

# Mouth Breathing Moggies



**Craig Reilly BVM&S CertSAM MRCVS**



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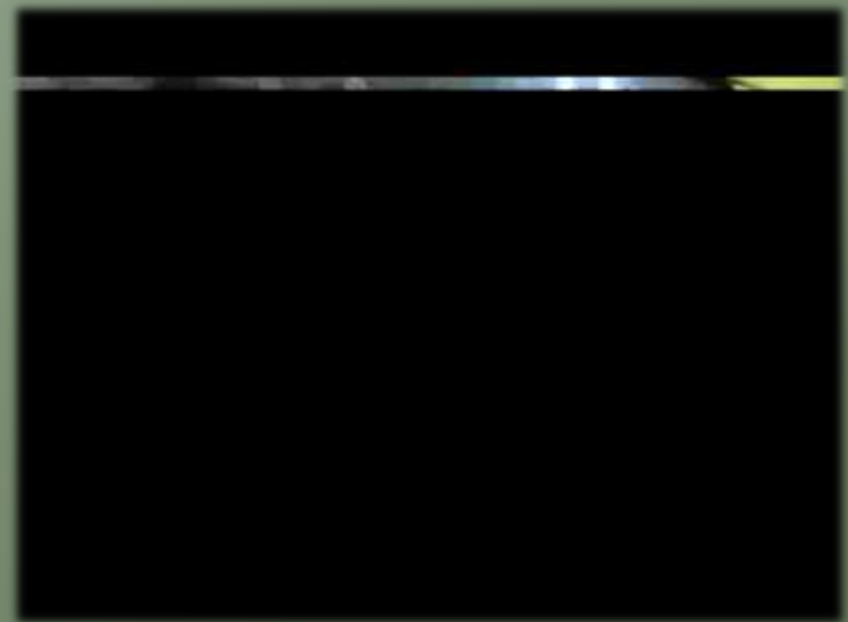


- Assessment
- Initial Presumptive Diagnosis?
- Review Causes of Dyspnoea and Therapy in acute cases
- Chronic management?



# Initial assessment

- Signalment and history
- Observation of demeanour and breathing pattern
- Clinical examination  
?delay until stabilised?
- Auscultate chest  
(murmur/gallop/airway sounds)
- Beware normal heart rate!



Courtesy: ICU, Vet. Clinical Medicine, Madras Veterinary College, Chennai- 600 007, Tamil nadu, India



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# Significance of breathing pattern

Loud airways



Stenotic nares

Inspiratory Stridor

Expiratory stridor

**URT**

**Pharynx/larynx**

**Intrathoracic  
trachea / bronchi**

**Lung parenchyma**

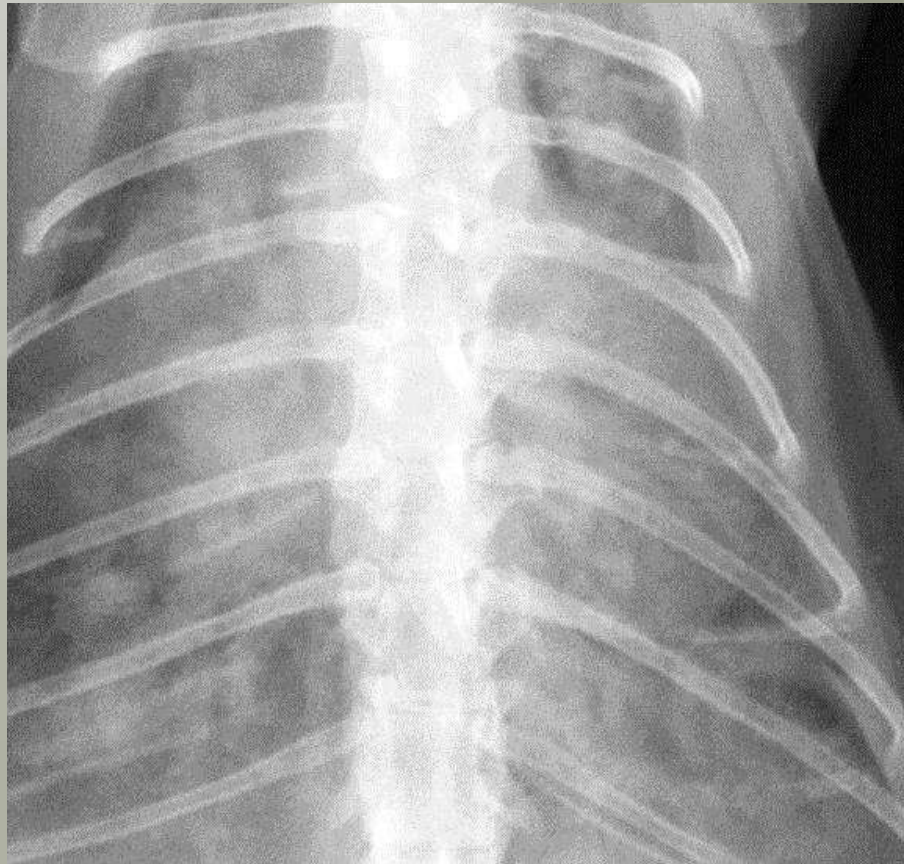
**Pleural space**

**Small airway**



Nasopharyngeal polyp

# Parenchymal Lung Disease (rapid shallow breaths)



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# Pleural Space disease

(short choppy breaths progressing to paradoxical respiration: abdomen and chest moving in opposite directions)

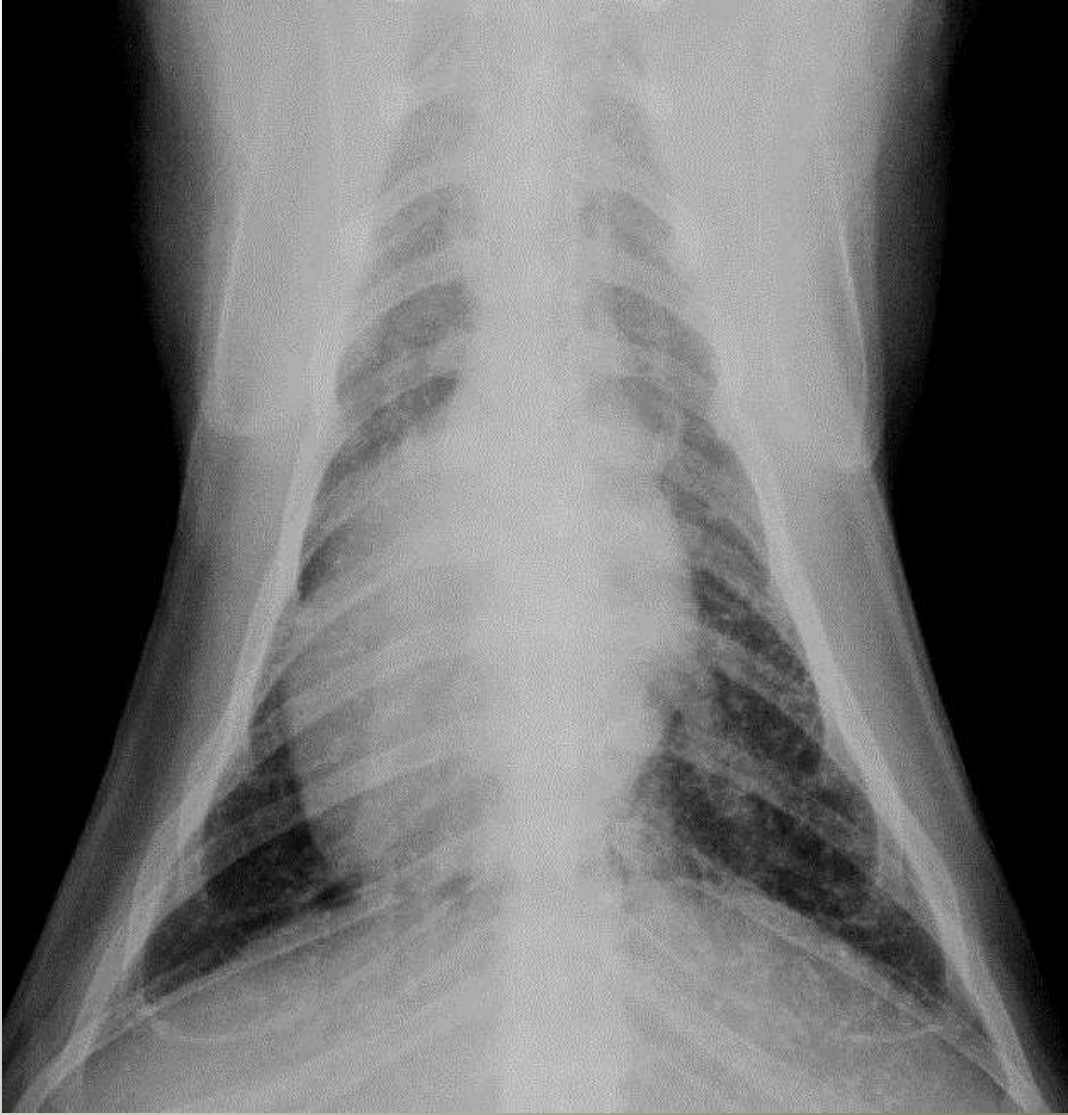


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# Lower airway disease

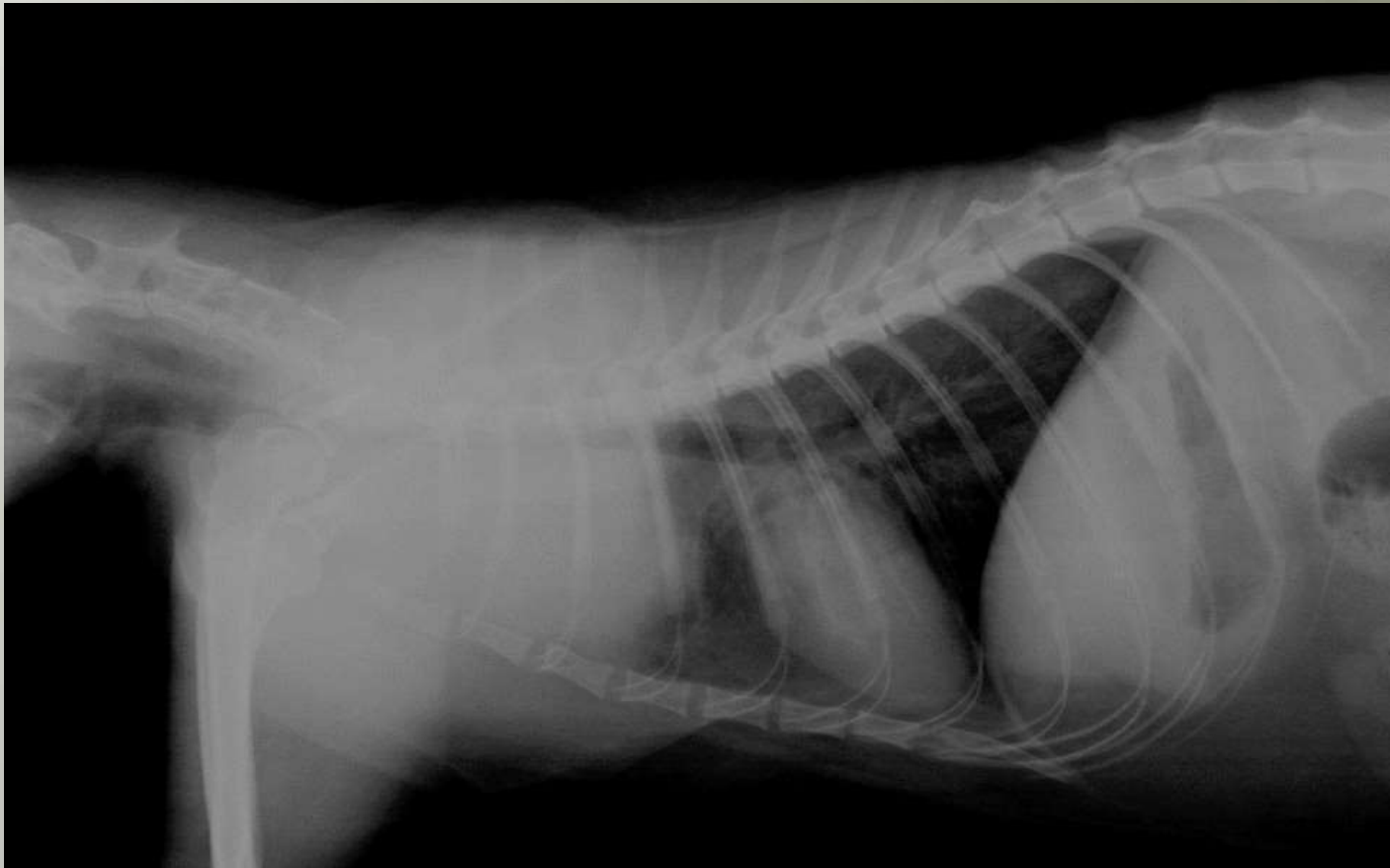
Short  
inspiration,  
prolonged  
expiration



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# Mediastinal mass (expiratory stridor)



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# It`s not always easy to tell!



Cyanosis:  $\downarrow O_2$   $\uparrow$ deoxyhaemoglobin ☹️

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**..much easier in slow motion!**

**..when sedated**



**...or slow replay  
using technology –  
new iphone5s  
SloMo (fantastic  
for lameness)**

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# In Severe Respiratory Distress?

- Avoid further stressing the cat
- **Oxygen (won't do harm: but virtually ineffective in anaemia)**
- Delay investigation until stabilised if possible +/- sedation



# Slightly more high tech....



Buster O<sub>2</sub> tent (£)  
(Care – overheating!!)



