- ❑ Laryngeal and bronchial collapse
- ❑ On going medical management
- ❑ Choosing the right candidate
- ❑ Location of collapse
- ❑ Complications
- ❑ Don't stent and place rings: worst of both worlds



TRACHEAL COLLAPSE

Stenting

- Indications
- Measurements
- Length of stenting
- Cost
- On going coughing
- Complications



TRACHEAL COLLAPSE

Prevention

- Prevention
 - Weight reduction
 - Exercise reduction
 - Avoid allergens, smoke, gasses, dust etc
 - Chest harness



EOSINOPHILIC BRONCHOPNEUMOPATHY

Aetiology

- EBP: PIE or EPG
- Immunological hypersensitivity
- Allergen rarely identified.
- Intradermal skin testing

EOSINOPHILIC BRONCHOPNEUMOPATHY

Diagnosis

□ Diagnosis

▣ Signalment

- Often young to middle aged dogs

▣ History

- chronic cough, productive cough, moist/soft cough, exercise intolerance, nasal discharge

▣ Physical examination

- Coughing, dyspnoea, wheezes and crackles,

▣ Diagnostics:

- Bloods may show eosinophilia. Absence does not exclude it

EOSINOPHILIC BRONCHOPNEUMOPATHY

Chest xrays

- Variable
 - Broncho-interstitial
 - Alveolar
 - Nodular/granuloma
 - Peribronchial cuffing
 - Bronchiectasis in chronic cases



EOSINOPHILIC BRONCHOPNEUMOPATHY

Bronchoscopy

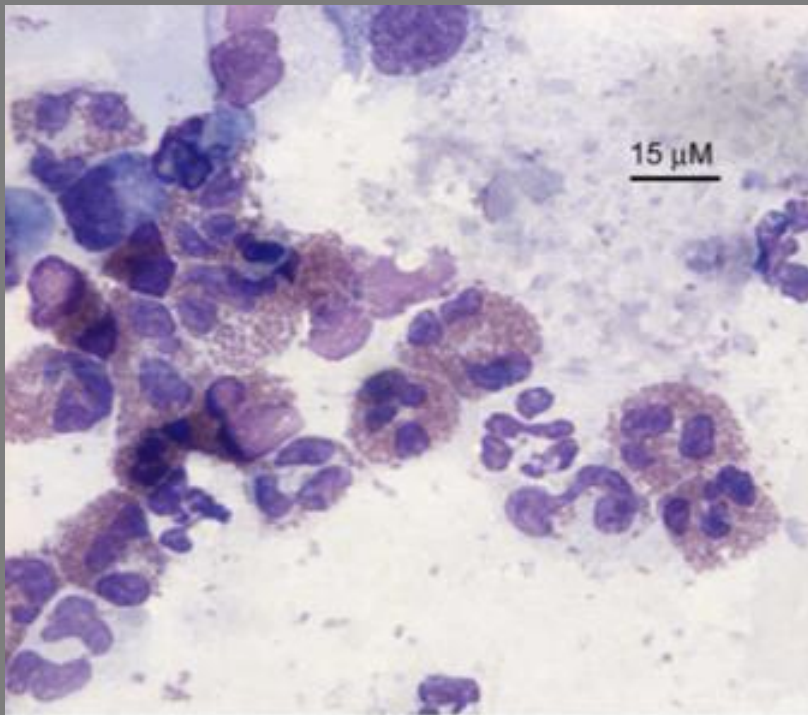
- ❑ Mucosal hyperaemia
- ❑ Polypoid and irregular mucosa
- ❑ Large amounts of green mucopurulent material



EOSINOPHILIC BRONCHOPNEUMOPATHY

BAL

- Eosinophils are the predominant cell type
- Normal <5% eosinophils
- Bacterial and fungal culture: negative



EOSINOPHILIC BRONCHOPNEUMOPATHY

Rule outs

- Parasites
 - ▣ Lung worms
 - ▣ Heart worm
 - Occult heartworm
 - Endemic area: SNAP test



