

# History

- Prince
- 5 year old NM, DSH
- Hx of sudden death
- Owner reported cat started to vomit ran across the room, dropped and started foaming then died.

# History

- The entire event reportedly took about 5 min.
- The cat was lively the previous night and this am
- Owner said there were no signs of coughing or vomiting prior to this

# Possible History FHD

- Coughing
- Dyspnea
- Vomiting (undetermined cause)
- PTE frequently results in acute respiratory failure and death.
- Vomiting and respiratory signs predominate in chronic disease.

# Physical Exam Findings

- Usually normal
- Increased bronchovesicular sounds
- Murmur or gallop rhythm should increase suspicion of primary cardiac disease.

# DIFFERENTIAL DIAGNOSIS

- Asthma
- Cardiomyopathy
- Chylothorax
- *Aelurostrongylus abstrusus* (lung worm) infection
- *Paragonimus kellicotti* (lung fluke) infection

# Diagnostic Plan

- **Concentration test/Direct Smear**
- **Antibody test**
- **Antigen test**

# Antibody Test

- ELISA or immunochromatographic tests
- Tests that detect circulating antibodies to immature and adult heartworm antigen are the most sensitive tests for feline heartworm disease.

# Antibody Test

- A positive result **simply documents exposure to heartworms.**
- The more intense the antibody response (higher titer or antibody unit [ABU] level), the more likely is an adult infection.