Shorline O<sub>2</sub>  
Door (££?)  
(remember need  
piped/portable O<sub>2</sub>)

6<sup>th</sup>-8<sup>th</sup> intercostal

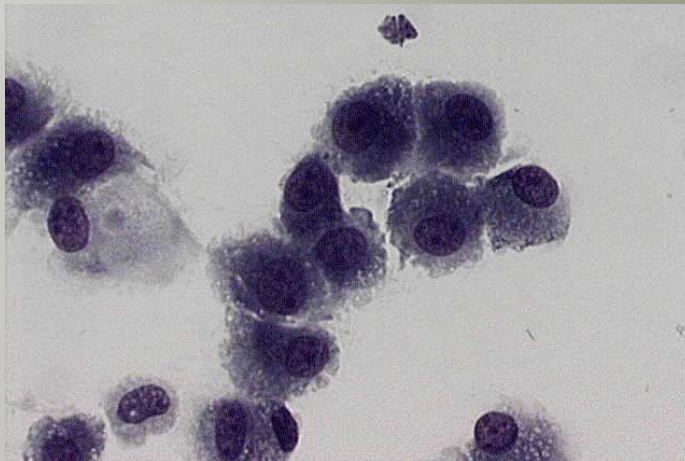
# Fine needle aspirate



- Air
- Transudate
- Modified transudate
- Exudate
- Chyle/pseudochyle
- Cells from abdominal organs
- Blood
- Pulmonary oedema fluid (well oxygenated)

# Practice laboratory

- **Diagnosis in <5 mins**
- **More accurate prognosis/therapy**
- **Specialist confirmation?**

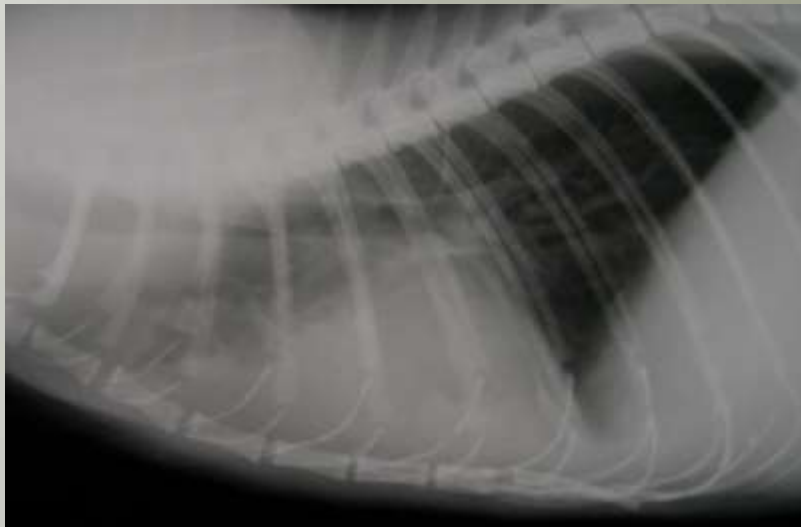


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# Radiography and ultrasonography

- Sedation (personal preference and familiarity)
- vital to have anaesthetic machine ready in case of respiratory failure



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# Causes of Dyspnoea

Don't focus solely on  
respiratory system!!



Methaemoglobinaemia

Oxidative damage to  
haemoglobin

- **Paracetamol**
- Chemotherapy
- Local anaesthetic



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# Blue is the new black?

## Congenital methaemoglobinaemia?



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# Non-respiratory Causes of Dyspnoea

- Methaemoglobinaemia
- Anaemia – acute only
- Congestive Heart failure?
  - Rate (beware!)
  - Gallop rhythm
  - Murmur (significance in dyspnoea?)
  - LA size?



# Cardiology for medics!

LA is usually enlarged if there is a cardiac cause of dyspnoea!



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# **Clinical signs and left atrial size in cats with cardiovascular disease in general practice**

S. Smith<sup>1</sup>,

J. Dukes-McEwan<sup>2</sup>

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Issue

**Journal of Small Animal Practice**

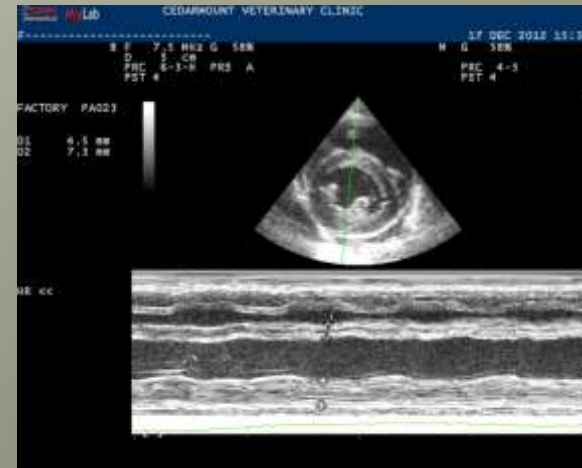
Volume 53, Issue 1, pages 27–33, January 2012



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# CHF (classification of HCM?)



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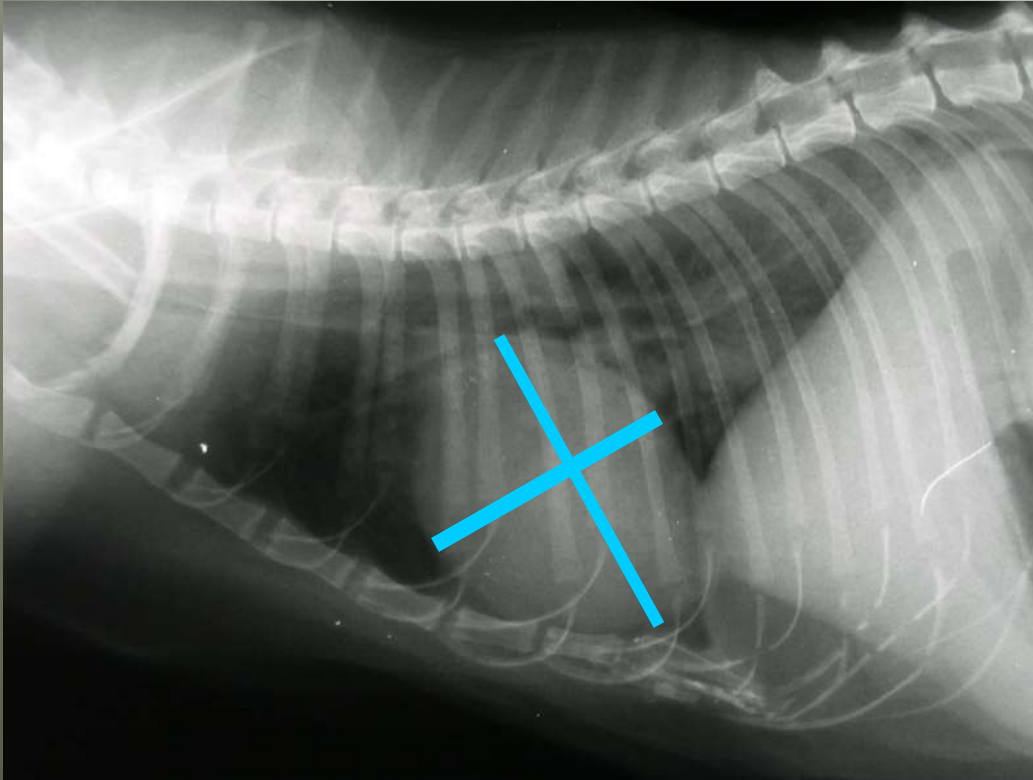
# Echocardiography

## Feline Myocardial Diseases (Phil Fox)

	LA	LVFW <sub>d</sub>	FS	LVID <sub>d</sub>
HCM	+/- >16mm	>6mm	OK	
Restrictive CM	>16mm (often >20mm)	OK	OK	OK
Dilated CM	>16mm	OK	<25%	>21mm
Endomyocardial fibrosis	>22mm	OK	OK	Speckled myocardium and mid-ventricular "band-like" plaque

+ assess LA for echocardiatic "smoke"  
 suggesting swirling / clotting of blood  
 - needs aspirate!

# Heart Size

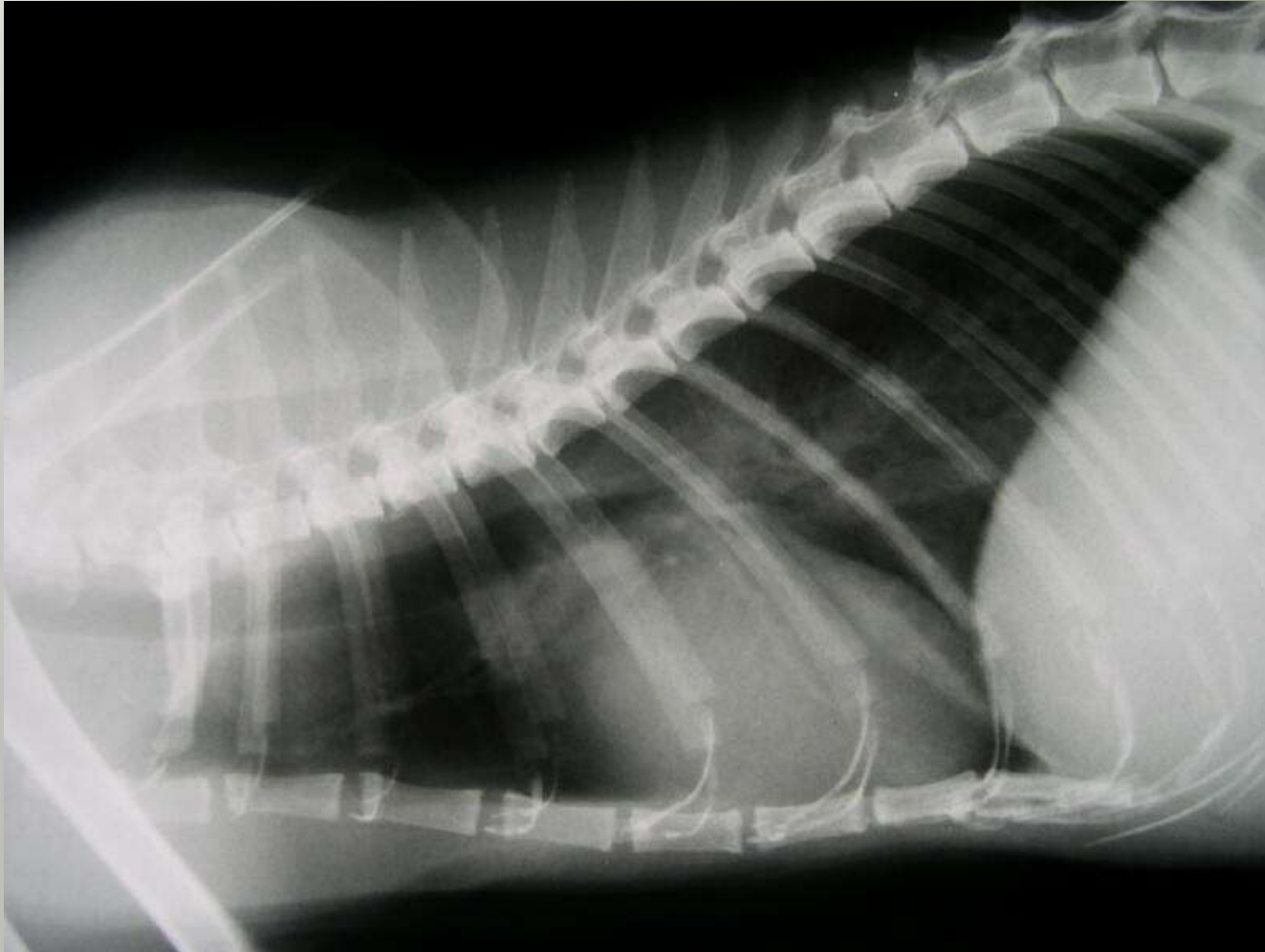


- **Lateral:** 2/3rds height, 2 rib spaces wide (or **VHS 7-8**)
- **Dorsoventral:** 2/3rds width

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# Cardiomegaly and pulmonary congestion

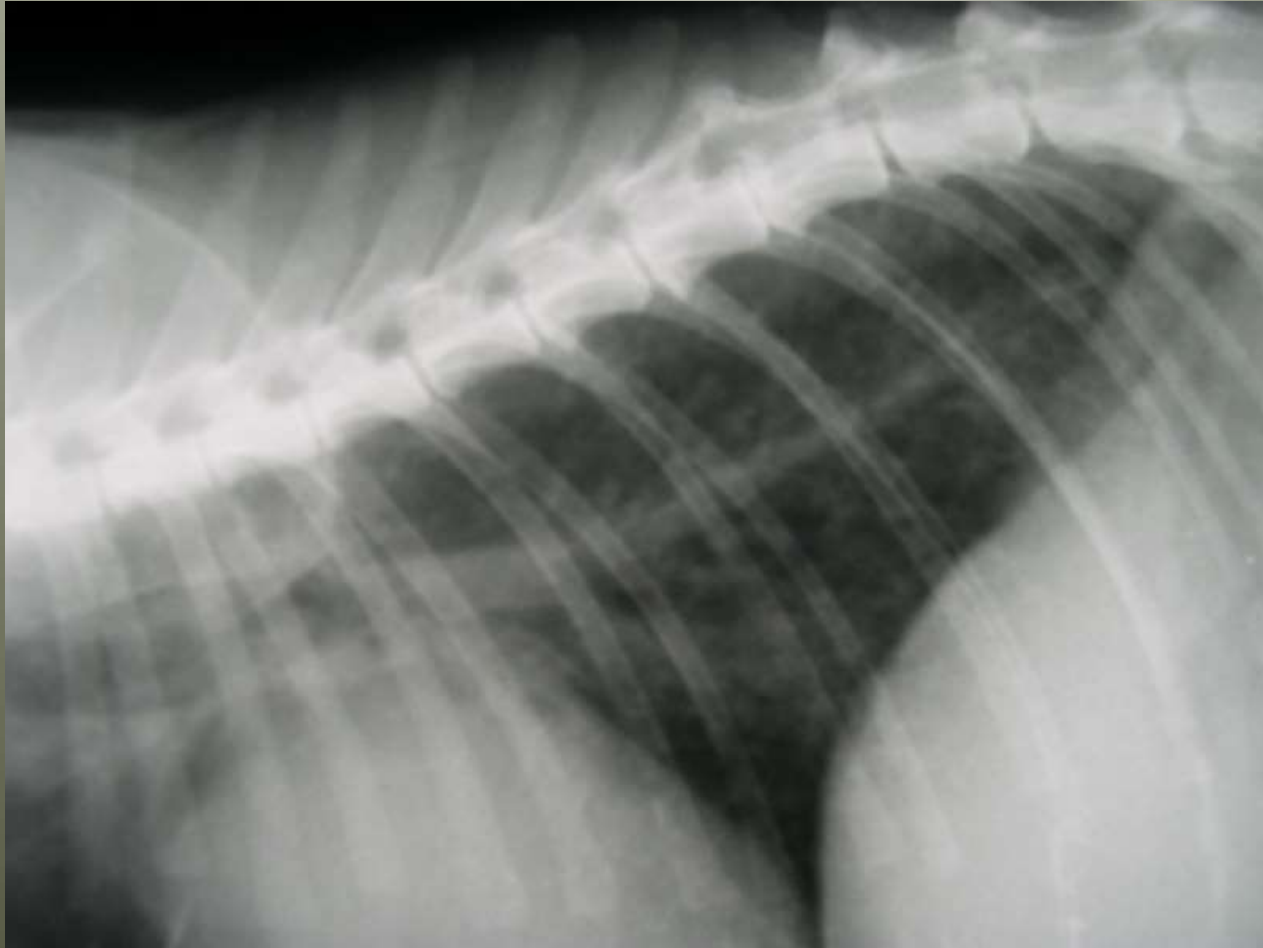


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Pulmonary oedema due to CHF can be anywhere in the lung (cf canine hilar oedema)



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..sometimes it's  
pretty obviously  
cardiac...!



