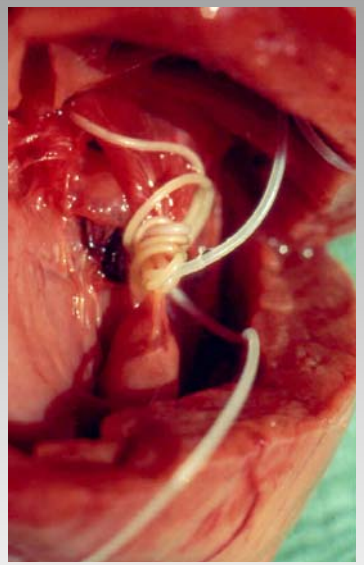
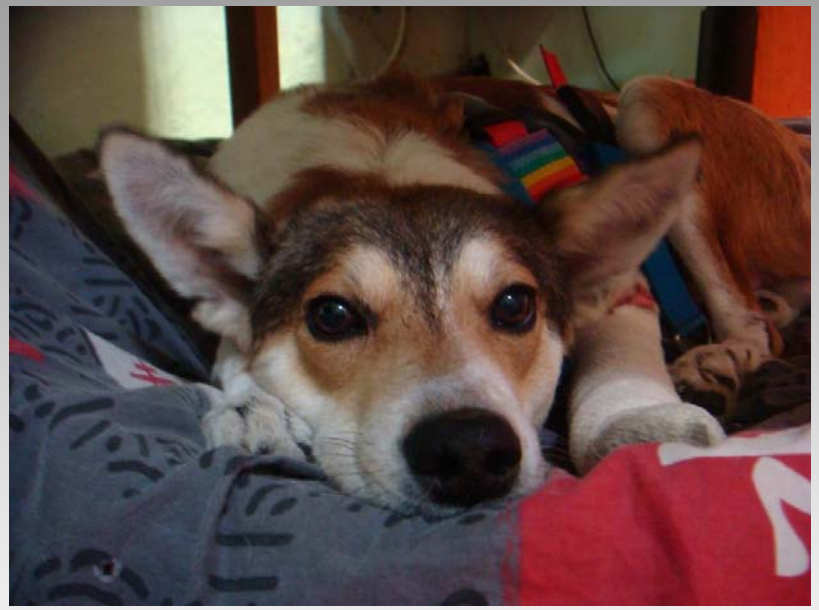
Filariosi cardiopolmonare nel cane e nel gatto





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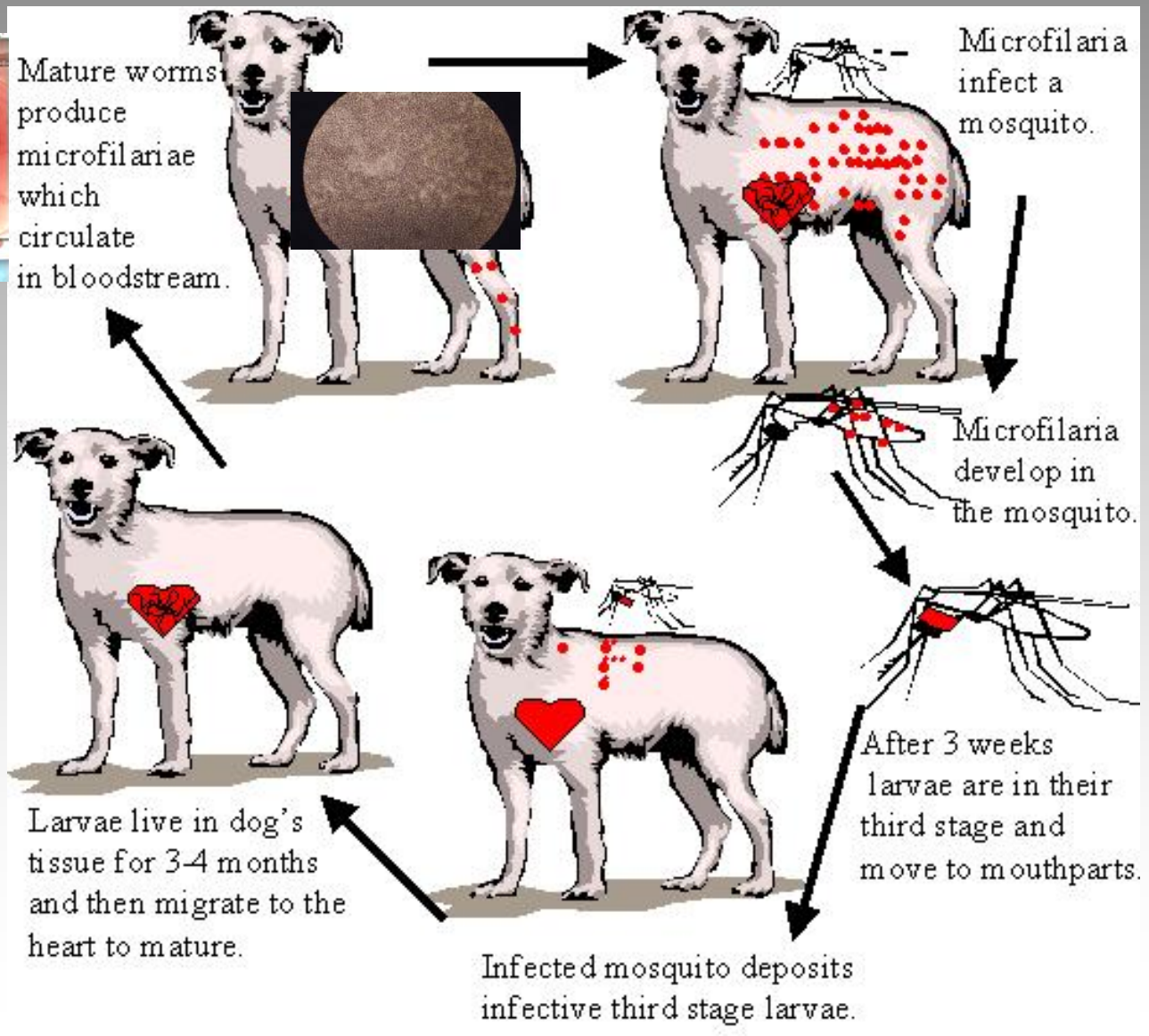
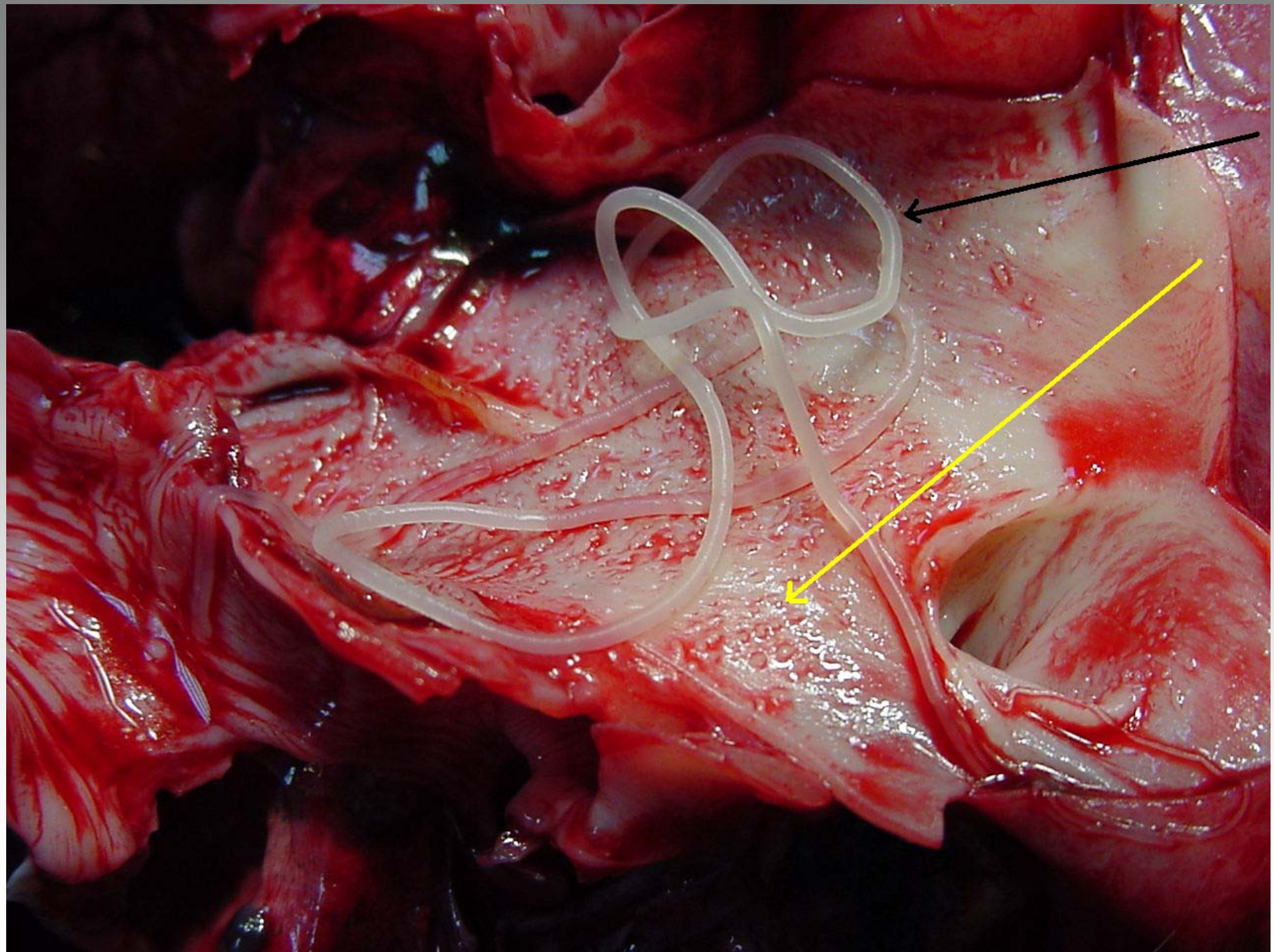
Roma 27 ottobre 2013