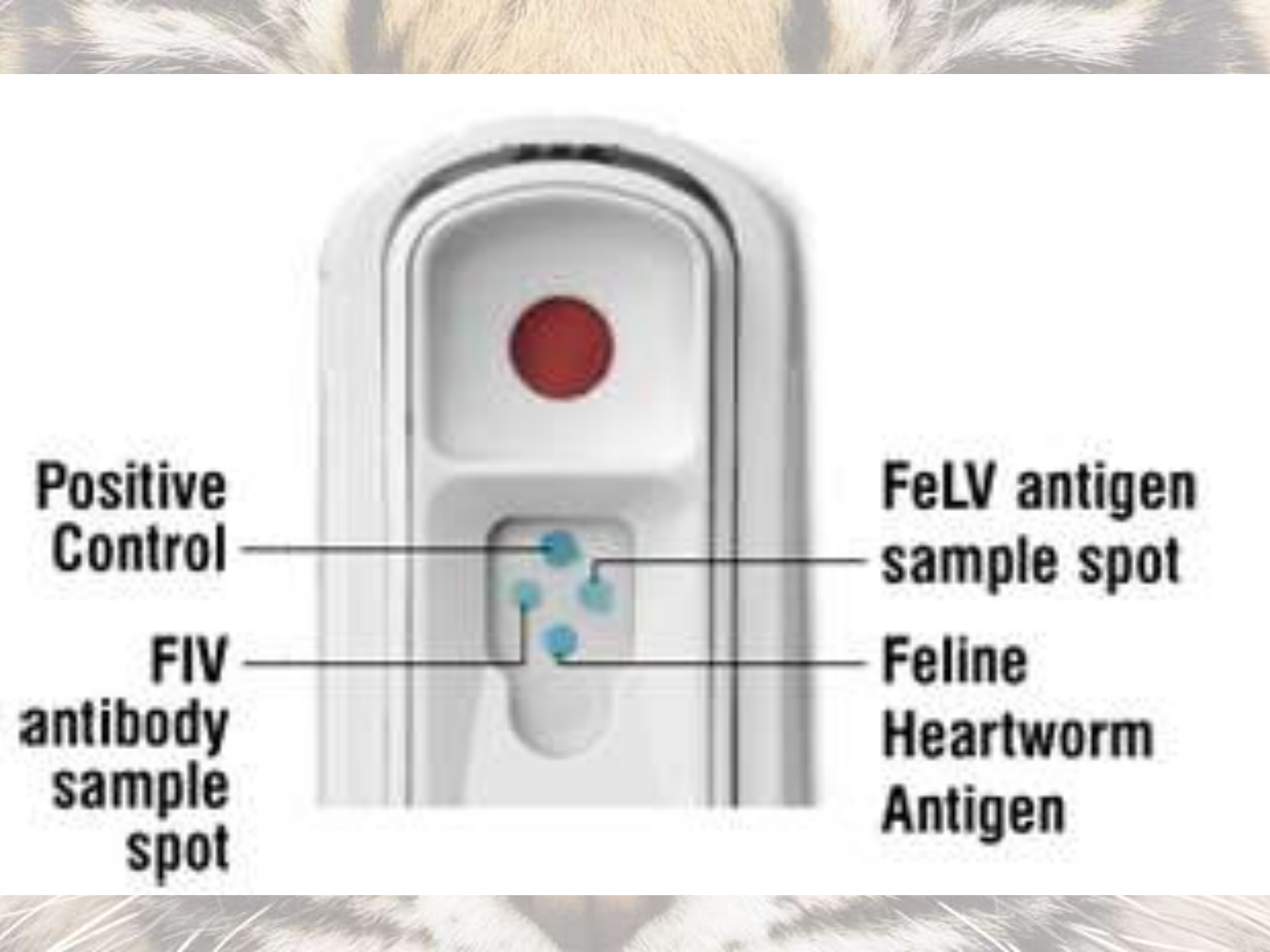


# Antigen Test

- ELISA or immunochromatographic tests
- Tests that detect circulating HWAg are more specific than antibody tests; a positive antigen test result is **strong evidence of adult heartworm infection.**

# Antigen Test

- Low worm burdens (**fewer than 5 worms**) and single-sex infections commonly result in false-negative Ag tests.
- Negative result does not rule out heartworm disease; more than 40% of cats with adult infection are antigen-negative.



**Positive  
Control**

**FIV  
antibody  
sample  
spot**

**FeLV antigen  
sample spot**

**Feline  
Heartworm  
Antigen**



# Radiology

- Enlarged (pulmonary vein,  $> 1.6$  times the width of the 9th rib), blunted, tortuous pulmonary arteries
- Patchy perivascular pulmonary infiltrates
- Pulmonary arterial obstruction and linear filling defects seen on nonselective angiography



Test	Pros	Cons
<b>Antigen</b>	Positive results indicates adult female heartworm present	Negative result does not confirm or deny infection <ul style="list-style-type: none"><li data-bbox="1265 382 1903 468">• Male-only infections will not be detected</li><li data-bbox="1265 489 1903 575">• Immature infections will not be detected</li></ul>
<b>Antibody</b>	Positive result indicates exposure to heartworm Negative result lowers likelihood of infection	Exposure to heartworm could be past or present Cats receiving preventives may test positive, but are not at risk for disease
<b>Radiography (X-rays)</b>	Changes in pulmonary arteries suggest heartworm infection	Changes only evident in half of heartworm-infected cats Similar findings are found in other parasitic lung infections Normal x-rays do not indicate absence of disease
<b>Echocardiography</b>	Detection of heartworm confirms infection	Lack of detection of heartworms does not prove absence of infection



# Treatment Plan

- Currently no approved or recommended medical adulticide therapy (ie **DO NOT** give melarsomine)
- Surgical or catheter-based extraction may be the most reasonable option

# Treatment Plan

- Symptomatic cats should be stabilized prior to consideration of worm extraction.
- Spontaneous “cure” is probably much more common in cats than dogs (shorter heartworm life span).



# Initial Stabilization

- Supplemental oxygen
- Theophylline (sustained release formulation) 25 mg/kg PO q24h in the evening or
- Terbutaline [0.1 to 0.2 mg/kg PO q12h]
- Prednisolone 1–2 mg/kg PO q12–24h for 10–14 days; then gradually reduce

# Initial Stabilization

- Doxycycline therapy 10mg/kg PO q24h (to eliminate the endosymbiont Wolbachia) may reduce the severity of pulmonary inflammation secondary to worm death
- Cautiously balanced fluid therapy if indicated
- Supportive care for PTE the same as initial stabilization (see above)

# Prevention

- Ivermectin (Heartgard for Cats)—24  $\mu\text{g}/\text{kg}$  PO every 30 days
- Milbemycin oxime (Interceptor)—0.5 mg/kg PO every 30 days
- Selamectin (Revolution) 6.6–20 mg/kg cutaneously every 30 days

# Prevention(Oral Ivermectin)



# Prevention(injectable Ivermectin)

- Off label use
- Ivermectin (canine dose: 6 to 12  $\mu\text{g}/\text{kg}$  **PO** monthly;
- feline dose: 25  $\mu\text{g}/\text{kg}$  **PO** monthly)
- kills L3 and L4 larvae during the first 2 months after infection.