EOSINOPHILIC BRONCHOPNEUMOPATHY

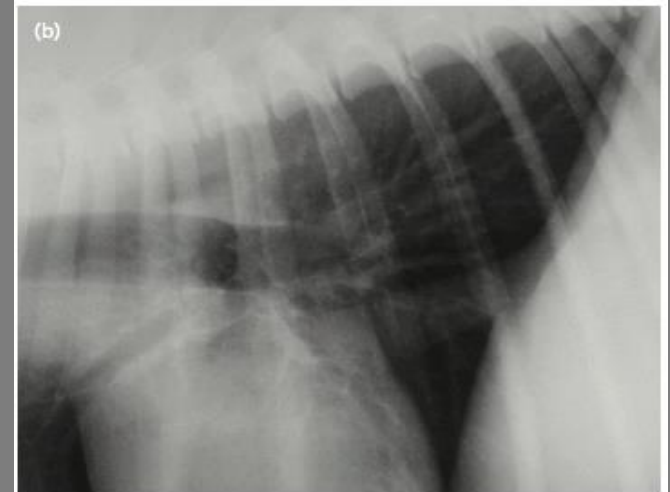
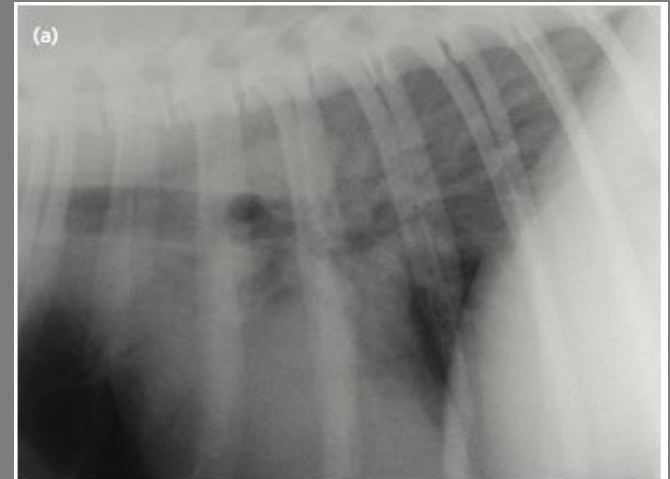
Treatment



MITRAL VALVE DISEASE

Diagnosis

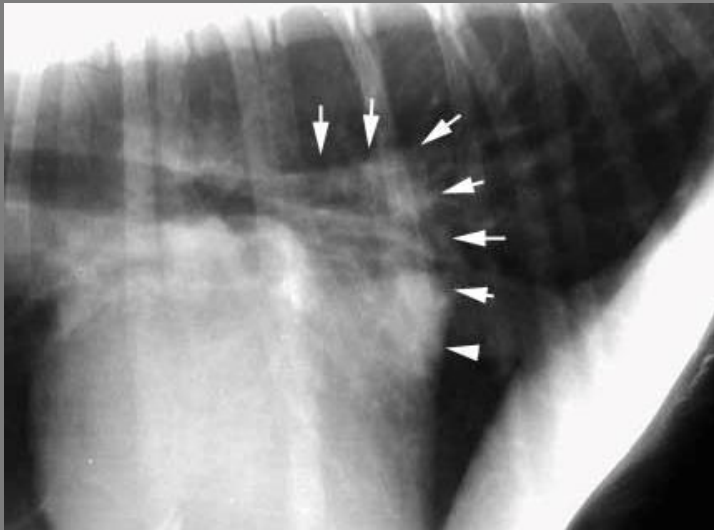
- Signalment
- History
- Physical exam
- NT-ProBNP
- X-rays
- Referral for echo