IZS Roma

La Vallonèa
Laboratorio di Analisi Veterinarie
www.laboratoriolavallonea.it

Ciclo ***Dirofilaria immitis***





Cane Patogenesi

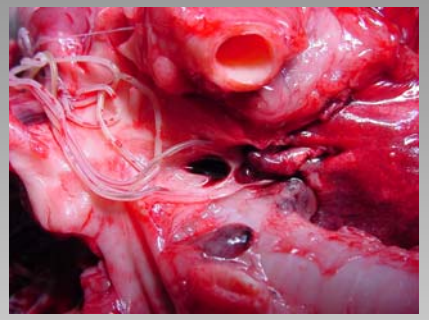
La FILARIOSI CARDIOPOLMONARE è una malattia polmonare.
Solo nel cane negli stadi avanzati può coinvolgere indirettamente le strutture cardiache destree

Nessuna lesione

Malattia infiammatoria polmonare

Malattia vascolare
(ipertensione polmonare, "cor pulmonale")

Insufficienza cardiaca congestizia destra



Presentazione clinica

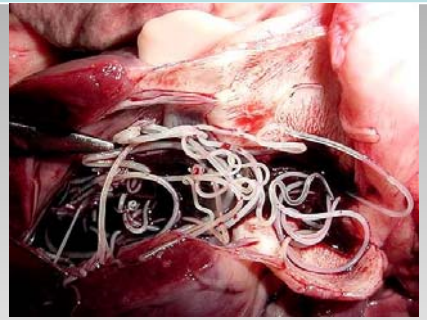
ASINTOMATICA per mesi/anni

Se non carica parassitaria elevatissima e/o intensa attività fisica

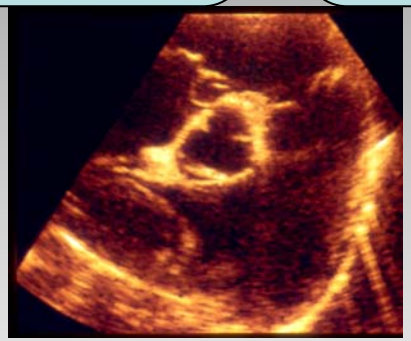
- TOSSE
- SINCOPI
- ASCITE

Acute on chronic

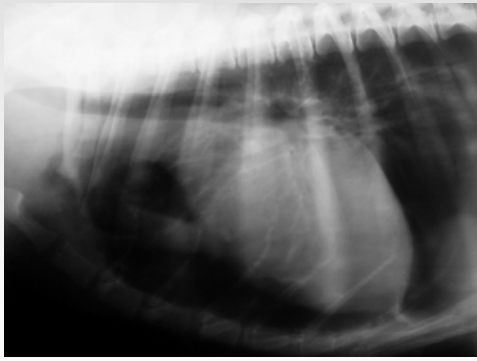
Sindrome della vena cava



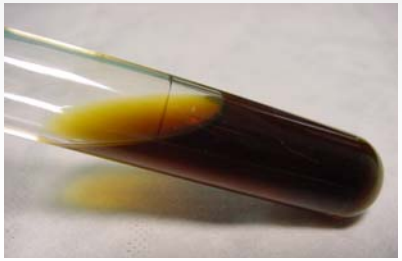
Tromboembolismo



Pneumotorace

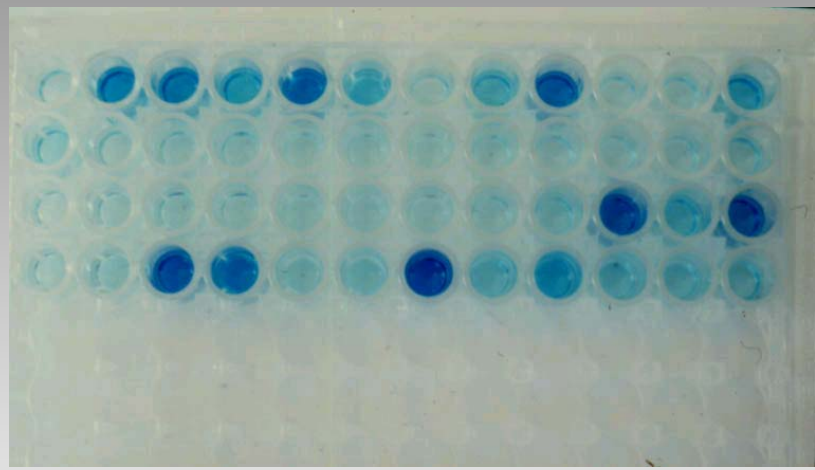


Causata da incrementi improvvisi della pressione polmonare, (tromboembolismo) con dislocazione dei parassiti dalle arterie alle camere cardiache destre



DIAGNOSI

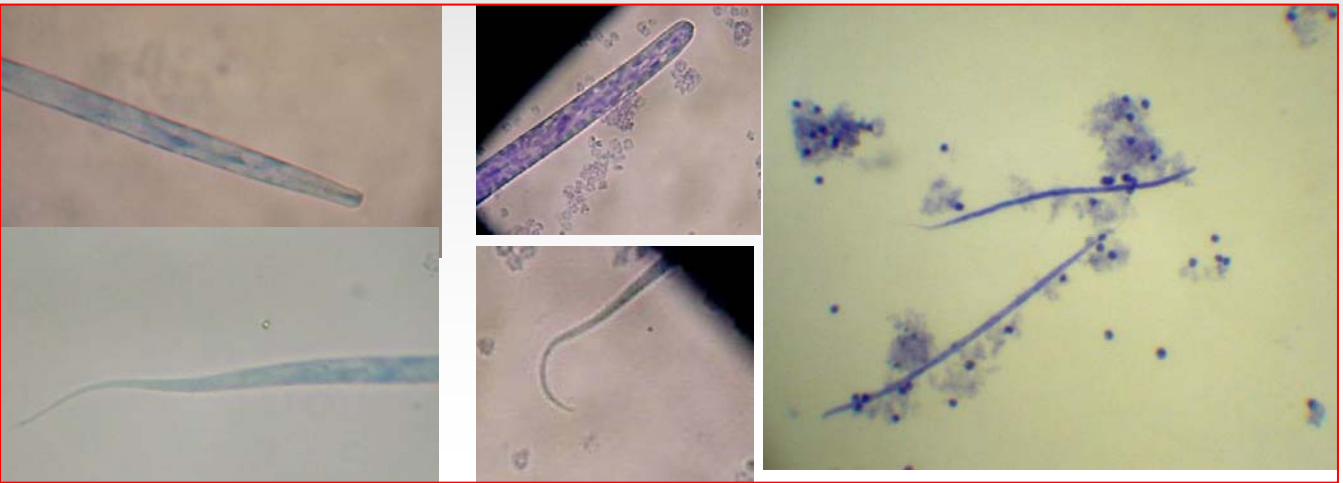
Test antigenici



134/134 > 50 mff/ml,
31/70 < 50 mff/ml.