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# URT Causes of Dyspnoea

- **Stenotic nares (part of Brachycephalic Syndrome) –**

- Surgical correction very rewarding as frequently no soft palate or laryngeal complications (cf. dogs!!)



- **Nasal Pathology**

(FB/Flu/Bordetella/Chronic Rhinitis/Mycoplasma/tumour/trauma`  
Flu/Acute Rhinitis/trauma/neoplasia/  
Cryptococcosis/Chronic bacterial rhinitis/Mycoplasma??/LP Rhinitis/FB

# Nasal Imaging

- Don't forget basics – teeth - palpate hard palate and nasal bones – and image sinuses too!!

- Xrays
- Rhinoscopy
- CT
- MRI



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# Tips for radiography

4 options each with advantages and disadvantages

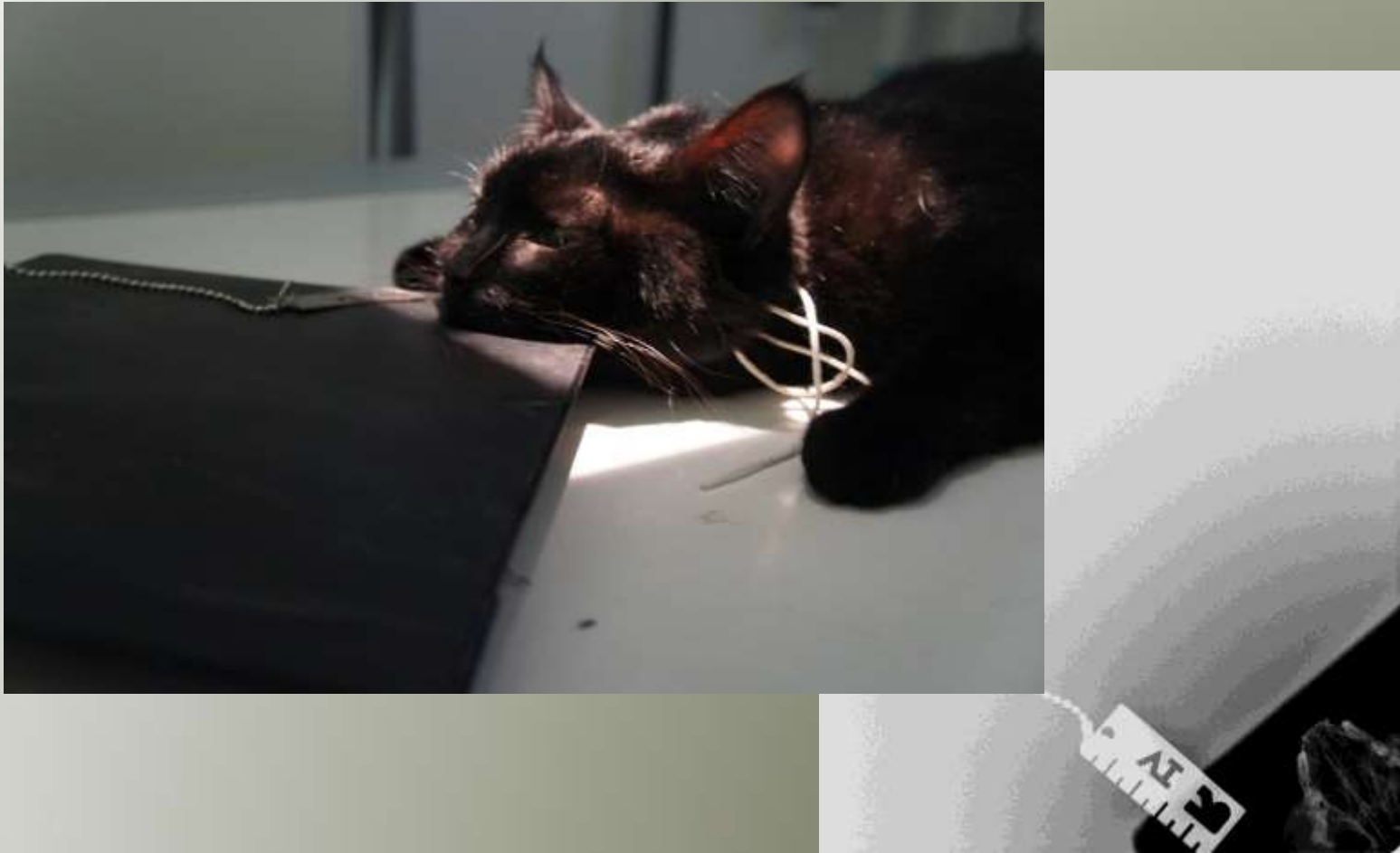
- Whole skull
- Intraoral cassette
- Intraoral film
- **Dental Film!! – best by far!**



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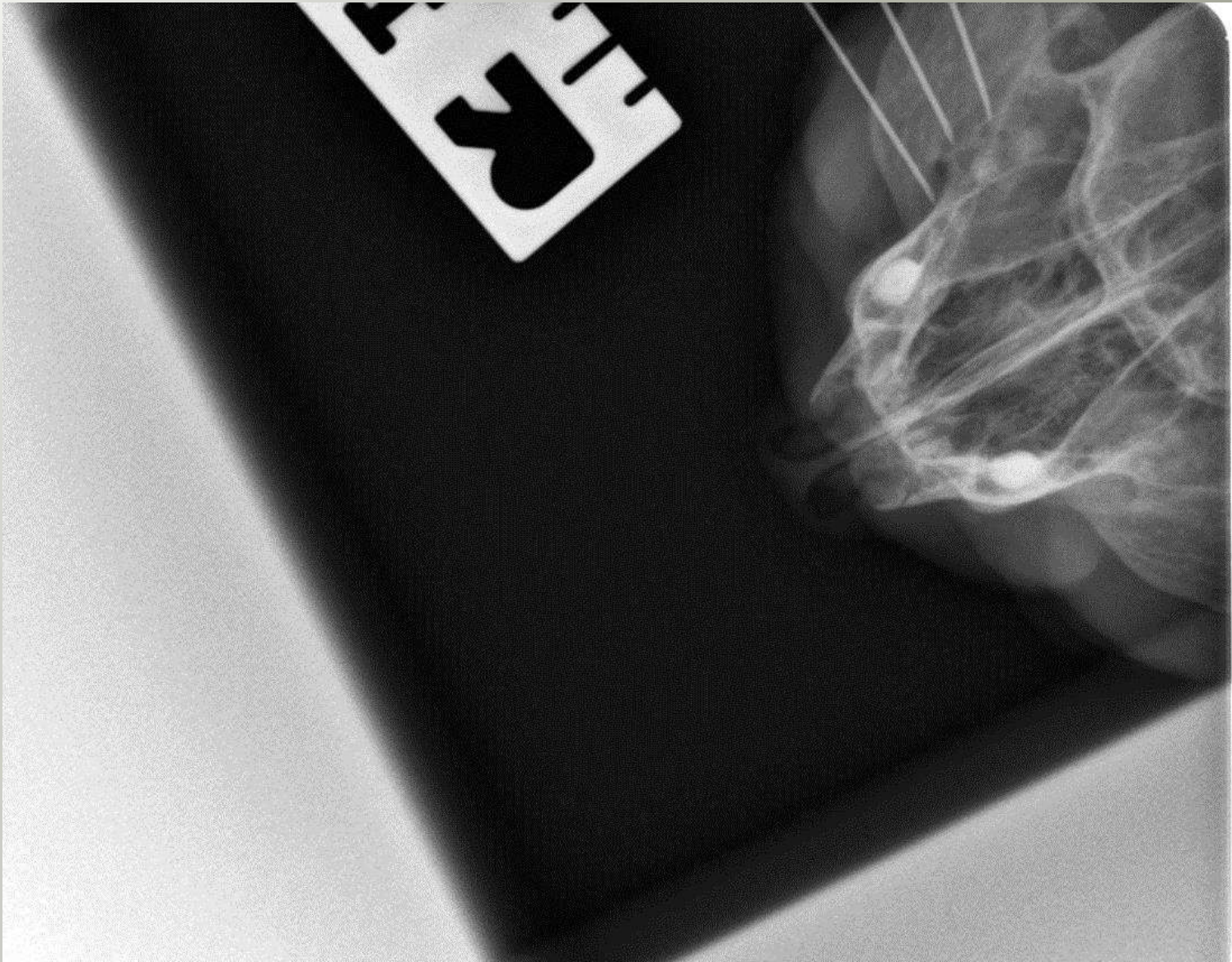


# Intraoral film (processing issues!!)



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# Conventional Intraoral film v Dental Imaging **No contest!!**



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# Nasopharyngeal Causes of Dyspnoea

- Pharyngitis/trauma/neoplasia
- Chronic bacterial rhinitis/Mycoplasma??/FB (grass blade!)
- Retroflex bronchoscope, or rigid rhinoscope by left entry pharyngotomy
- Nasopharyngeal stenosis or Polyp (can cure!)
- **Nasal Lymphoma – beware renal!**



# Respiratory Causes of Dyspnoea

- **Larynx** (audible wheezing!)  
**Allergy**/polyps/neoplasia/trauma/paralysis : *very resistant to anti-inflammatory therapy – many referral centres refuse feline laryngeal surgery!!*



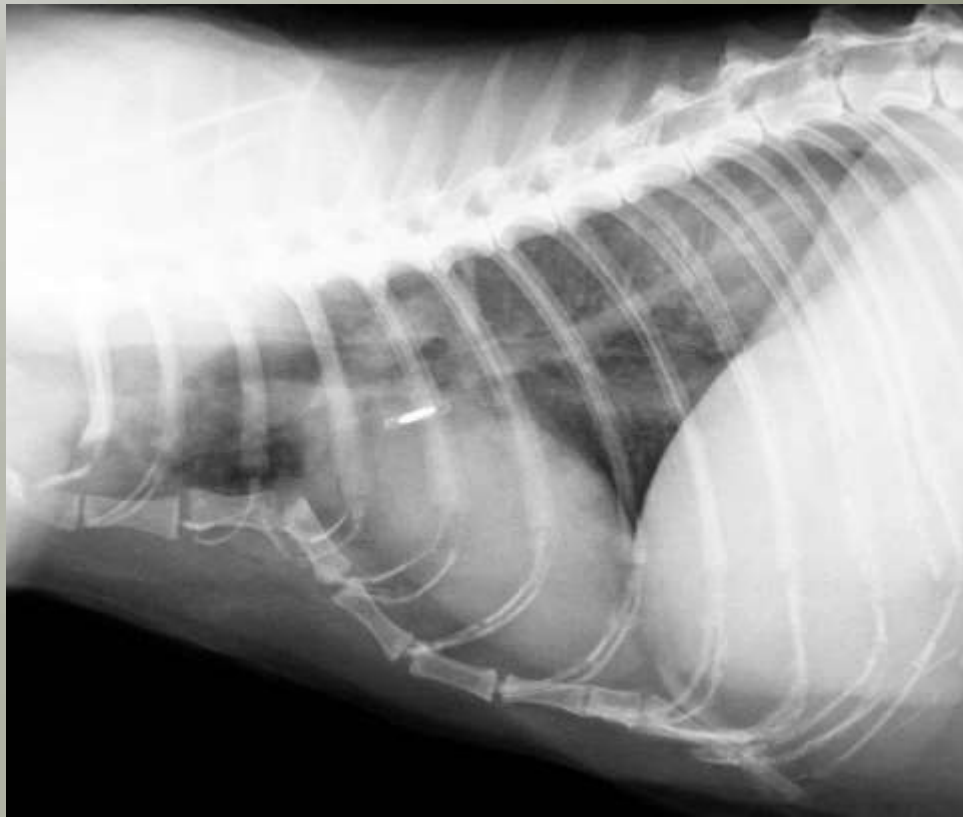
- **Trachea**  
FB/Flu/Bordetella/Aleurostrongylus/  
tumour/trauma/external pressure  
(endotracheal tube cuff insufflation!)