MITRAL VALVE DISEASE

Interpreting radiographs

1. Cardiac size
2. Pulmonary veins
3. Pulmonary oedema



MITRAL VALVE DISEASE

Echocardiography

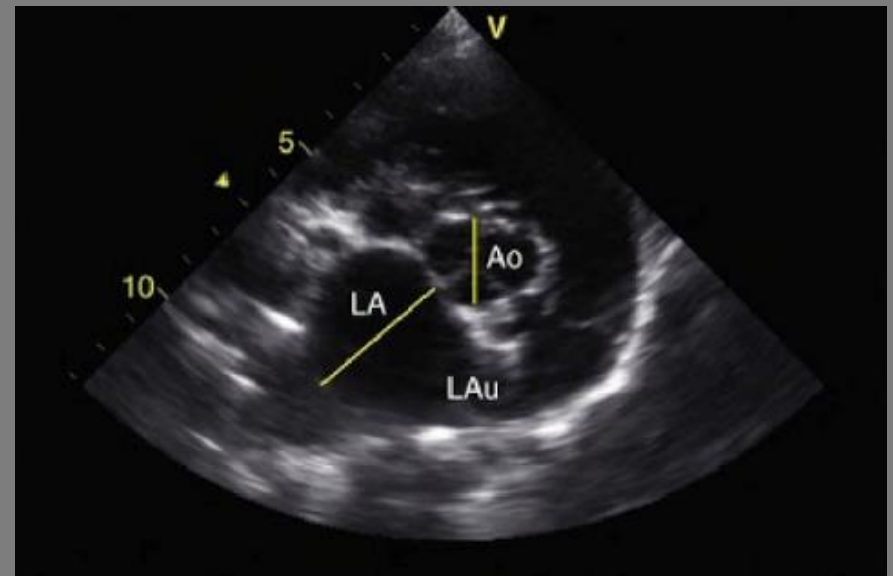
- Very useful diagnostic tool

- LA:Ao

Grade	Mild	Moderate	Severe
LA:Ao	1.6-2	2-2.5	>2.5

- Pulmonary hypertension

- TV pressure > 25mmHg



MITRAL VALVE DISEASE

Coughing

- What can cause a dog with mitral valve disease to cough?
 - Pulmonary oedema
 - Pulmonary hypertension
 - Mainstem bronchial compression
 - Something completely unrelated!
 - Tracheal collapse
 - Chronic bronchitis
 - IPF
 - Pulmonary neoplasia

MITRAL VALVE DISEASE

Treatment

- Pulmonary oedema
 - ▣ Triple therapy
 - Frusemide 2mg/kg BID
 - ACEi 0.25-0.5mg/kg SID
 - Pimobendan 0.25mg/kg BID
- Pulmonary hypertension
 - Sildenafil 1mg/kg TID and up-titrated
 - <3mg/kg PO TID
- Main stem bronchial compression
 - ▣ Codeine 1mg/mg TID
 - ▣ WARN OWNERS

MITRAL VALVE DISEASE

Treatment

- EPIC study



CHRONIC BRONCHITIS

- ❑ Chronic inflammatory disease
- ❑ Diagnosis of exclusion
- ❑ Tricky diagnosis

Canine Chronic Bronchitis



CHRONIC BRONCHITIS

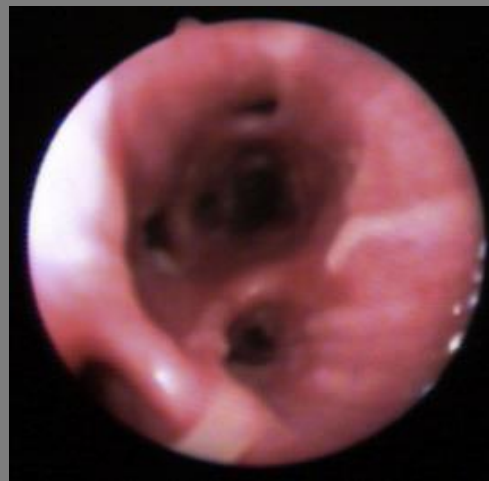
Diagnosis

- History
 - ▣ Chronic cough
 - ▣ Otherwise well dog
- Physical exam
 - ▣ Sinus arrhythmia
 - ▣ Harsh lung sounds, wheezes