168 out of 204 HW infected dogs Knott test positive

Courtney and Zeng (Veterinary Parasitology 94:199-204, 2001)



DIAGNOSI

“Goccia spessa“
Sensibilità 60%
Specificità 0%

Antigen testing

Sensibilità 99%
Specificità 100%

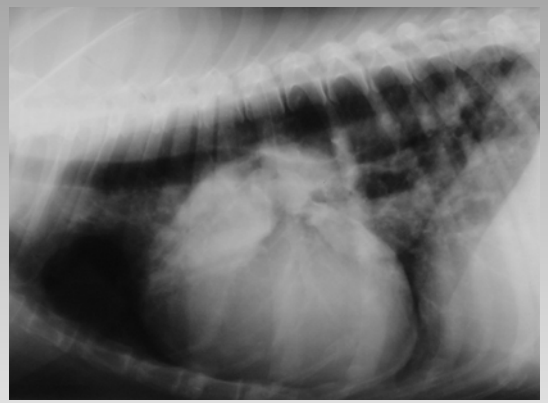
Sensibilità 80%
Specificità 100%
Knott test

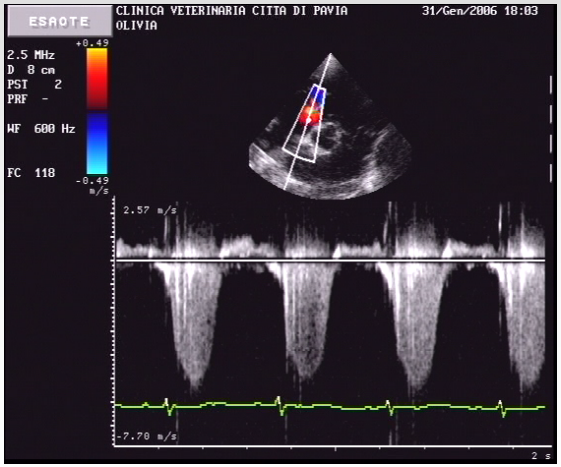
D.limitis

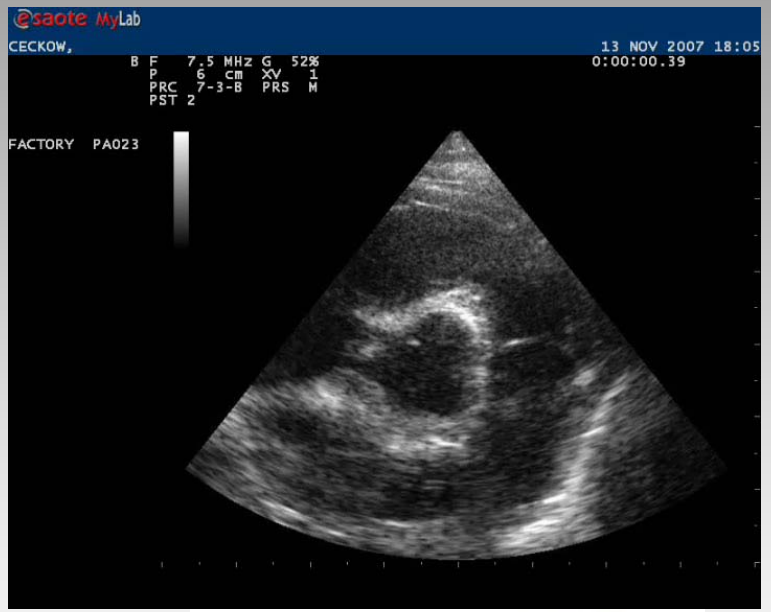
D.repens

STADIAZIONE / PROGNOSI / SCELTA TERAPIA

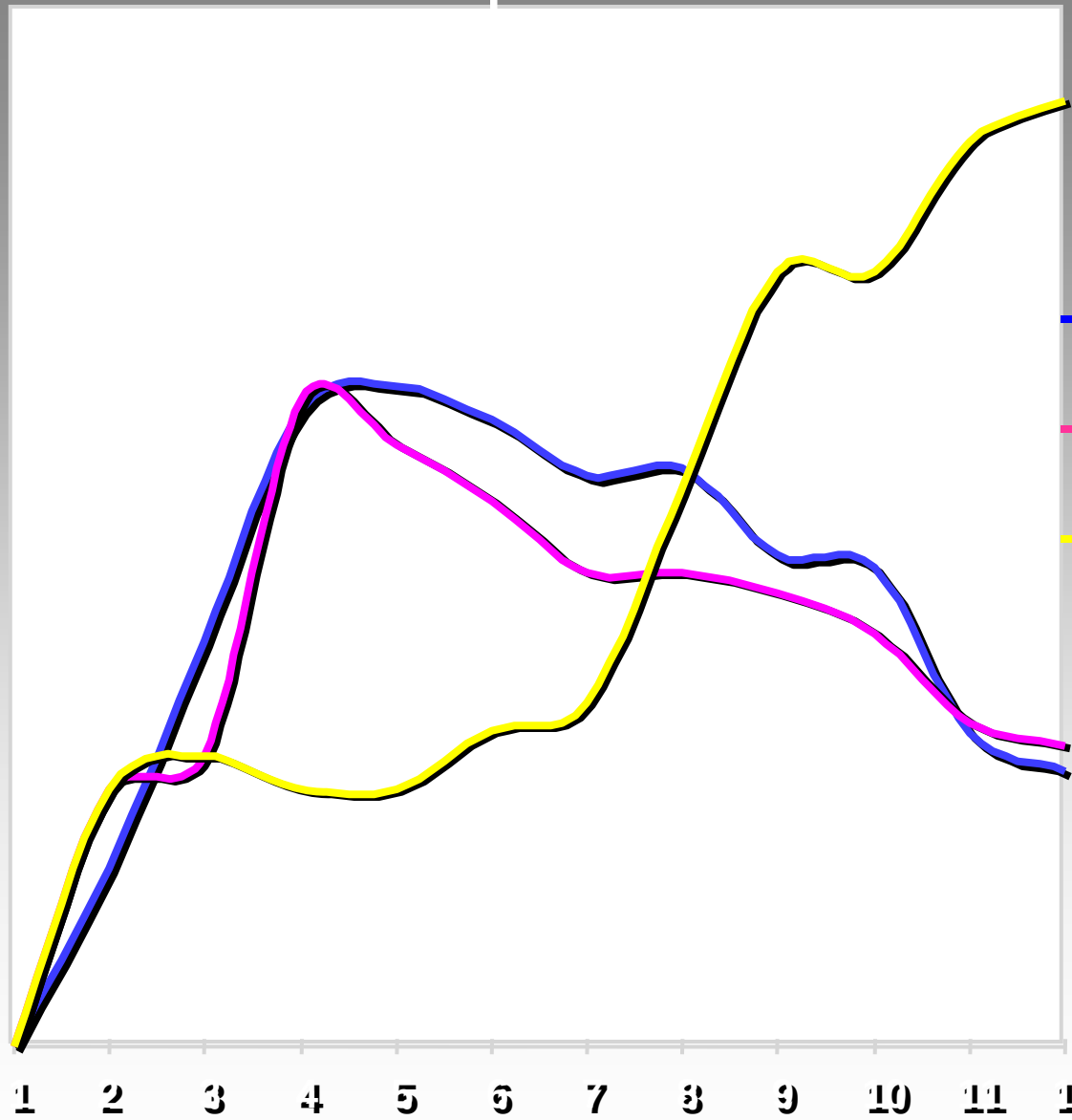
Malattia vascolare ⟺ Carica parassitaria







Carica parassitaria e malattia vascolare



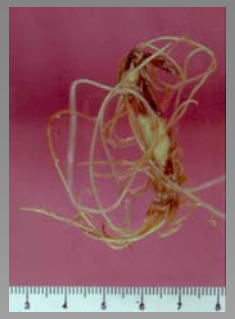
Carica parassitaria Ag tests

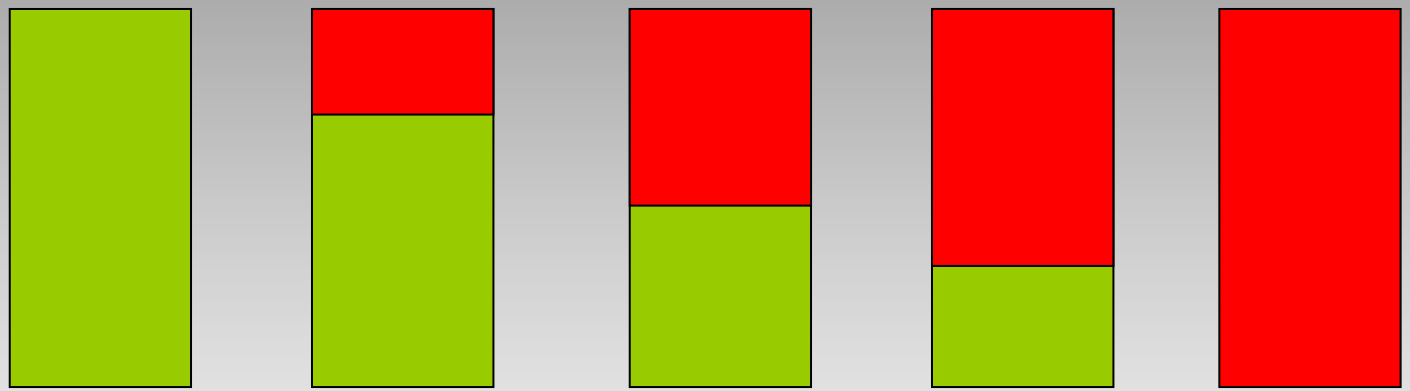
Carica parassitaria . Eco

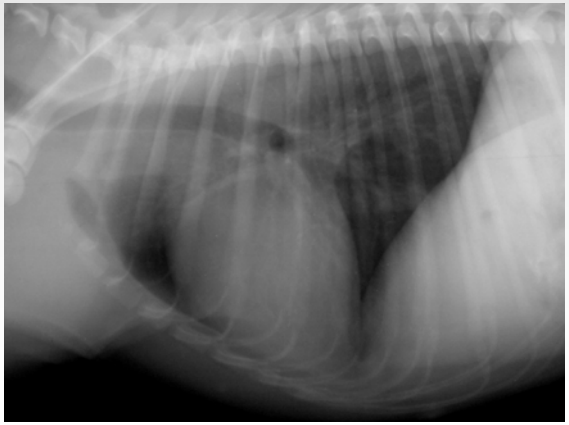
Lesioni vascolari. Radiologia

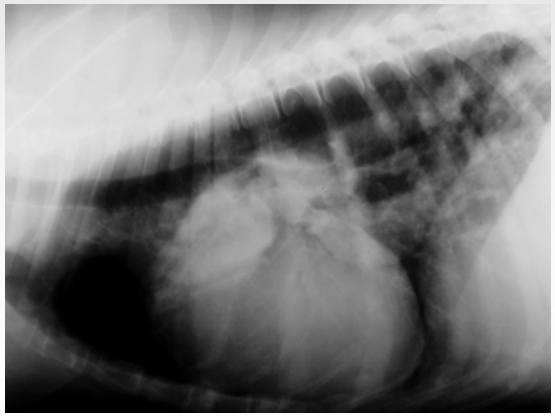
Età dei cani

Venco L et al.*Relative utility of Echocardiography, Radiography, Serologic testing and Microfilariae counts to Predict Adult Worm Burden in Dogs Naturally Infected with Heartworms.* Recent Advances in Heartworm Disease. Symposium ’01.