**Cystoscope**

# Respiratory Causes of Dyspnoea

Chest wall trauma or congenital malformation

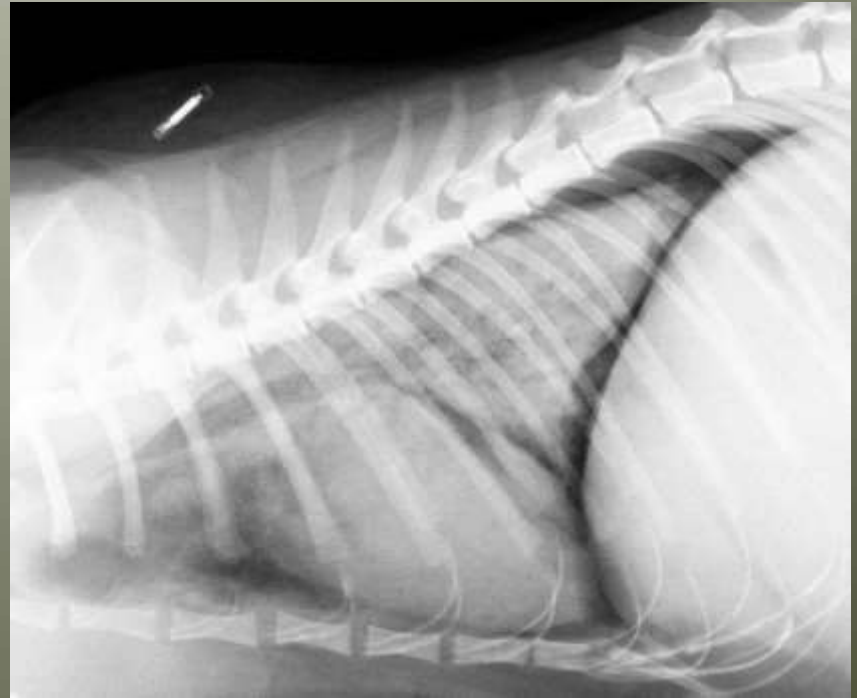
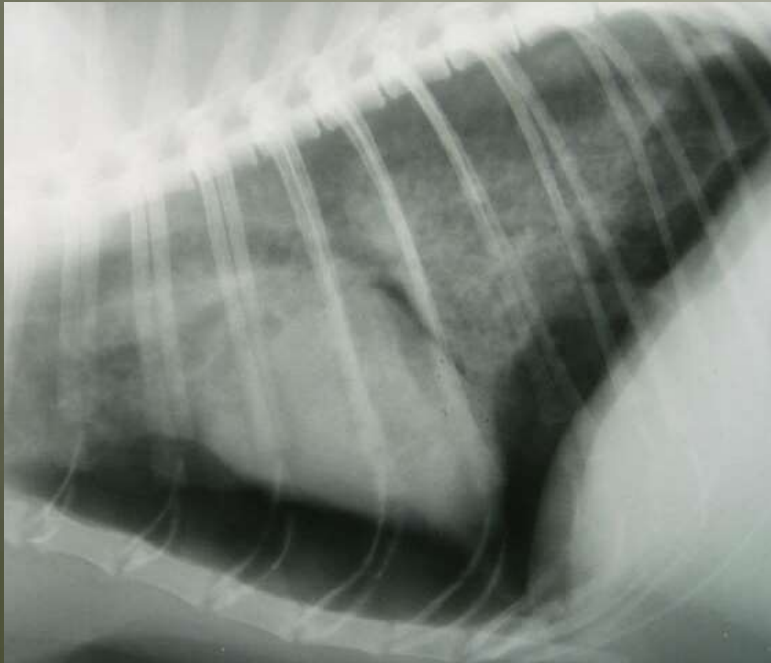


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# Pneumothorax and atelectasis

## Trauma/Primary Lung Pathology



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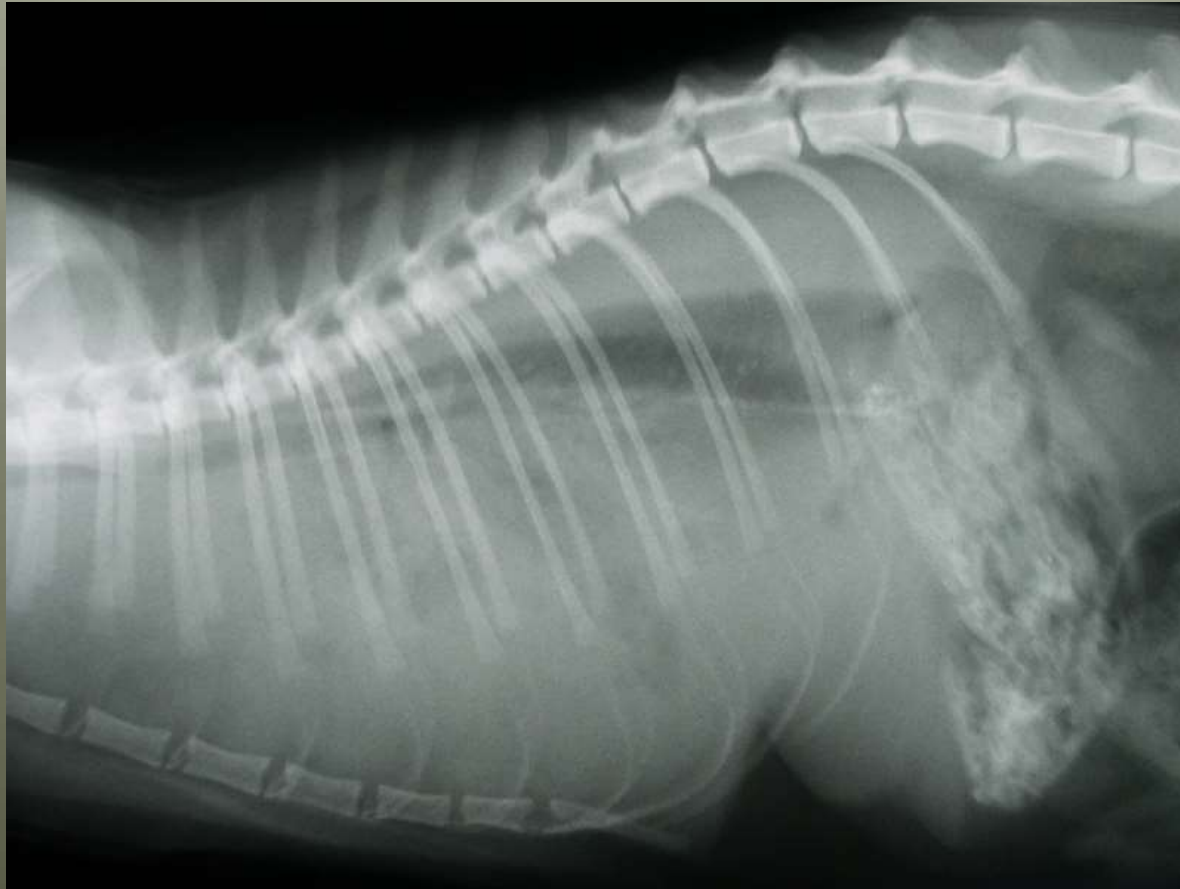


# Respiratory Causes of Dyspnoea

- **Bronchi**  
(Feline Airway Disease/chronic bronchitis/asthma/Aleurostrongylus)
- **Lungs** (oedema incl non-cardiac), trauma, neoplasia, bronchopneumonia)
- **Thoracic cavity** (effusions (incl. wet FIP)/pneumothorax/ruptured diaphragm/ mediastinal disease/neoplasia/ pneumomediastinum)



# Tracheal elevation: Cats aren't small dogs



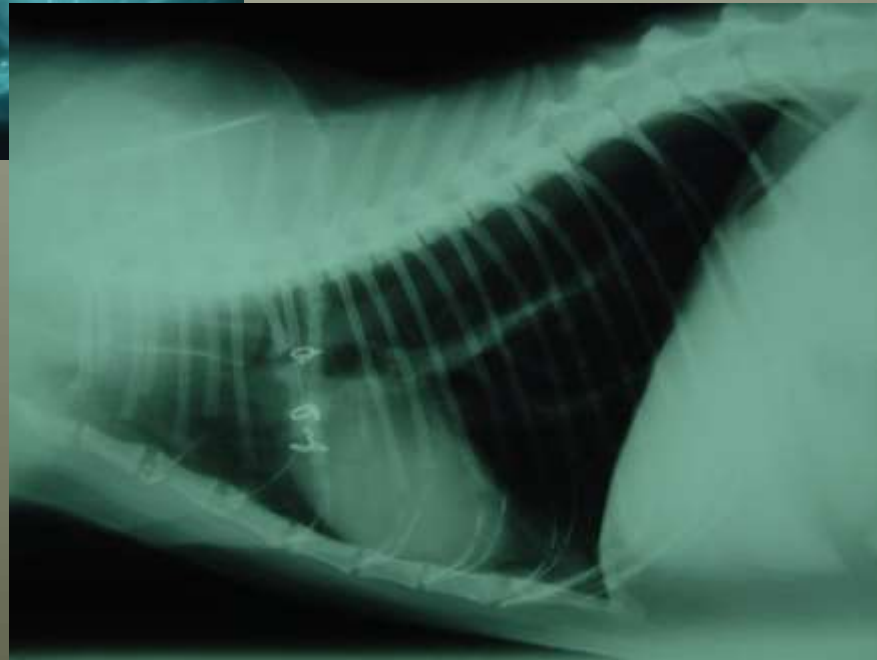
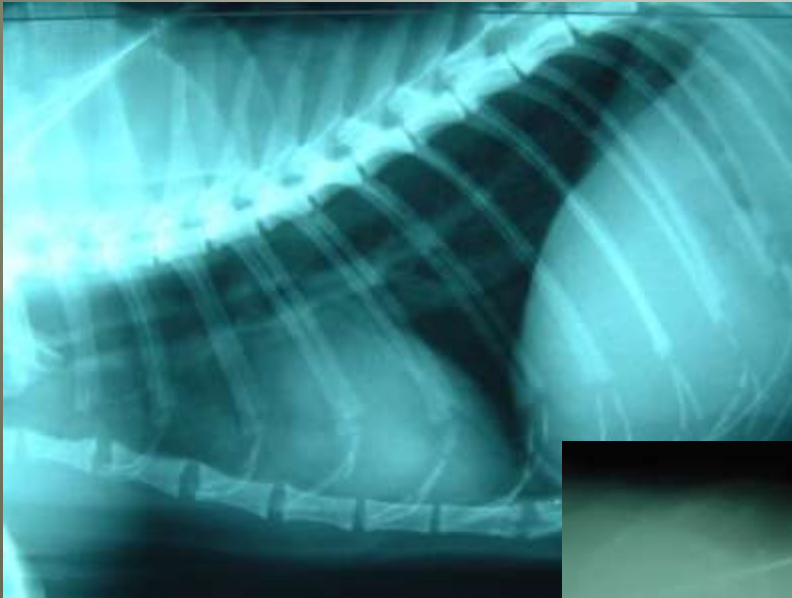
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# Thymoma

+/- paraneoplastic dz

- Myasthenia gravis
- Exfoliative Dermatitis



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# Unusual exudate associated with thoracic lymphoma



**Never forget FeLV FIV Coronavirus!**

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# Diaphragmatic hernia (hepatocytes on FNA left thorax)

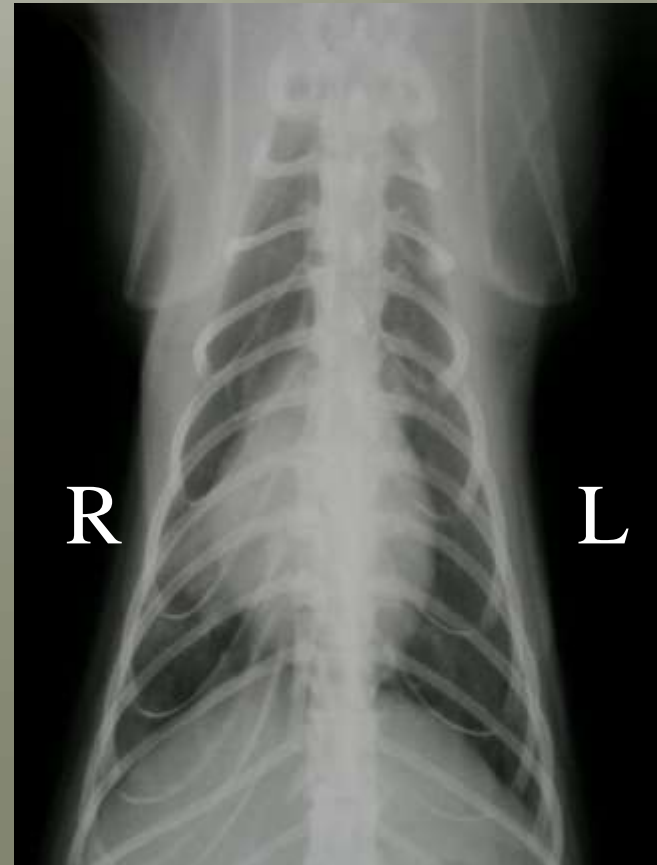


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# Feline Asthma/chronic airway disease