# Prevention(injectable Ivermectin)

- Has a reliable reach-back effect of 2 months
- Protection **may** extend to lapses of 3 to 4 months **if** administered continuously for 12 months after the lapse.



Postmortem Findings



Post mortem findings







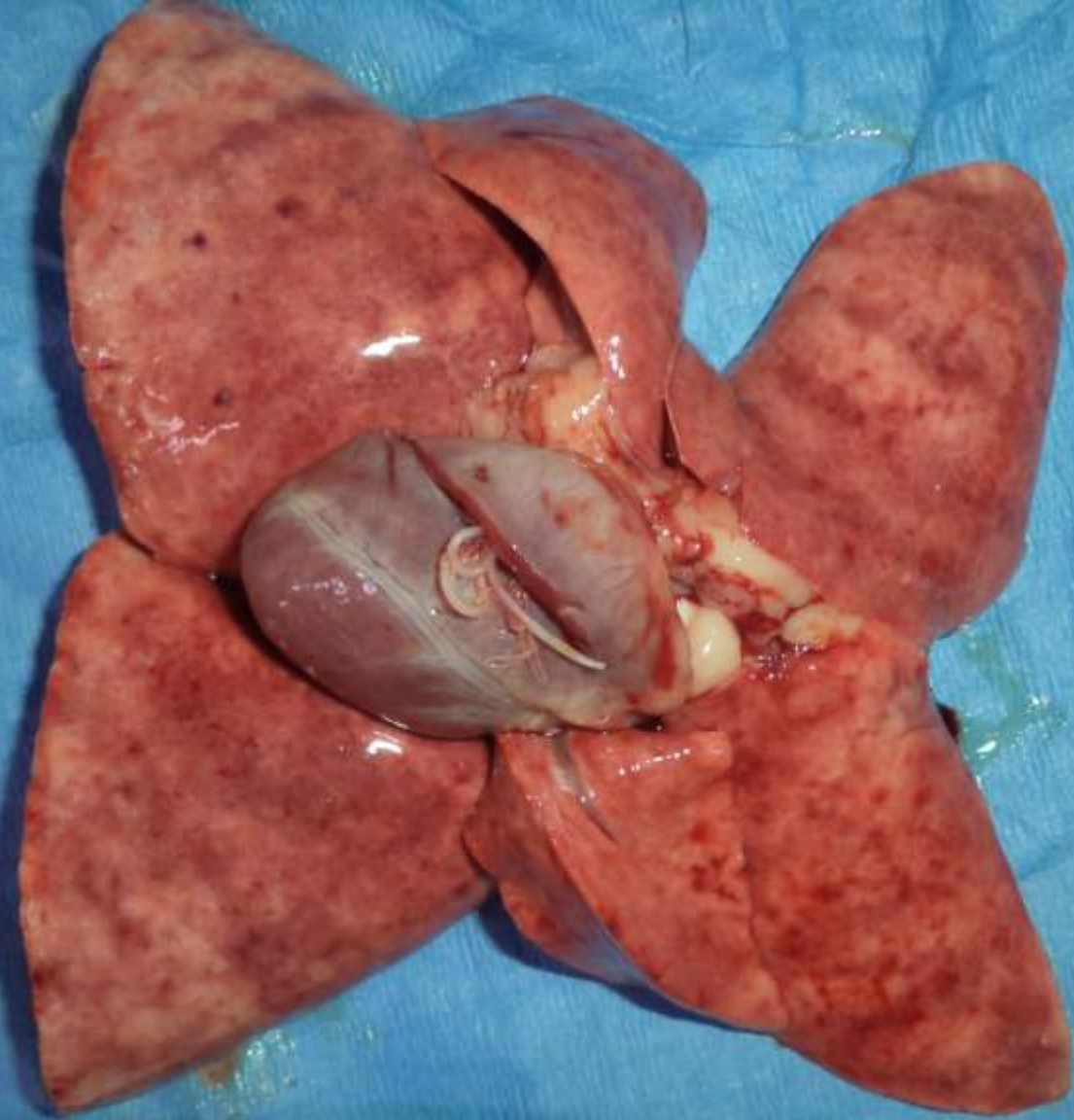
Postmortem Findings