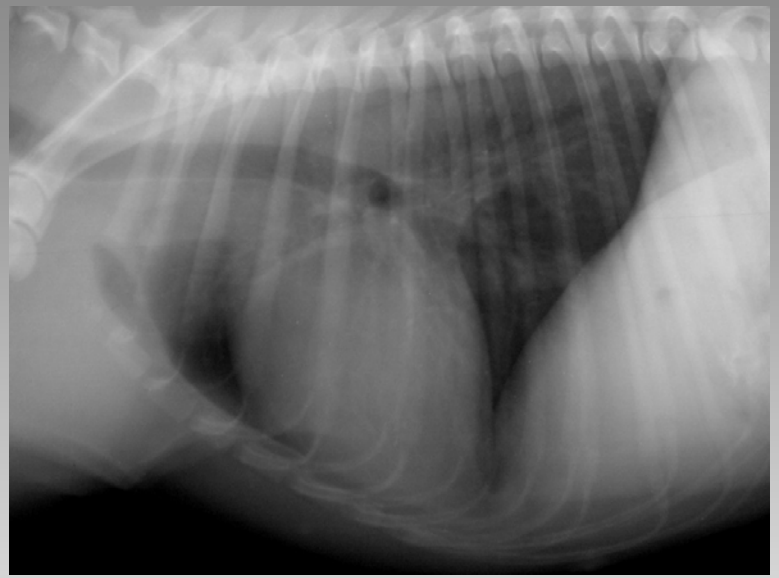


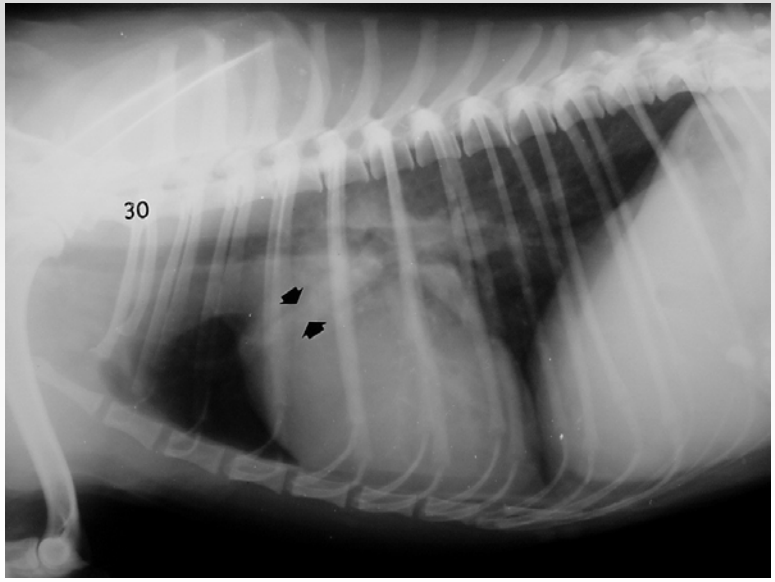


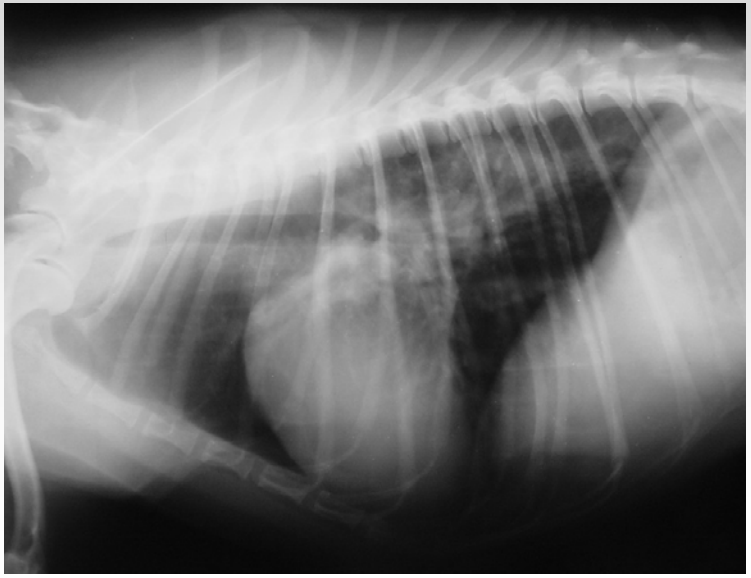


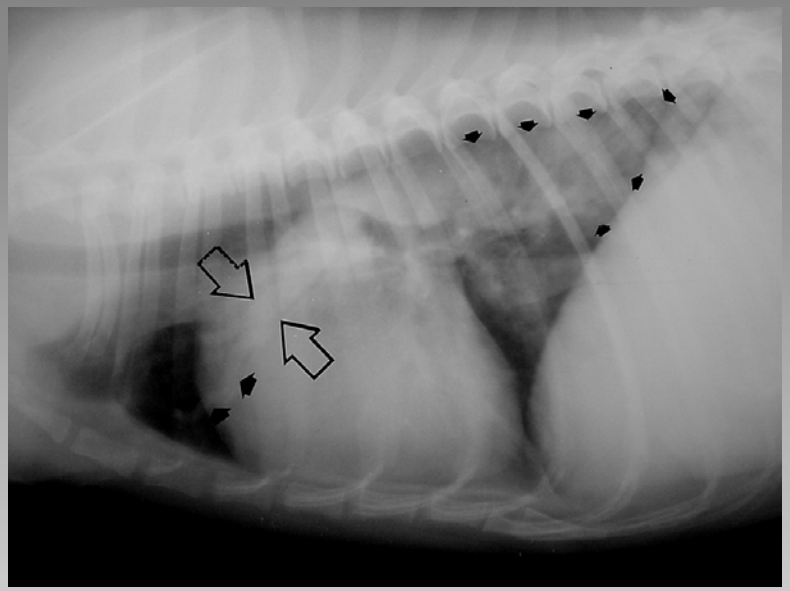


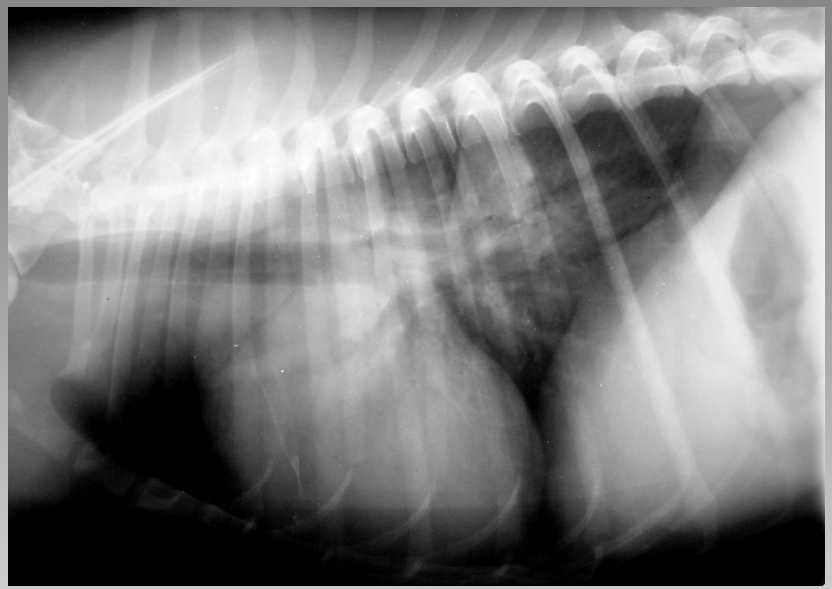
Radiologia

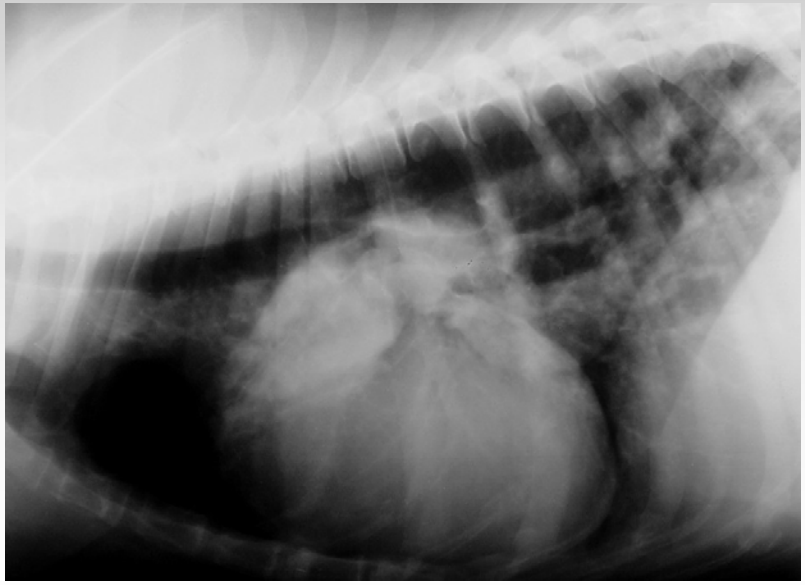


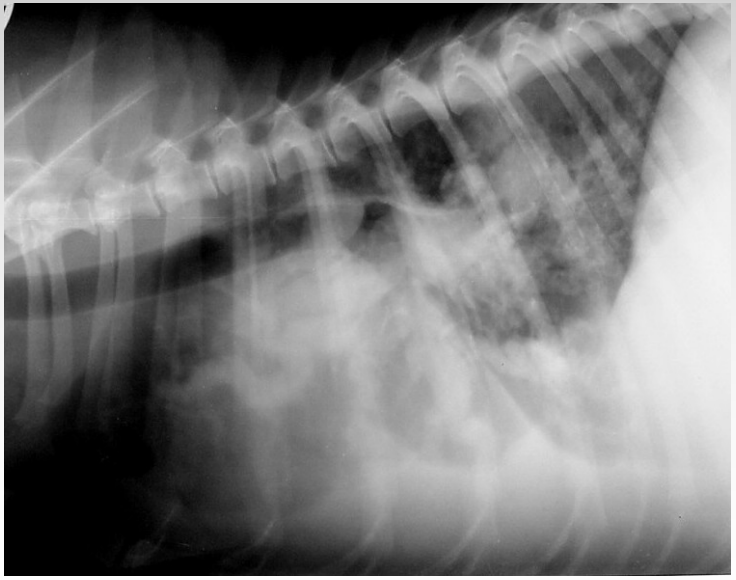






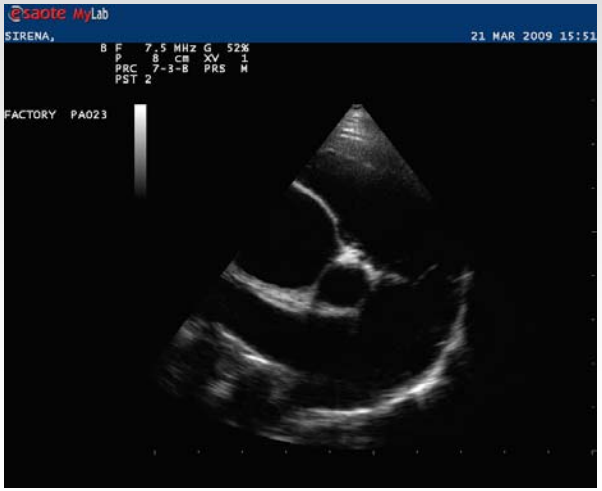


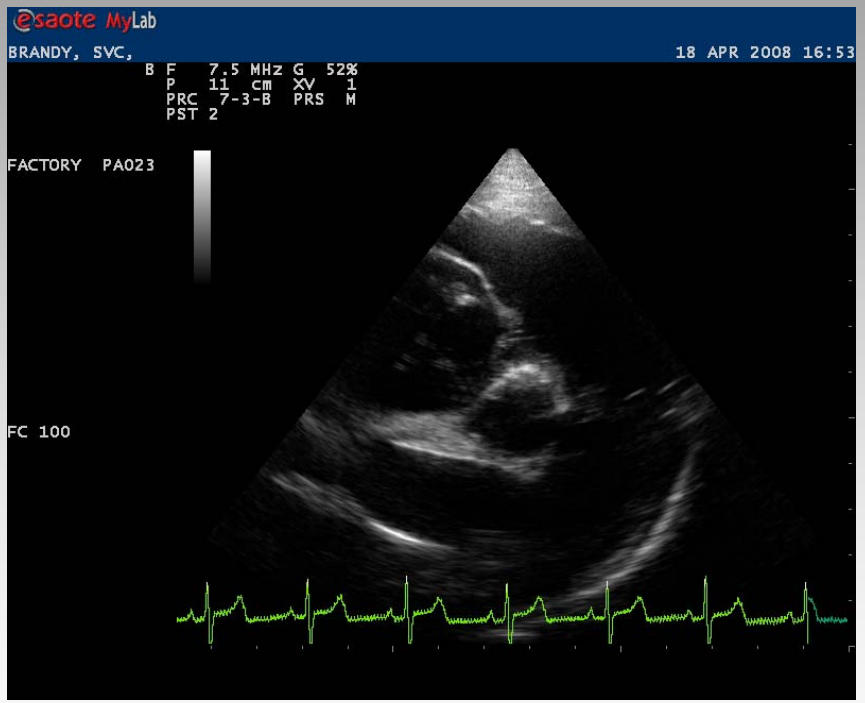




Ipertensione polmonare

Modificazione arterie polmonari

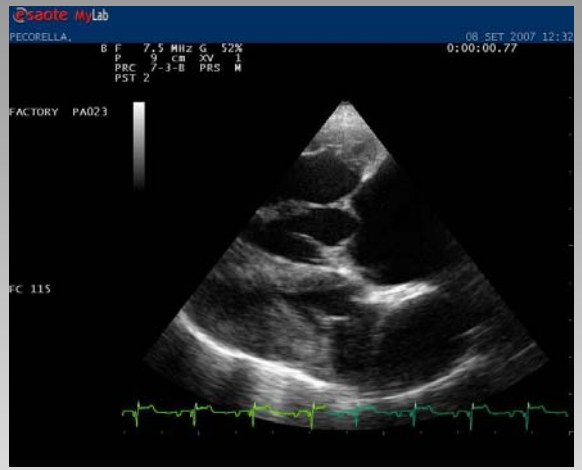


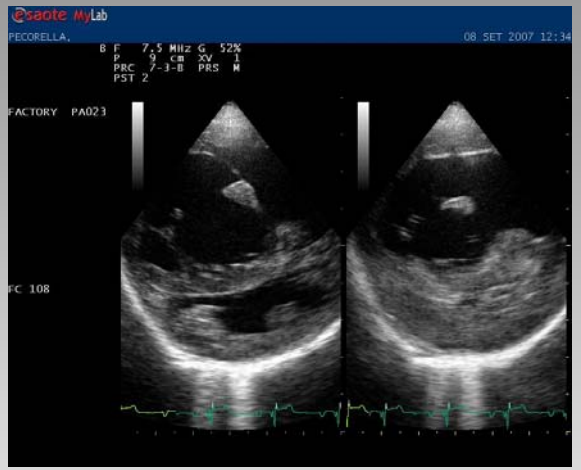


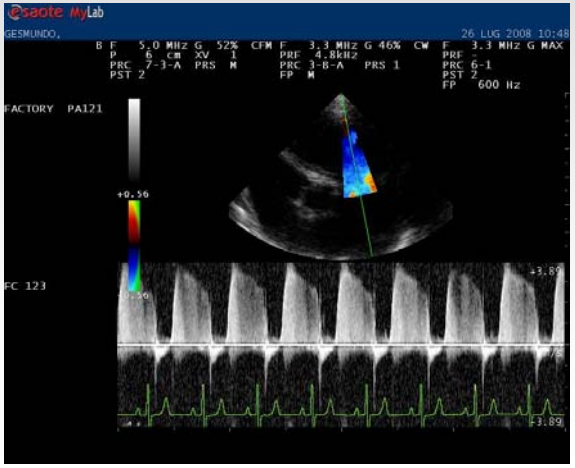
ASPETTI PROGNOSTICI

Ipertensione polmonare

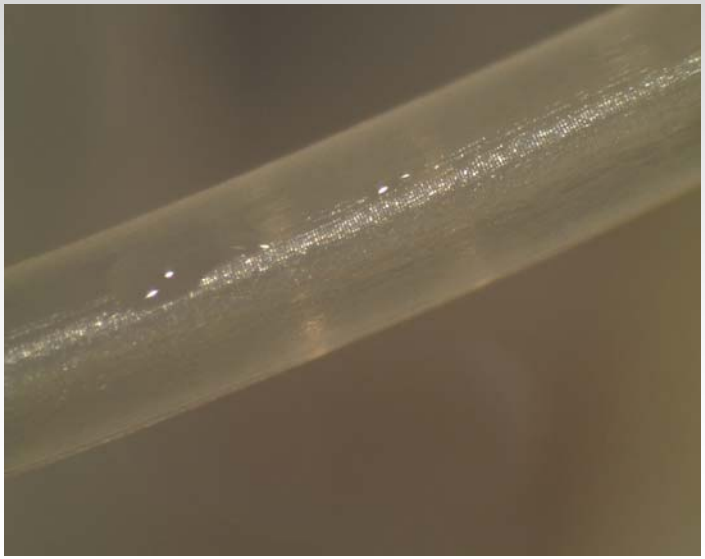
Modificazione camere destre



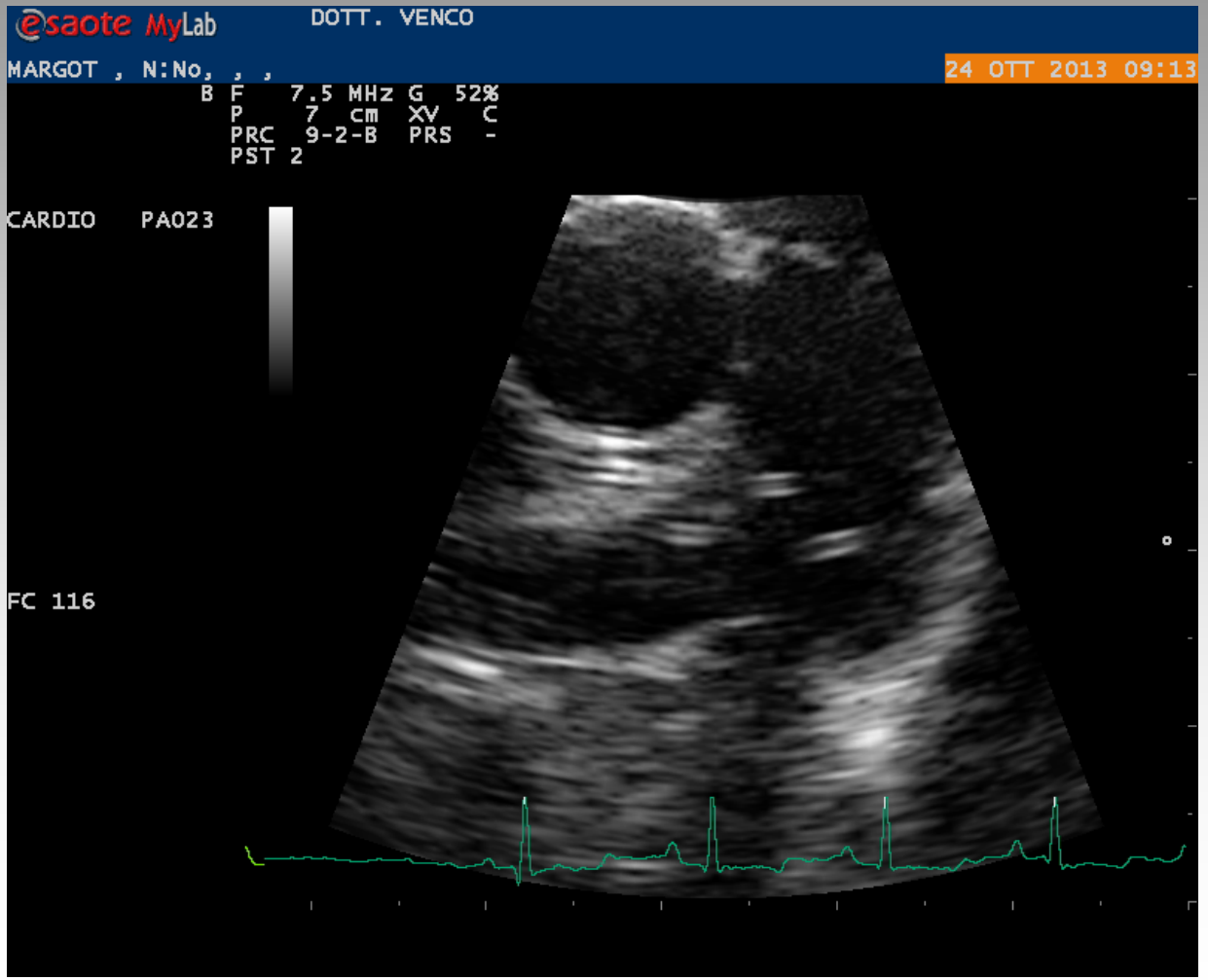




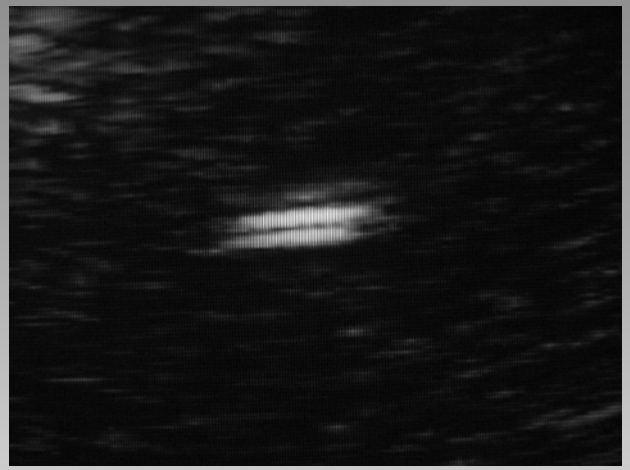
visualizzazione macrofilarie

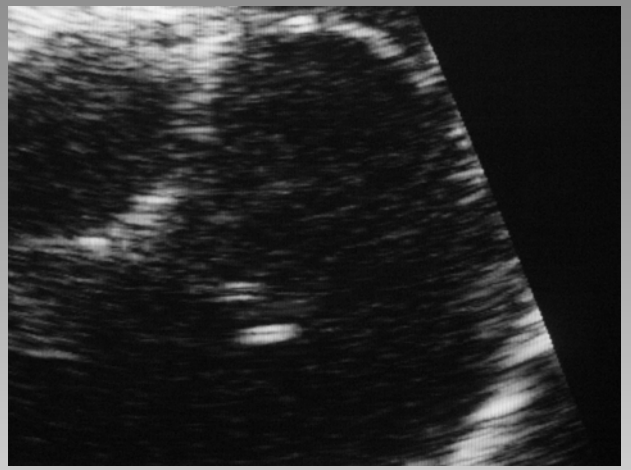


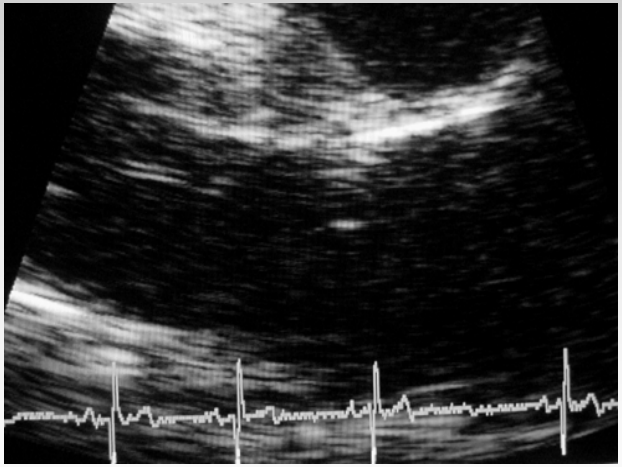
visualizzazione macrofilarie

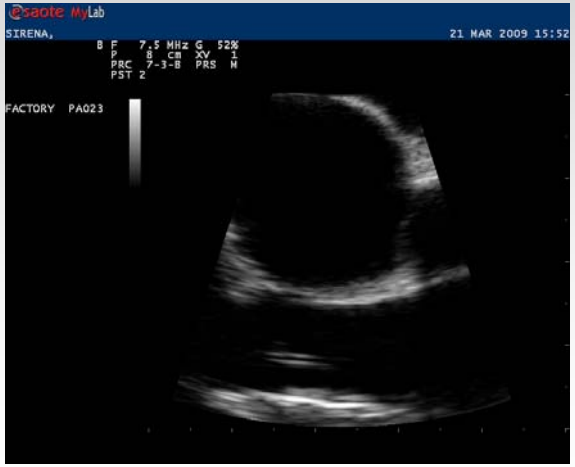