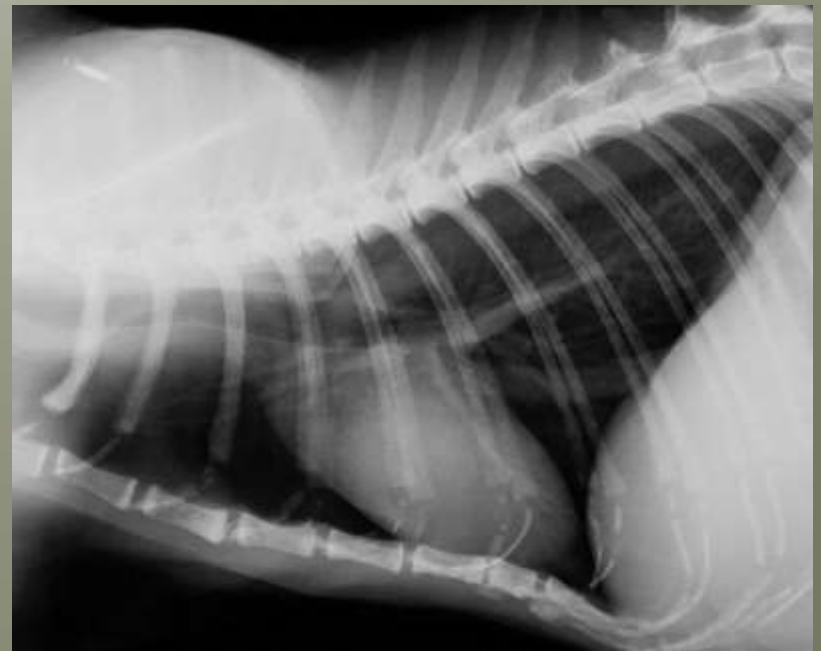
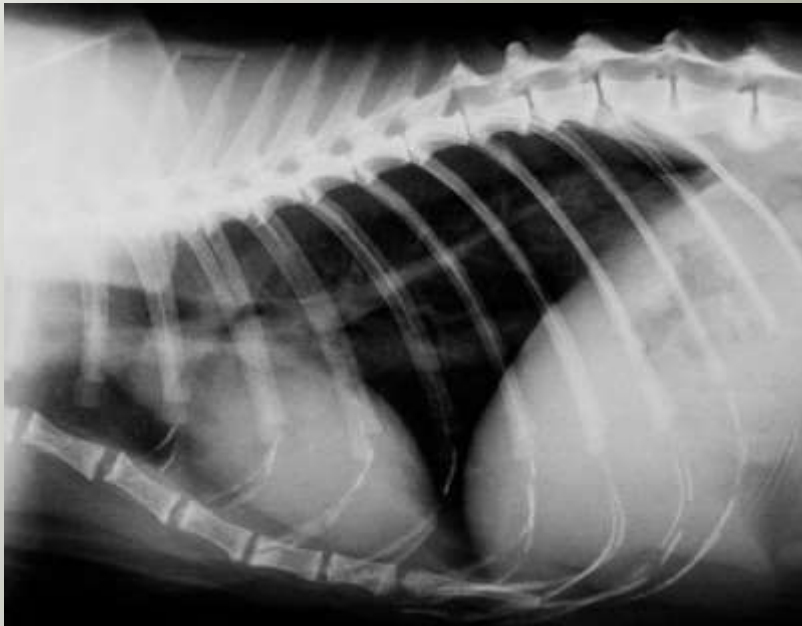
- **Air entrapment**
- **Tram-lines and doughnuts**
- **Consolidation of right middle lung lobe (cf alectectasis)**
- **Many asthmatics have normal radiographs!**
- **BAL to confirm**



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# Air entrapment – radiograph interpretation?



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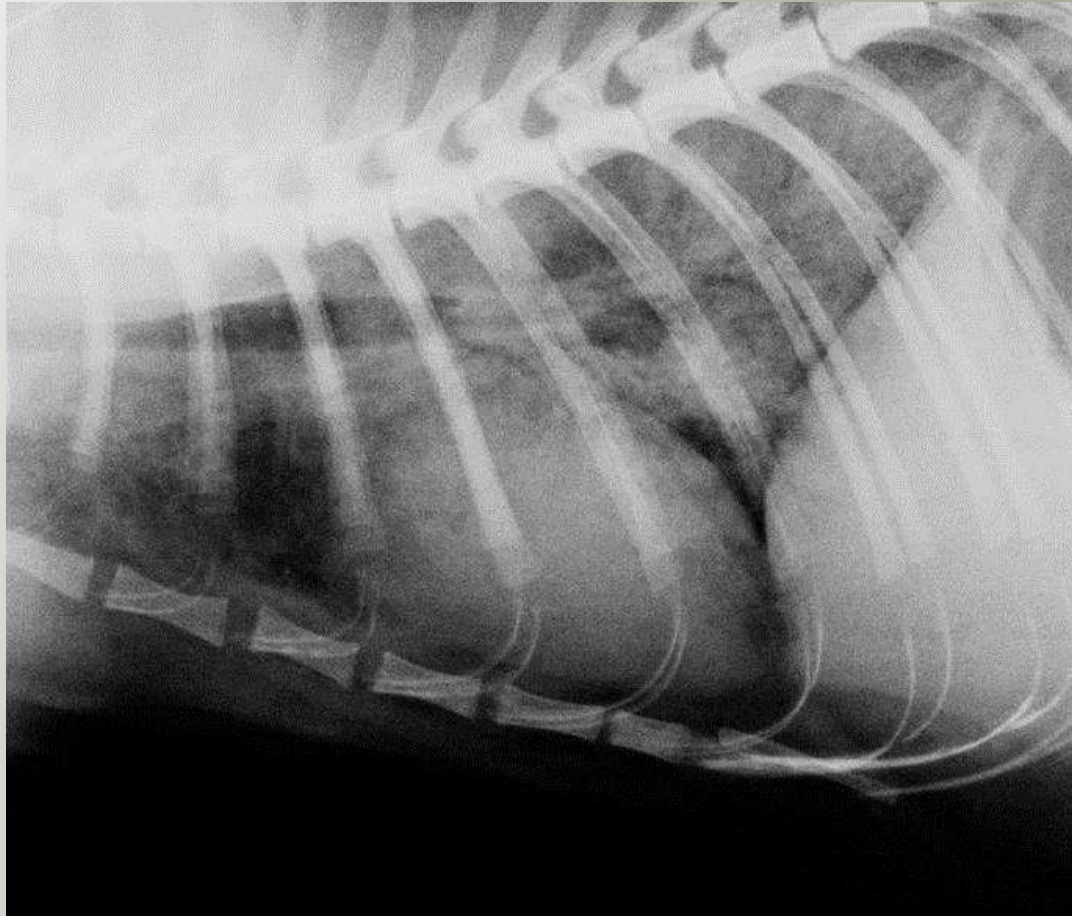
No-one would argue with.....



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# Tramlines and doughnuts!



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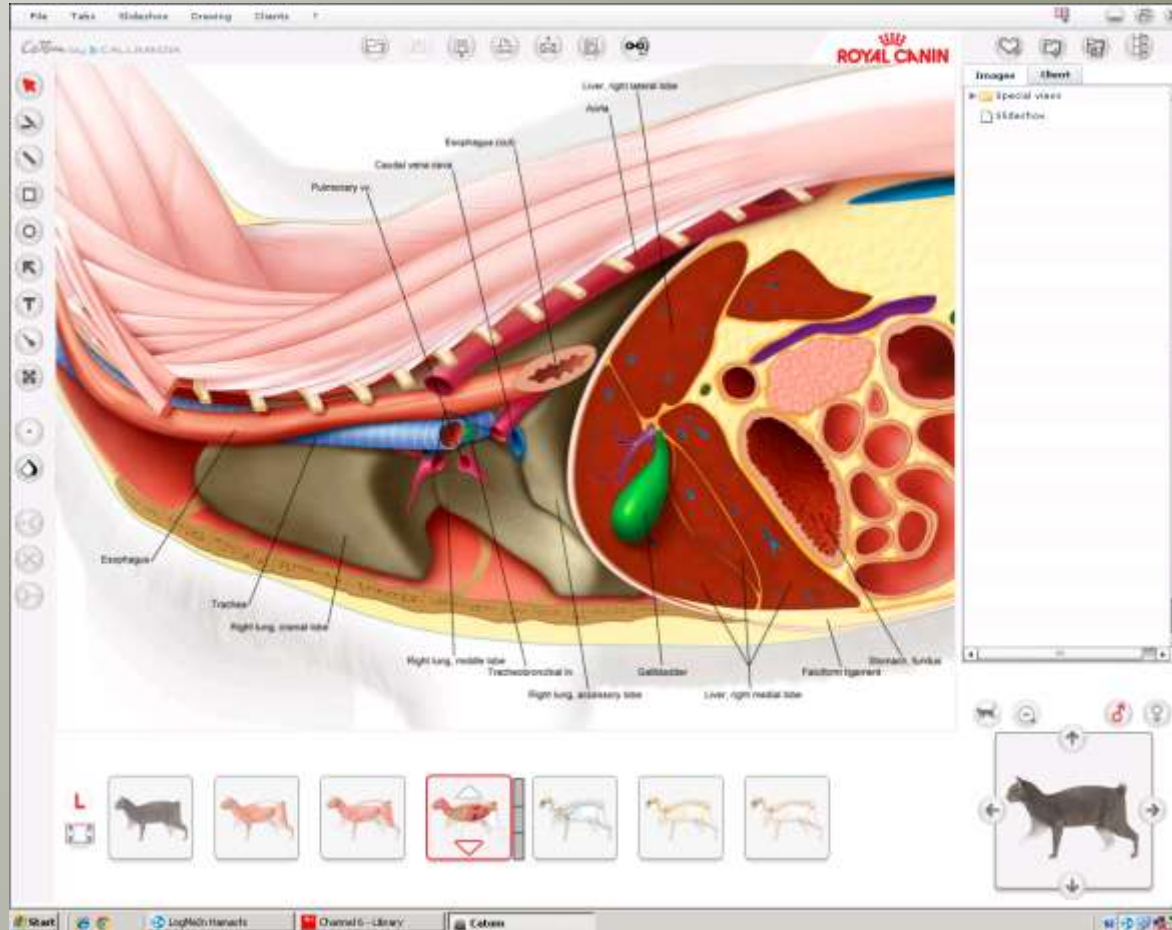
# Care with over-magnification!



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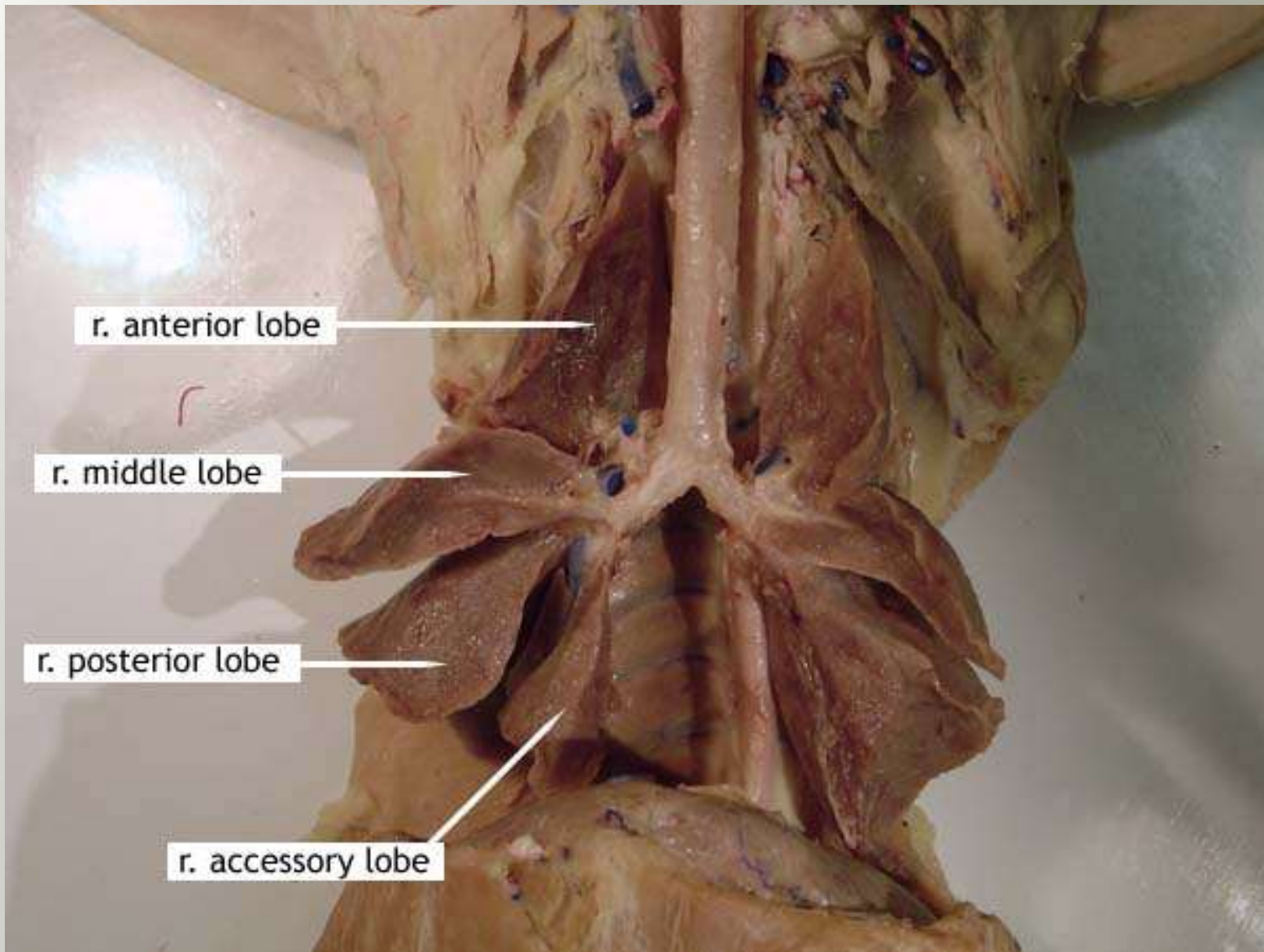