Postmortem Findings



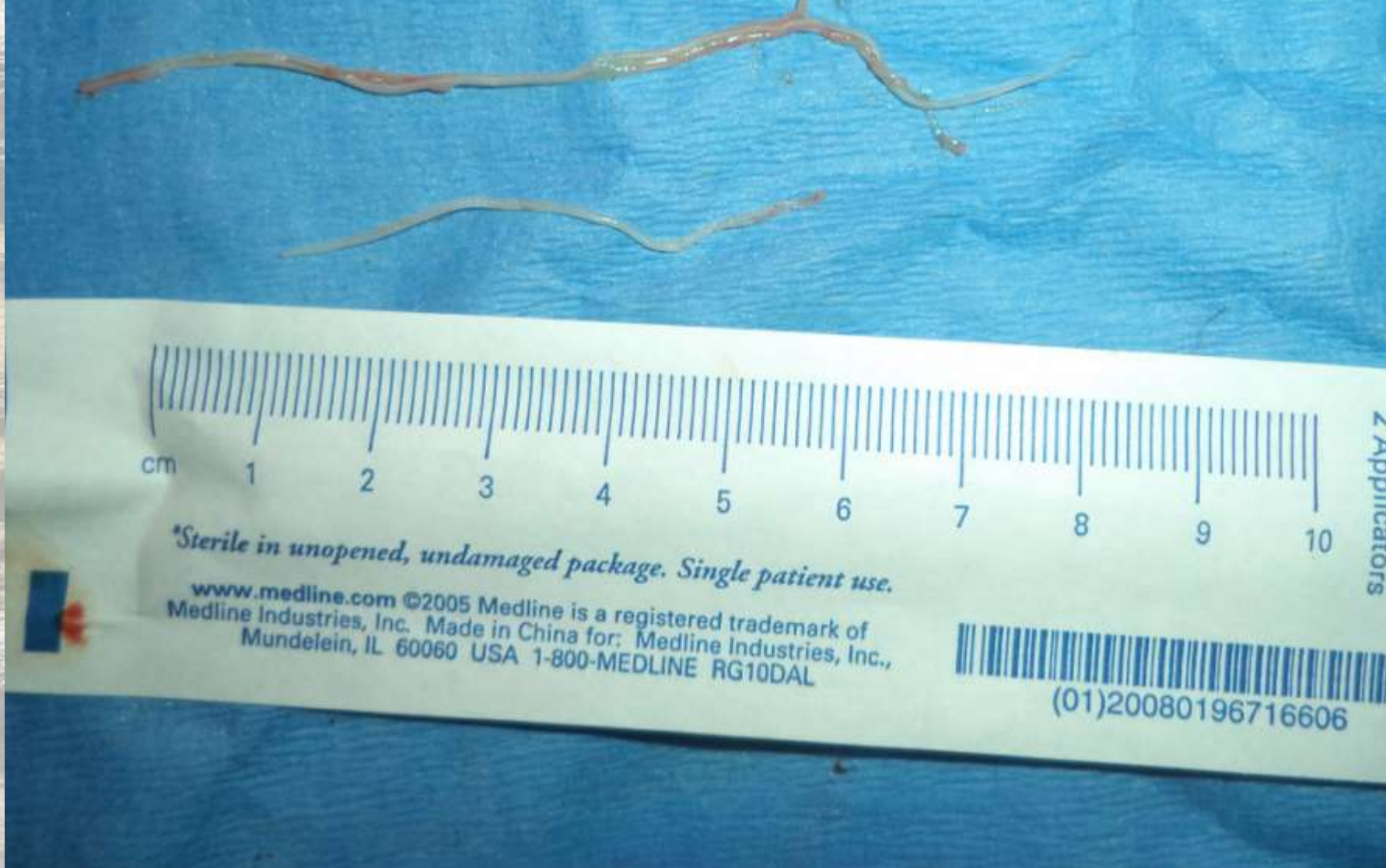
# Postmortem Findings



Reorder  
MDS202  
6 in  
(15.2 cm)  
Contents:  
2 Applicators

10 9 8 7 6 5 4 3 2 1 cm

\*Sterile in unopened, undamaged package. Single patient use.  
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## Postmortem Findings









# Questions ?