Identificazione dei parassiti



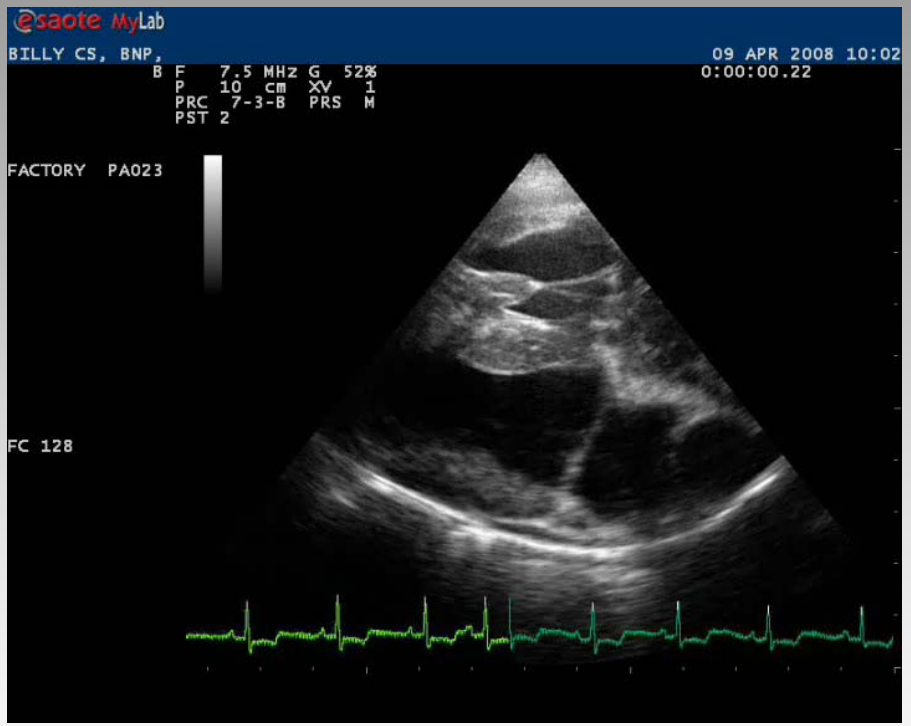


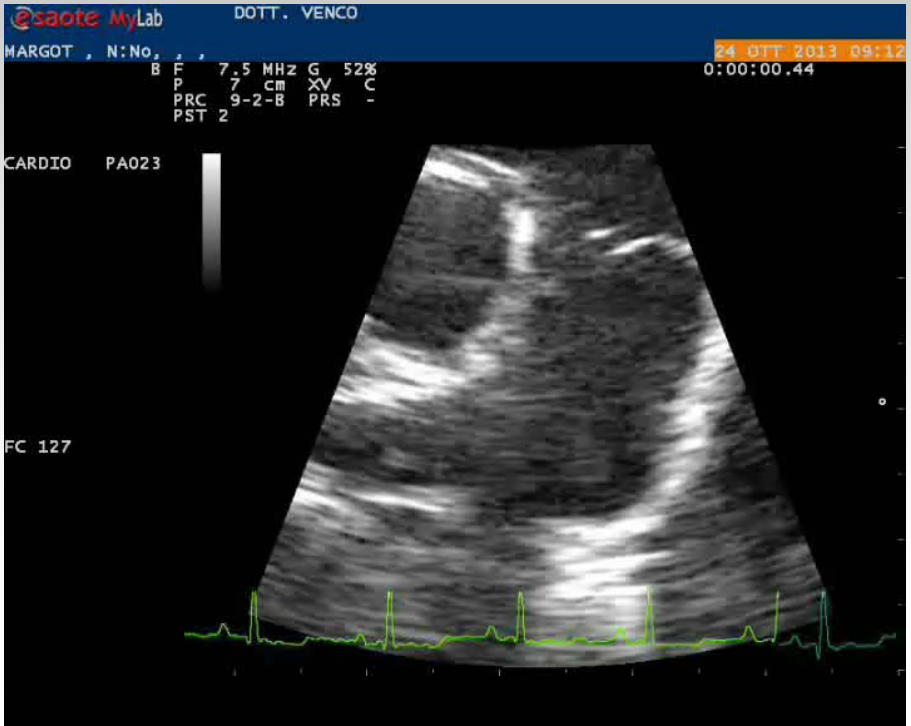




INDIRIZZI TERAPEUTICI

Identificazione dei parassiti





INDIRIZZI TERAPEUTICI

RISCHIO

Classe “basso rischio tromboembolico”

Bassa carica parassitaria e assenza di alterazioni vascolari polmonari

I soggetti appartenenti a questa classe devono presentare tutte le seguenti caratteristiche:

- ☺ Soggetto asintomatici
- ☺ Nessuna alterazione evidenziabile all’esame Rx
- ☺ Test antigenici semiquantitativi per la ricerca di antigeni circolanti positivi a basso livello oppure negativi con microfilaremia presente.
- ☺ Non evidenziabili ecograficamente macrofilarie nelle porzioni prossimali del circolo arterioso polmonare.
- ☺ Nessuna grave patologia concomitante.
- ☺ Proprietari in grado di applicare le disposizioni suggerite.

RISCHIO

Classe “elevato rischio tromboembolico”

Elevata carica parassitaria e/o presenza di alterazioni vascolari polmonari