# Why is right middle lobe so susceptible to consolidation?



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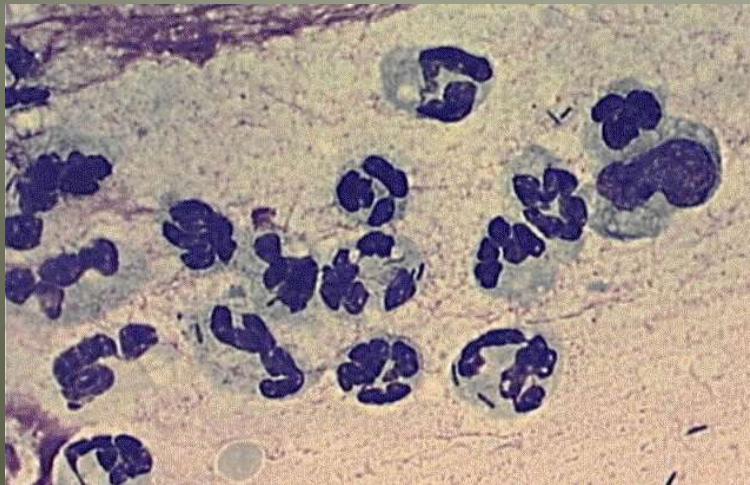


# Bronchoalveolar lavage in the cat

- Sterile urinary catheter (pre-measured) introduced into lung via endotracheal tube
- three doses of 5-10 ml sterile saline
- chest coupage before each re-aspiration
- first wash usually not recovered
- second wash for culture
- final wash for cytology  
(froth reflects presence of surfactant)