CHRONIC BRONCHITIS

Diagnosis

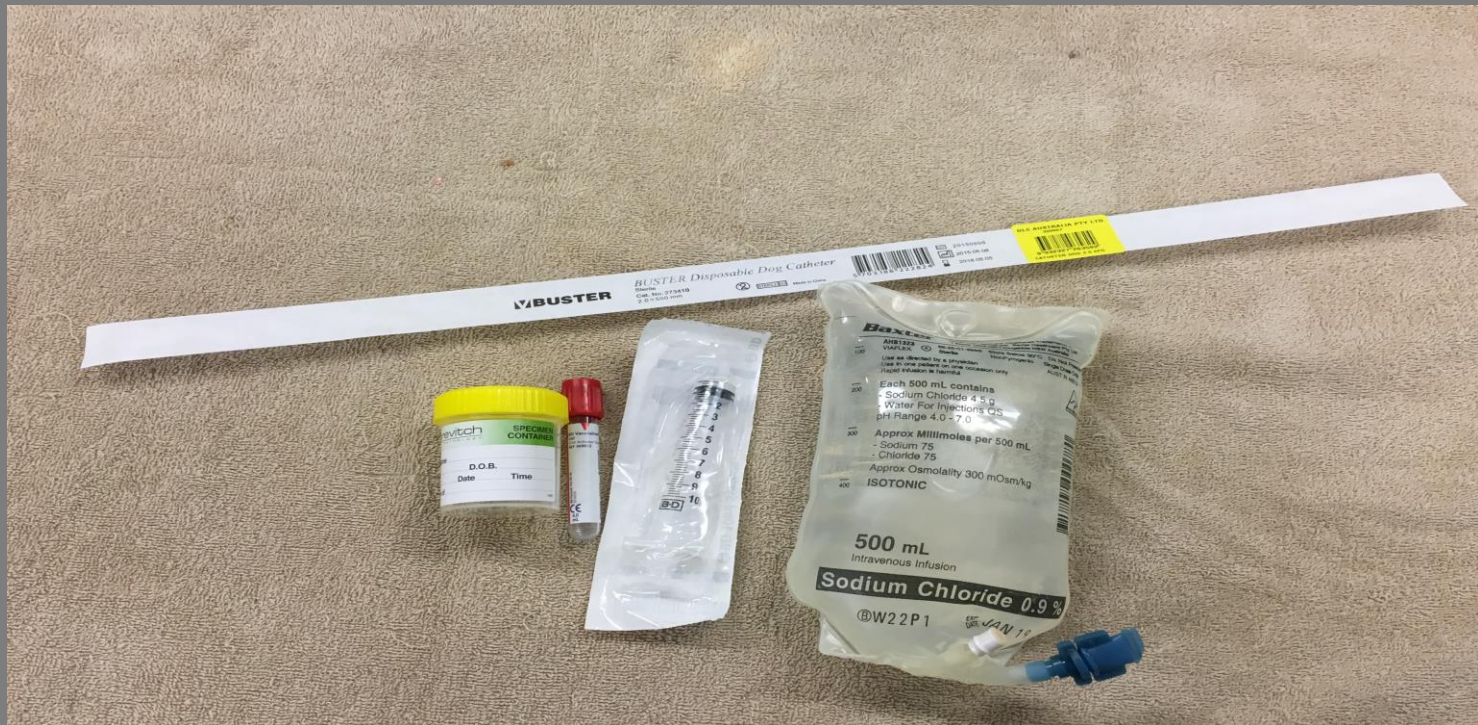
- Imaging
 - ▣ X-rays/CT
 - ▣ Bronchoscopy
- BAL
 - ▣ Cytology
 - ▣ Culture
 - ▣ PCR
- Bloods
 - ▣ NT-proBNP