I soggetti appartenenti a questa classe presentano almeno una delle seguenti caratteristiche:

- Soggetto sintomatico
- Alterazioni evidenziabili all’esame radiografico del torace (malattia vascolare polmonare).
- Test antigenici semiquantitativi per la ricerca di antigeni circolanti positivi a livello medio o alto.
- Evidenziabili ecograficamente macrofilarie nelle porzioni prossimali del circolo arterioso polmonare.
- Grave patologia concomitante.
- Proprietari non in grado di applicare le disposizioni suggerite.

Melarsomine Di-idrocloridato

- Due iniezioni al dosaggio di 2.5 mg / kg a distanza di 24 ore

A 10% death rate can be expected in dogs with High risk of thromboembolic complications when 2 doses are given initially.

- **Consigliato :**

  Dosi refratte: 1 iniezione seguita da due inizioni a distanza di 24 ore almeno dopo 50 giorni

Una somministrazione di melarsomina alla dose di2.5 mg / kg uccide circa il 90 % degli adulti maschi ed il10 % delle femmine riducendo di circa il 50 % la carica parassitaria (ed il rischio di tromboembolismo massivo).

The three-injection alternative protocol is the treatment of choice of the American Heartworm Society and several university teaching hospitals, regardless of stage of disease.

“Pulmonary thromboembolism is an inevitable consequence of a successful adulticide therapy. If several worms die widespread pulmonary thrombosis frequently develops. Mild thromboembolism may be clinically unapparent, but in severe cases life threatening respiratory distress can occur.”

Il periodo più critico è 7-14 giorni dopo il trattamento ma può manifestrsasi più precocemente o tardivamente

ATTENZIONE A

TOSSE
FEBBRE
DISPNEA
EMOTTISI
SINCOPI

TROMBOEMBOLISMO POLMONARE

PREVENZIONE TROMBOEMBOLISMO

- **RIPOSO !!**
- Eparina calcica
- Prednisolone

- *Aspirina*

NO

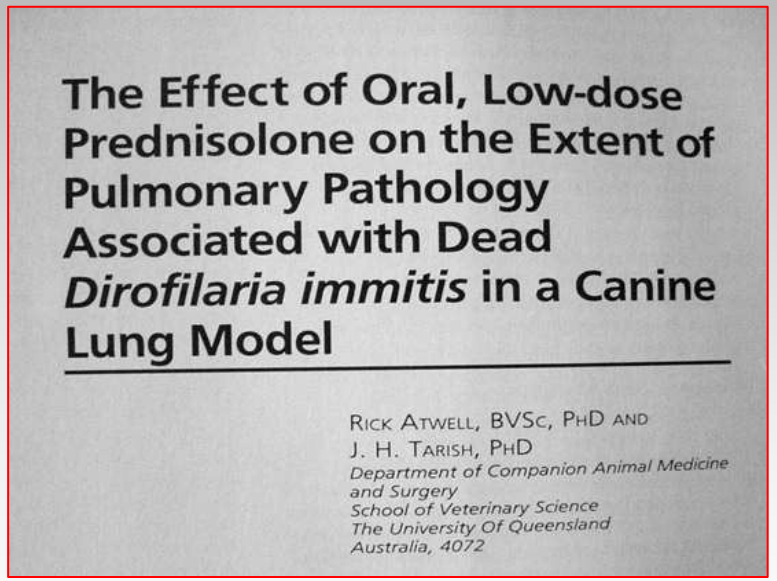
Eparina calcica

- 50-100 UI s.c. 3 times daily starting 1-2 weeks prior to and continuing for 4-6 weeks after adulticidal treatment