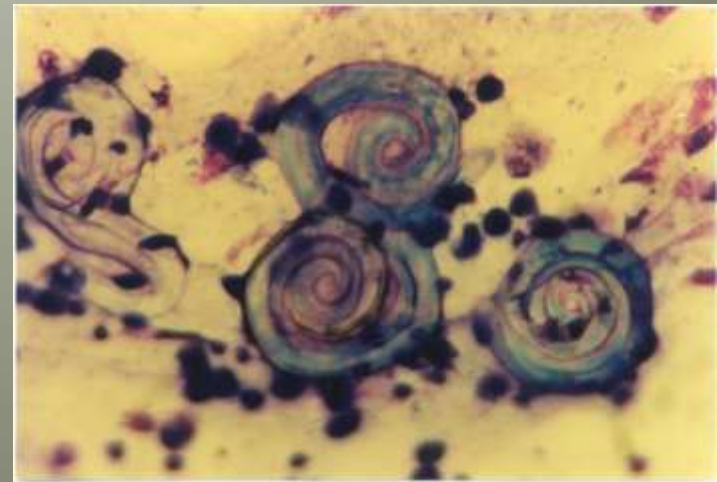


# Airway cytology



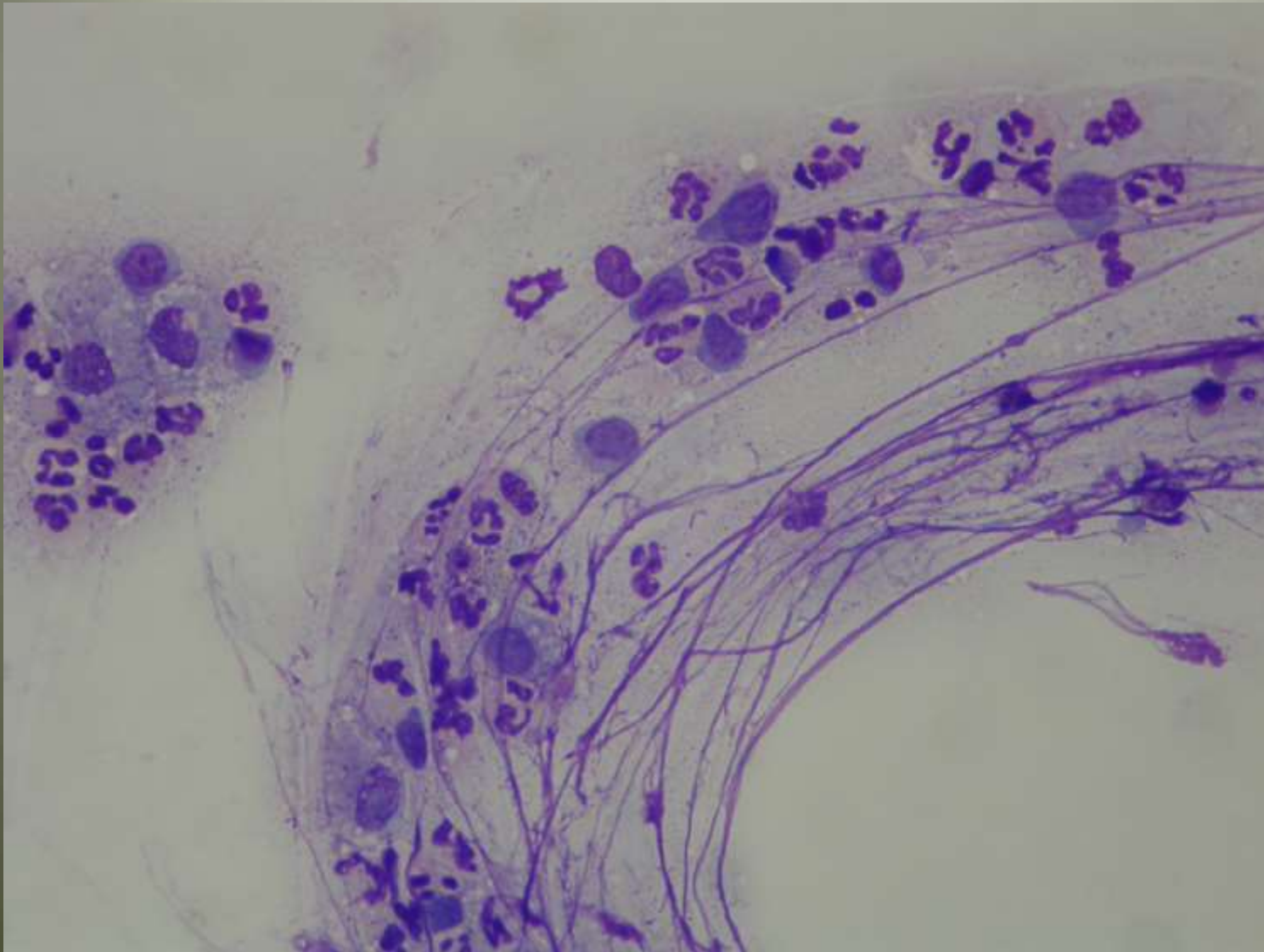
Bacteria in PMN`s

# Lungworm larvae



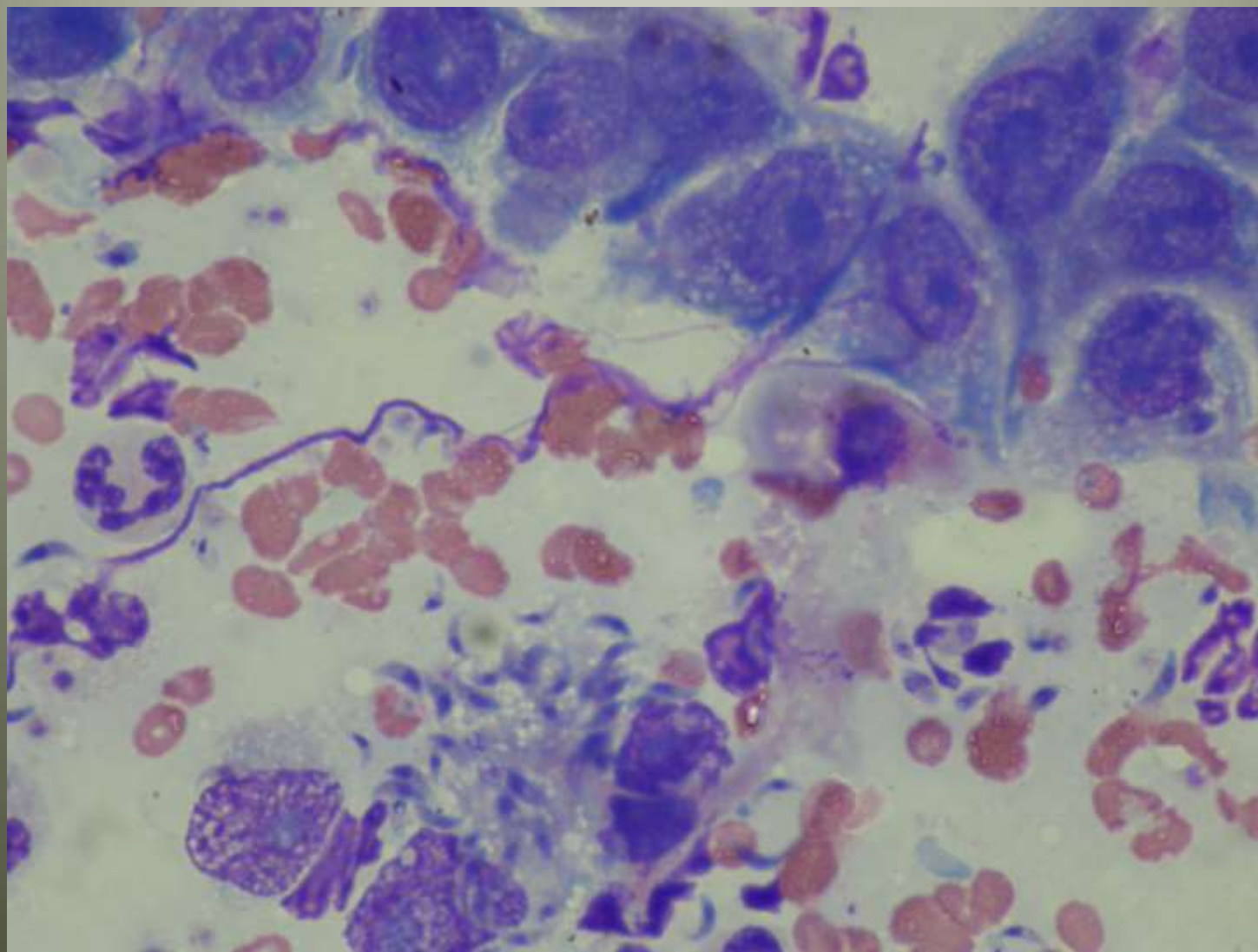
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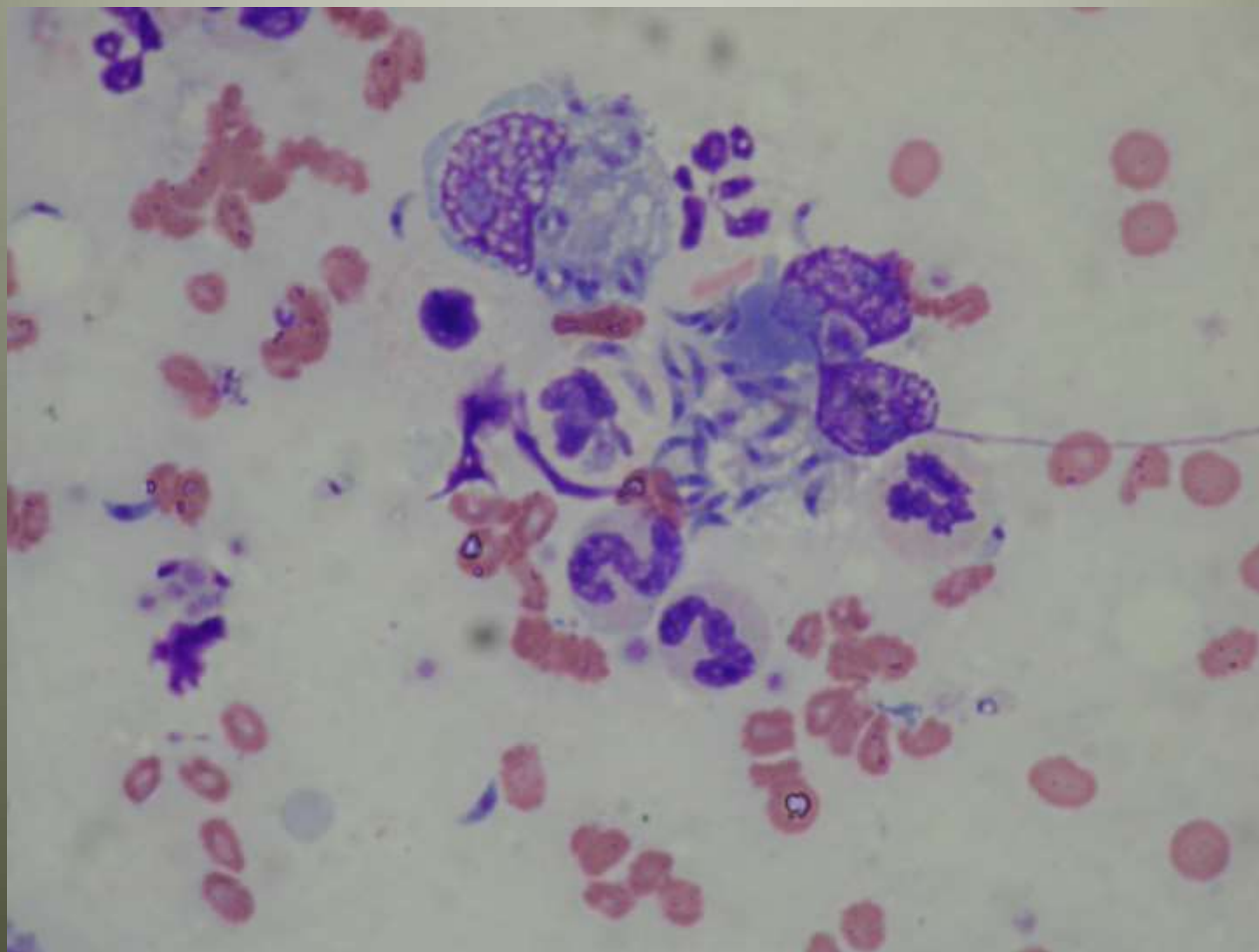
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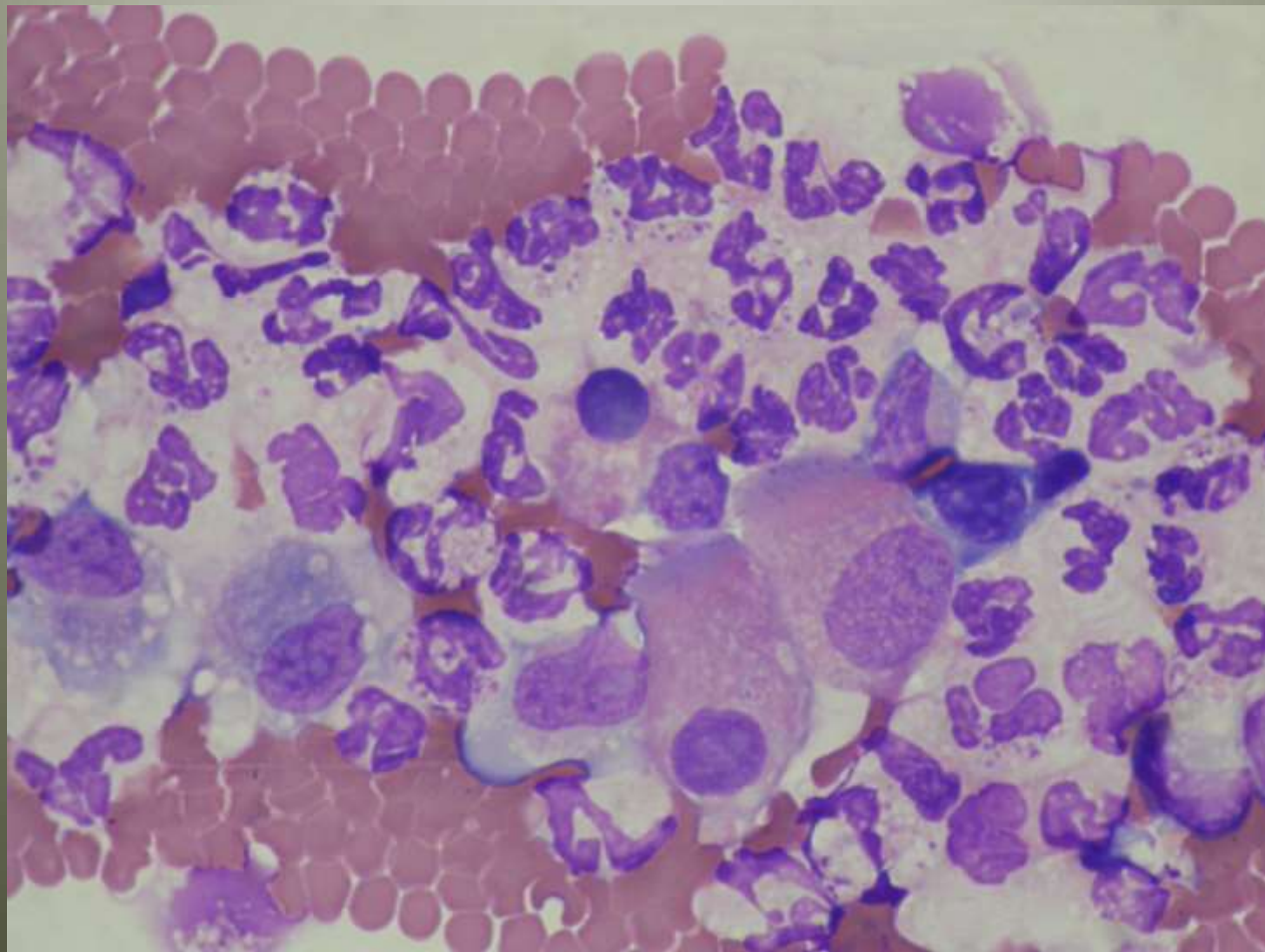
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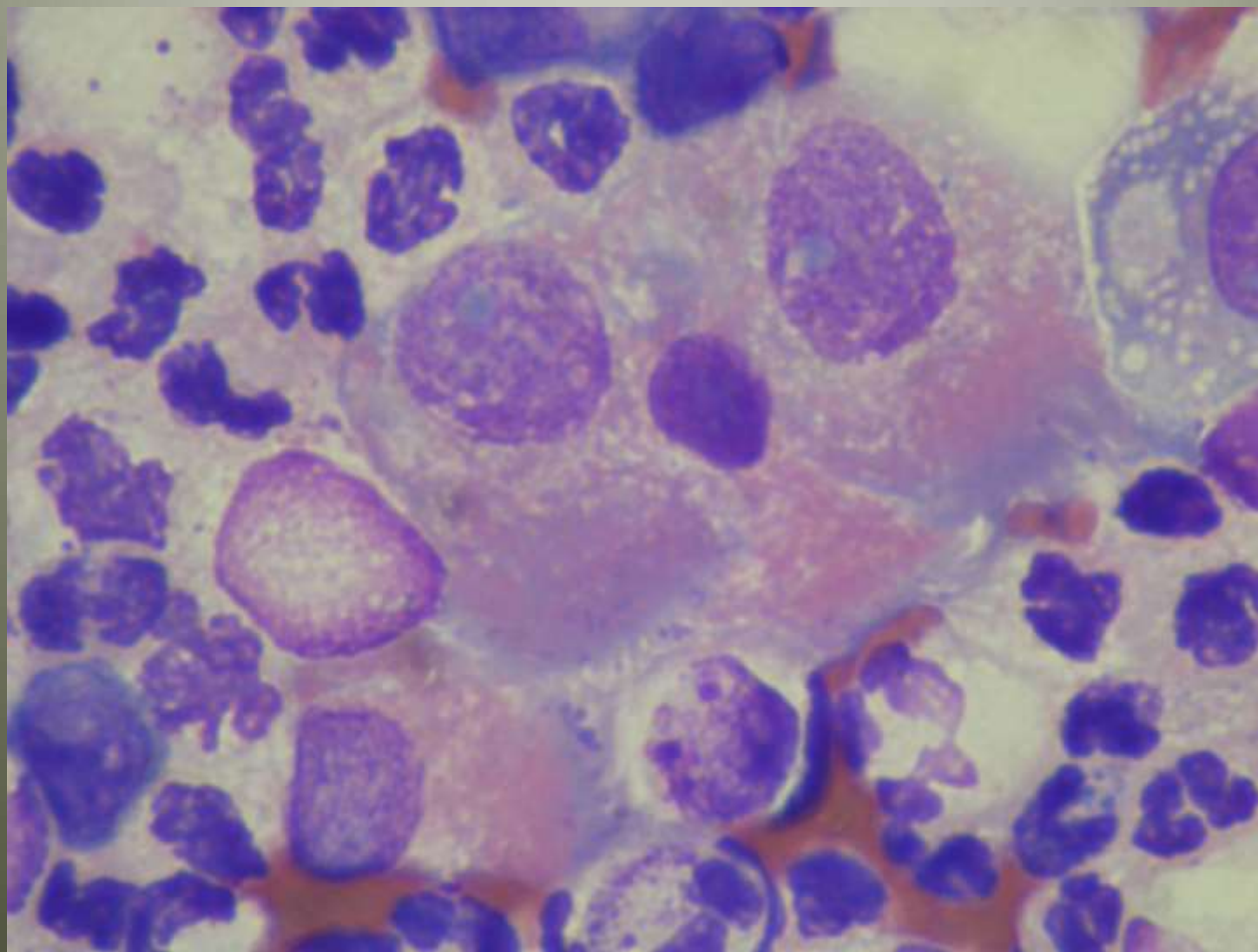
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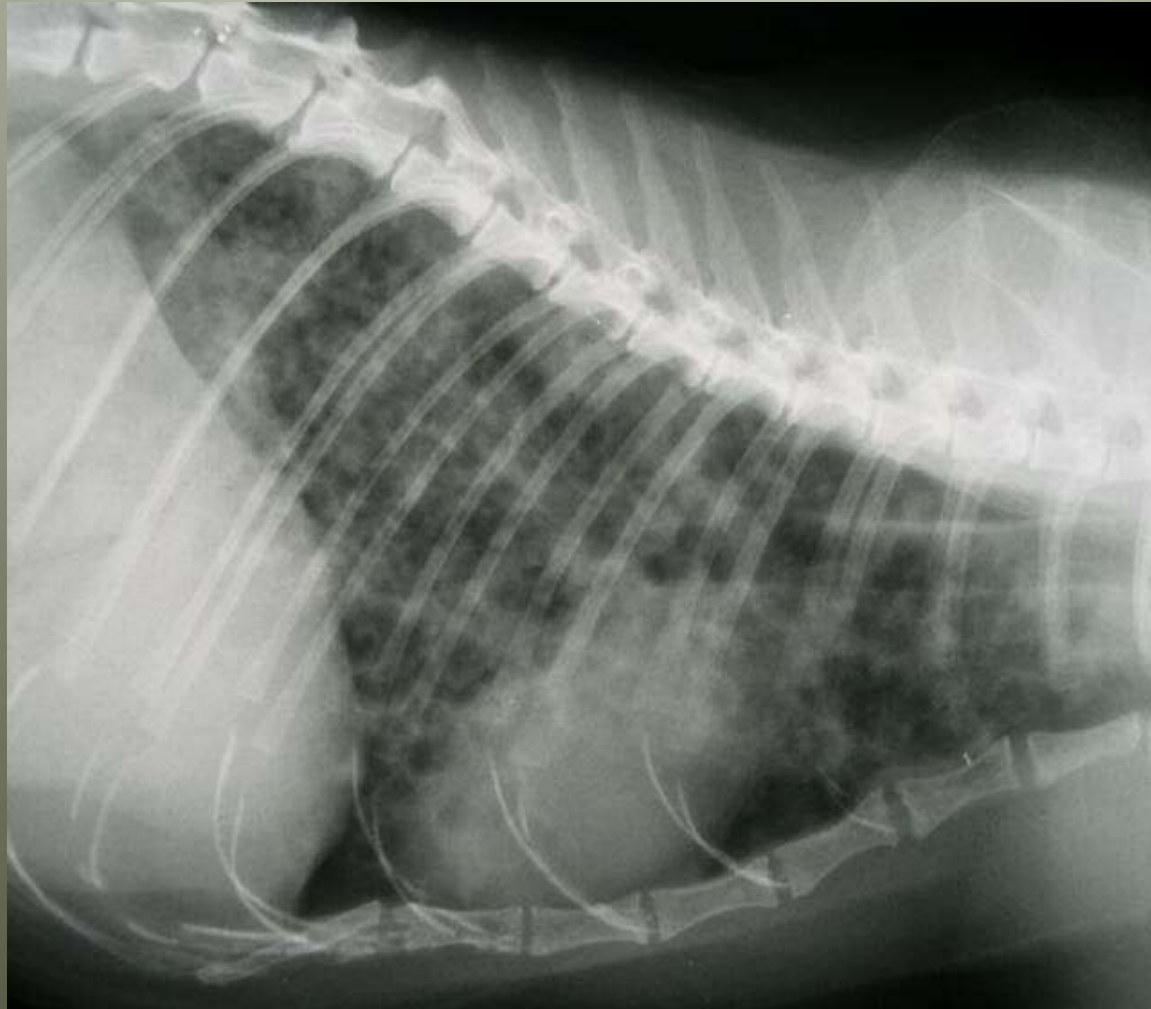




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# Pulmonary neoplasia confirmed on BAL

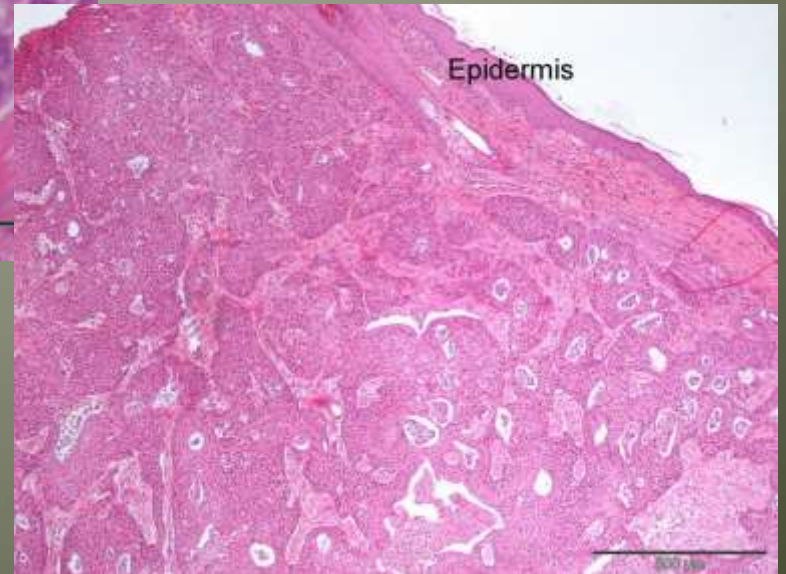
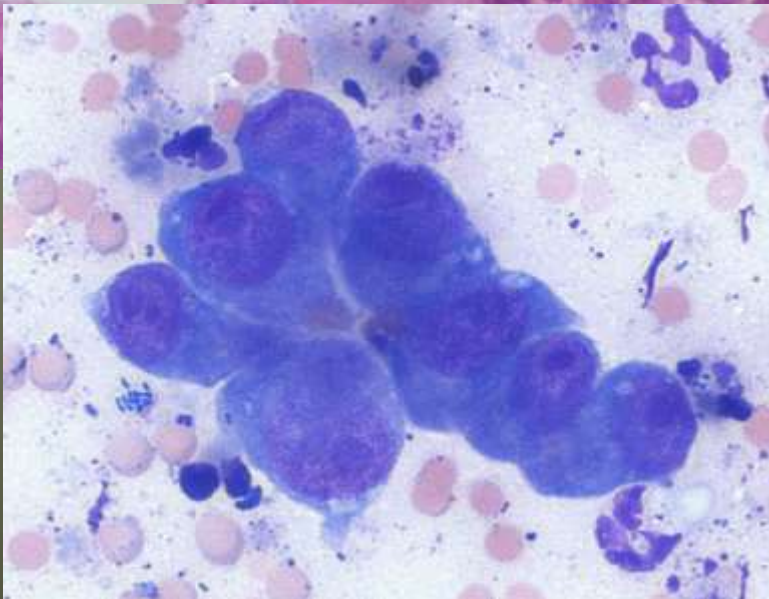