CHRONIC BRONCHITIS

Foolproof BAL

	<10kg	>10kg
Volume saline	4-6ml	6-8ml
Syringe size	10ml	10ml



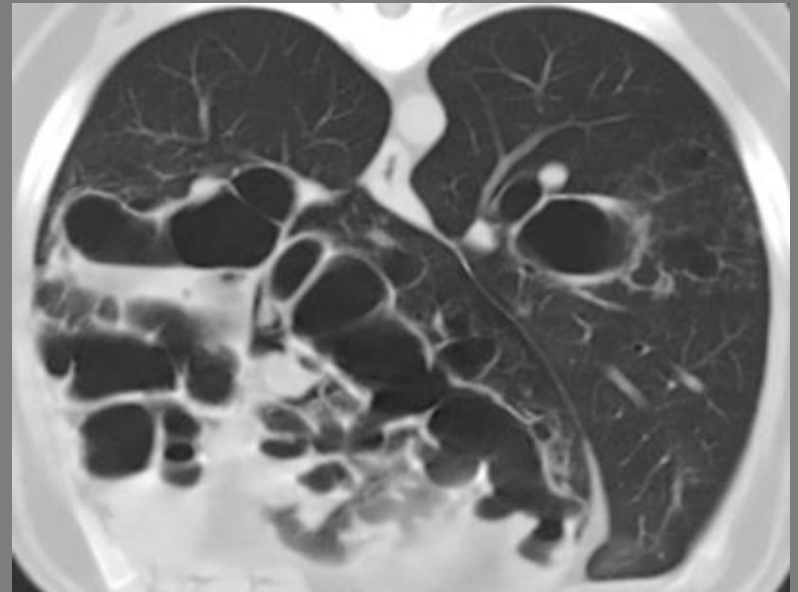
CHRONIC BRONCHITIS

Treatment

- Owner education: resolution vs improvement
- Remove potential irritants
- Antibiotics based on MC&S
- Corticosteroids
- Bronchodilators?
- Antitussives if all else fails

BRONCHIECTASIS

- ❑ Chronic inflammation/infection
- ❑ Permanent and progressive damage
- ❑ Cylindrical and saccular forms
- ❑ CT most sensitive
- ❑ Treatment
 - ▣ Underlying cause
 - ▣ Antibiotics
 - ▣ N acetyl cysteine
 - ▣ AVOID ANTITUSSIVES
 - ▣ Careful immune suppression



IDIOPATHIC PULMONARY FIBROSIS

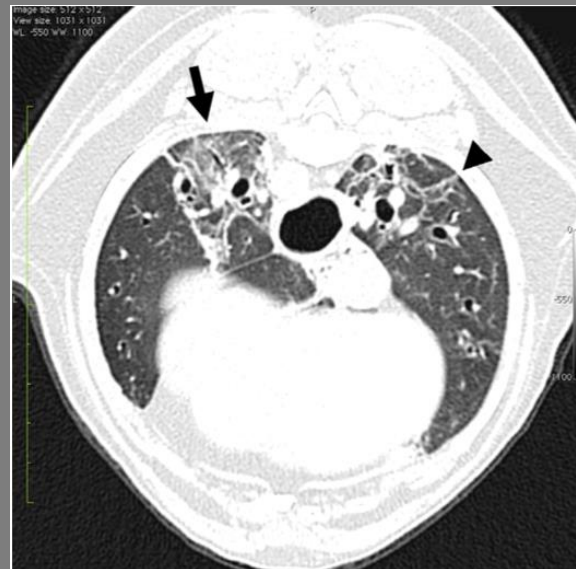
- Chronic progressive interstitial lung disease
- Mainly middle aged WHWTs



IDIOPATHIC PULMONARY FIBROSIS

Diagnosis

- History
 - ▣ Chronic
- Physical exam
 - ▣ Inspiratory Velcro crackles
- Imaging
 - ▣ X-rays
 - ▣ CT scan
- BAL
- Biopsy



IDIOPATHIC PULMONARY FIBROSIS

Treatment

- Corticosteroids
 - ▣ 0.5mg/kg PO SID
- Bronchodilators
 - ▣ Theophylline 10mg/kg PO BID
- Antitussives
 - ▣ Codeine 1mg/kg PO TID
- Deterioration despite above treatment
 - ▣ PHT
 - PDE5 inhibitors Sildenafil 1mg/kg PO TID
 - ▣ Pneumonia
 - Antibiotics
- Poor prognosis

Pneumocystis carinii

- ❑ Fungal pathogen
- ❑ Immunocompromised
- ❑ Young CKCS and Dachshunds
- ❑ Difficult to diagnose
- ❑ Non responsive to regular ABs
- ❑ Potentially life threatening
- ❑ DRY EYE