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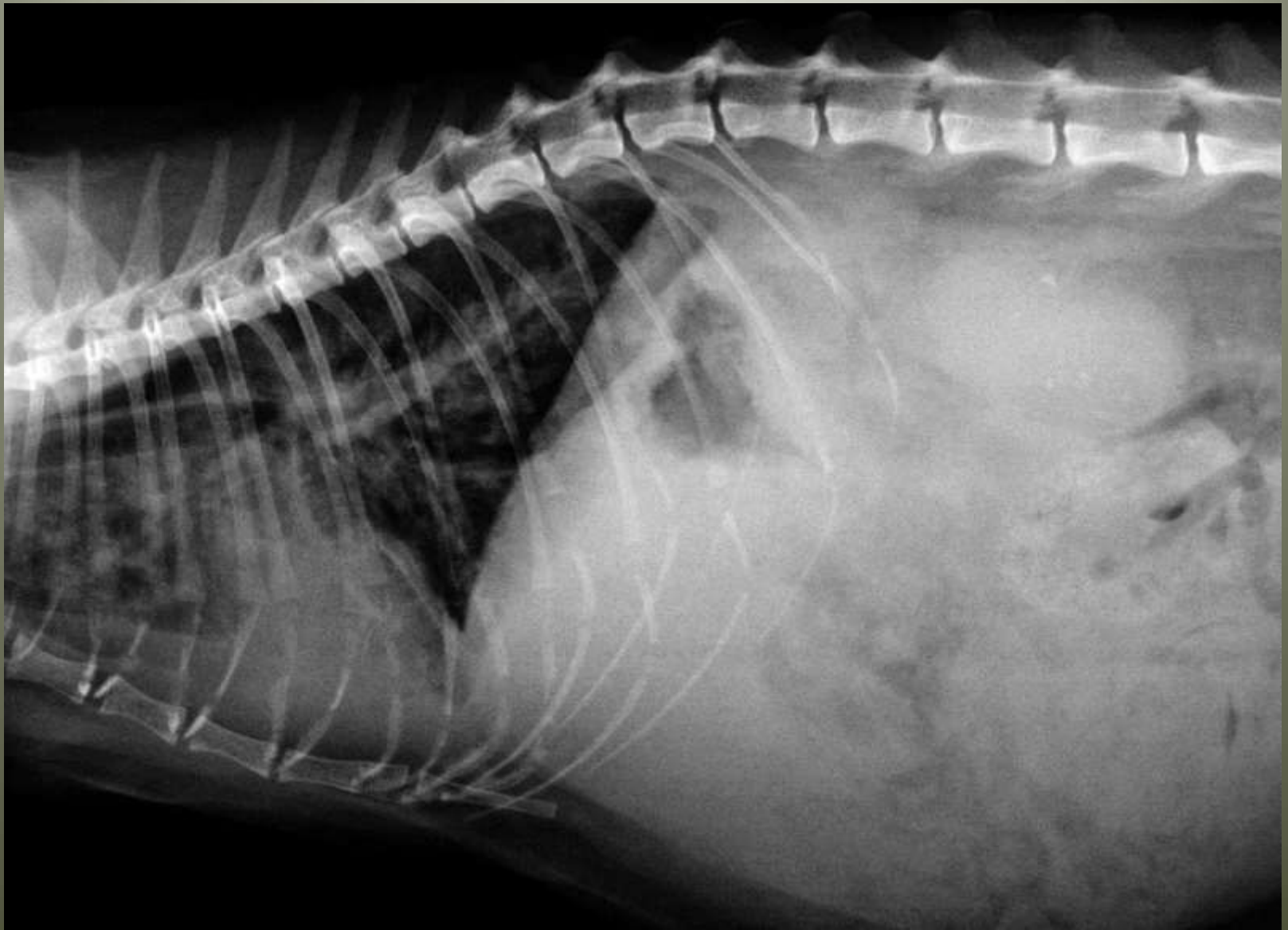




# Lung Digit syndrome



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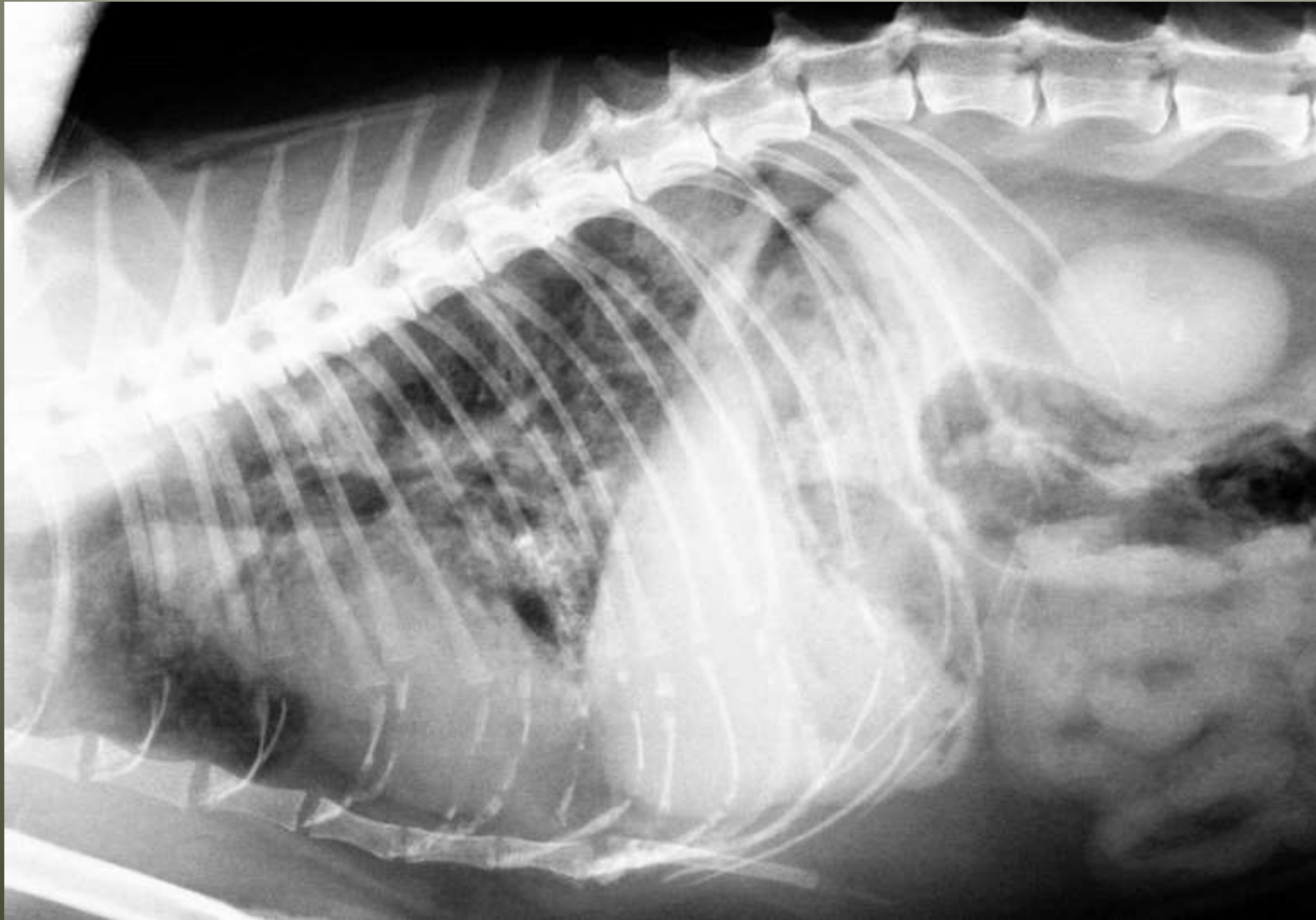
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# Therapy for Feline Asthma

- **Lifestyle changes**
- **Fenbendazole 50mg/kg sid 5dd/Milbemax/Advocate???**
- **Dexamethasone 0.2-2.2 mg/kg then Prednisolone 1 mg/kg bid 5dd and taper slowly**
- **Theophylline (Corvental-D) 100mg/cat sid**
- **(Terbutaline 0.01 mg/kg s/cut or 1/8 to 1/4 2.5mg tablet bid PO)**



# Inhalers - you can't be serious!



## Older Protocol

- **Albuterol (one dose as needed - up to every 30 mins)**
- **Fluticasone 250mg - one puff bid daily (+/- oral pred)**
- **?? Beclamethasone**

**(Intractable cases: Consider addition of ciproheptadine (1mg/kg PO bid/tid))**

# AeroKat<sup>®</sup>

Feline Aerosol Chamber



**BreathEazy<sup>®</sup>**  
respiratory relief for cats, dogs and horses

AEROSOL DRUG DELIVERY  
*for*  
FELINE ASTHMA

A photograph of a young girl with blonde hair and bangs, smiling and holding a Siamese cat. The photo is framed in a circular shape with a green background. Below the photo is a white paw print graphic containing a small image of the AeroKat device.

**AeroKat<sup>®</sup>**  
Feline Aerosol Chamber

[www.aerokat.co.uk](http://www.aerokat.co.uk)

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Symptoms	Recommended Treatment
<p>Mild Intermittent</p> <p>Intermittent coughing, occasional difficulty breathing</p>	<ul style="list-style-type: none"> <li>• Salbutamol inhaler as required (with <b>AeroKat*</b> Chamber)</li> </ul>
<p>Mild Persistent</p> <p>Symptoms don't affect quality of life Between "attacks" the cat eats, drinks and plays</p>	<ul style="list-style-type: none"> <li>• Flixotide<sup>†</sup> 125 mcg evohaler, 1 actuation – twice daily with <b>AeroKat*</b> Chamber</li> <li>• Salbutamol inhaler as required (with <b>AeroKat*</b> Chamber)</li> </ul>
<p>Moderate Persistent</p> <p>Symptoms have a negative effect on quality of life but their cough, wheeze or dyspnea is not constant</p>	<ul style="list-style-type: none"> <li>• Flixotide<sup>†</sup> 125 mcg evohaler, 1 actuation – twice daily with <b>AeroKat*</b> Chamber</li> <li>• Consider using 1mg/kg of prednisolone administered orally twice daily for 5 days and then once daily for 5 additional days</li> <li>• Salbutamol inhaler as required (with <b>AeroKat*</b> Chamber)</li> </ul>

Note: This page contains a list of MDI medications and some selected information about each MDI medication, that have been used with the **AeroKat\*** Chamber.  
BreathEazy Ltd. does not endorse the use of any specific MDI medications.



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# Strategies for management long term infections

- Mycoplasma – Ronaxan 5mg/kg BID
- Chronic bacterial rhinitis – if non-surgical control can be partially achieved with 1/3<sup>rd</sup> of a 250mg capsule of Zithromax every 3dd, often combined with therapeutic nasal flushes



# It must be Beer o'clock!!!



[craig.reilly@zen.co.uk](mailto:craig.reilly@zen.co.uk) 91271364 (w) 07817877137 (mob)

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http://www.infusionconcepts.com/Quick/QChestDrains.html#Troch

**infusion concepts**

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Walk Me Home

Know what you're after?  
Find it here quickly

## Chest Drains

Quick Links

- Infusion
- Accessories
- Drainage
- Critical Care
- Multi Packs

[Click here for our A-Z product index](#)

[Useful Links](#)

### Trochar

\* Sharp trochar stylet for easy puncture. Two lateral holes & one small end hole for drainage. Supply PVC material

Available as:

**Plain:**  
Standard connector (supplied) can be removed, allowing use of your preferred drain connector

**Needle-Free kits:**  
Single connection required to allow full assembly  
Needle-free valve for complete drain security  
C-clamp on drain

Plain:  Specification  Codes  
Needle-Free:  Specification  Codes  
 Detailed Information

### Non-Trochar

\* Three pairs of lateral holes and one full bore end hole. Supply PVC

Available as:

**Plain:**  
Standard connector (supplied) can be removed, allowing use of your

14:21  
30/01/2014

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Know what you're after?  
Find it here quickly

# Heimlich Pillow Valve



## Quick Links

-  [Infusion](#) **Heimlich Pillow Valve (DRHEIM-P)**
-  [Accessories](#)
-  [Drainage](#)
-  [Critical Care](#)
-  [Multi Packs](#)

[Heimlich Pillow Valve \(DRHEIM-P\)](#)

This PVC valve acts in the same way as a standard Heimlich valve. It has light-weight valve leaves with reduced surface area, which improves spontaneous emptying. The valve has other significant advantages over a standard Heimlich valve:

• Compared to a standard Heimlich Valve, the Heimlich Pillow Valve is:

- \* More pliant
- \* Less expensive
- \* More compact
- \* Easier to connect
- \* Simple to replace
- \* More effective in valve action
- \* More comfortable for your patient



[Click here for our A-Z product index](#)

Useful Links

## Features of this valve include:

- Luer-locking for simple and secure connection to our drain systems
- Also fits our standard and needle-free drain connectors
-



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# Reference material

- Pyothorax management  
<http://veterinarycalendar.dvm360.com/avhc/Medicine/Pyothorax-Medical-treatment-surgical-treatment-or-/ArticleStandard/Article/detail/587154>
- Asthma <http://www.felineasthma.org/links/gunn-moore.htm>
- Dyspnoea management tables  
<http://inpractice.bmj.com/content/15/6/301.full.pdf+html?sid=04abfbec-091b-43b7-ae6c-6a44506faabc>
- FIP <http://www.dr-addie.com/>