Vezzoni A., Genchi C. Proceedings Heartworm Symposium '89

Prednisolone

- 1 mg/kg every other day from 5 th to 23 rd day post adulticide treatment

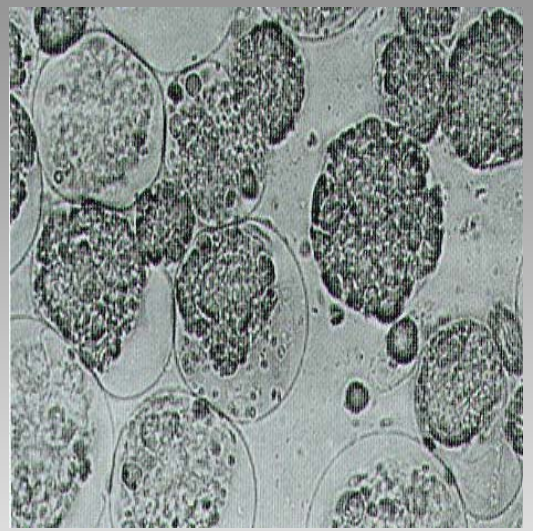


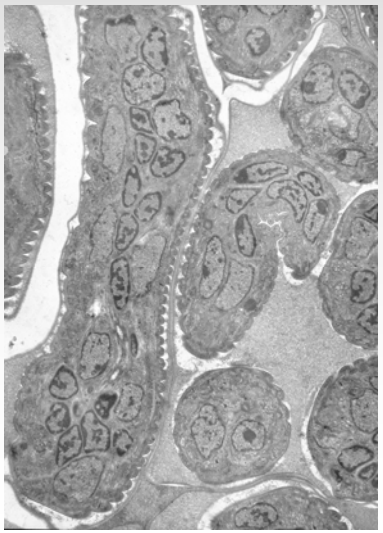
The Effect of Oral, Low-dose Prednisolone on the Extent of Pulmonary Pathology Associated with Dead *Dirofilaria immitis* in a Canine Lung Model

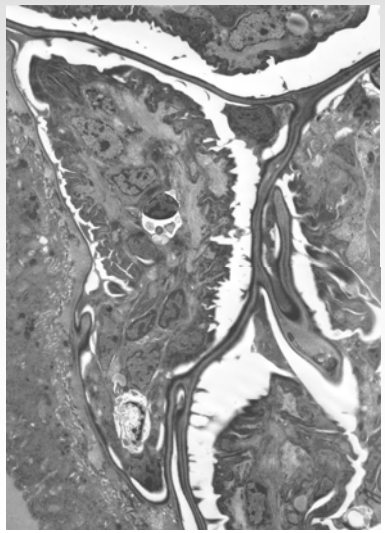
RICK ATWELL, BVSc, PhD AND
J. H. TARISH, PhD
Department of Companion Animal Medicine and Surgery
School of Veterinary Science
The University Of Queensland
Australia, 4072

Doxiciclina e Wolbachia spp

NEL CANE evidenze sperimentali sembrano suggerire che la somministrazione di Doxiciclina per via orale al dosaggio di 10 mg / Kg per i 30 giorni che precedono la prima somministrazione di melarsomina, eliminando gli endosimbionti delle macrofilarie (Wolbachia spp), possa ridurre il rischio successivo di tromboembolismo indotto dalla morte dei parassiti.







Tromboembolismo

GABBIA

Ossigeno : ***Fi O2 40-50 %***

PREDNISOLONE
1-2 mg/kg per 3 o 4 giorni
Eparina calcica
150 UI s.c. 3 volte al dì

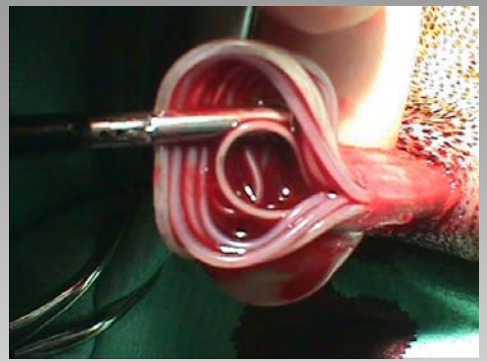
Butorfanolo : 0.1-0.2 mg/Kg i.m.
Morfina 0.5 mg/Kg s.c.

INSUFFICIENZA CARDIACA CONGESTIZIA DESTRA

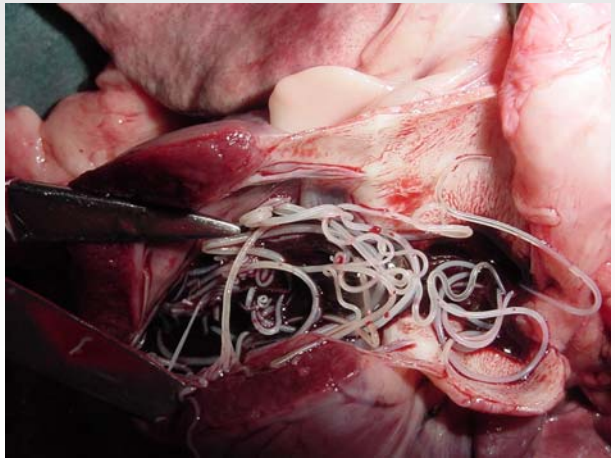
- Furosemide **1 mg /Kg B.I.D**
- Spironolattone **2 mg /Kg S.I.D.**
- Idroclorotiazide **2 mg /Kg S.I.D.**
- ACE inibitori
- Digossina

0.005-0.01 mg/kg B:I:D:
(solo in FIBRILLAZIONE ATRIALE)

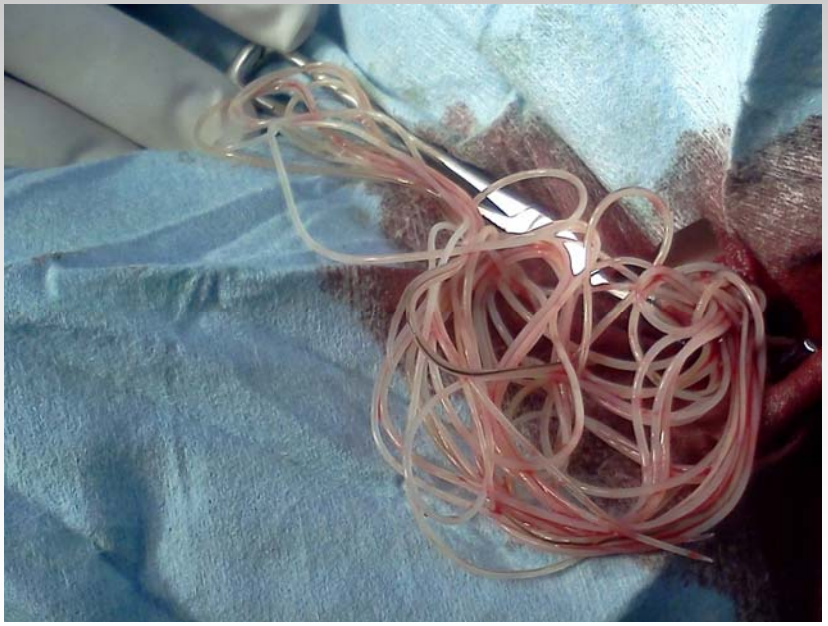
Terapia chirurgica mini-invasiva



Cani con alta carica parassitaria



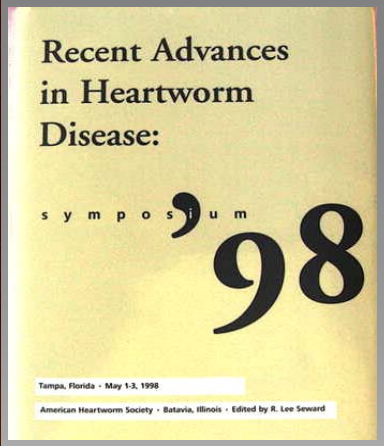
Sindrome vena cava
(indispensabile)



Surgical Removal of Heartworms Versus Melarsomine Treatment of Naturally-infected Dogs with High Risk of Thromboembolism

SIMONA MORINI[1]
LUIGI VENCO[1]
PAOLO FAGIOLI[1]
CLAUDIO GENCHI[2]

[1]Veterinary Hospital Città di Pavia, Pavia, Italy, [2]Institute of Veterinary General Pathology, Faculty of Veterinary Medicine, University of Milan, Milan, Italy



Flexible Alligator Forceps ® Fujinon

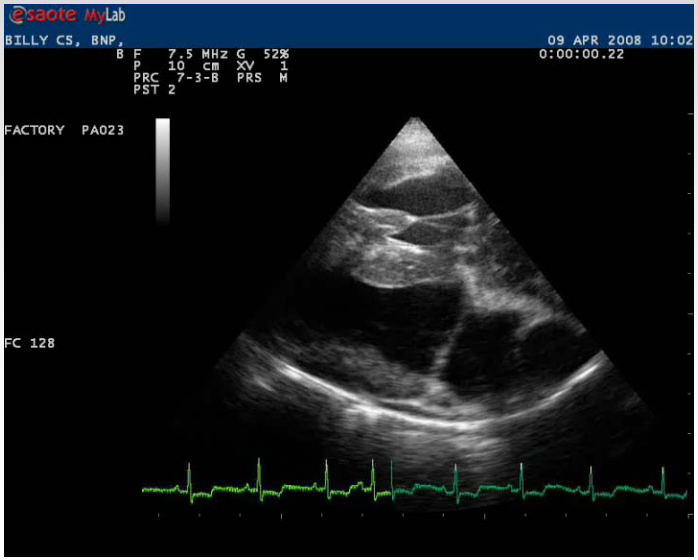
Ishihara et al.

EFFICACIA

Negativizzazione test antigenico 4-5 mesi post chirurgia.

- Sindrome vena cava 78%
- Casi cronici 65 %

Media parassiti rimossi 90%
(Ishiara et al. 1989)

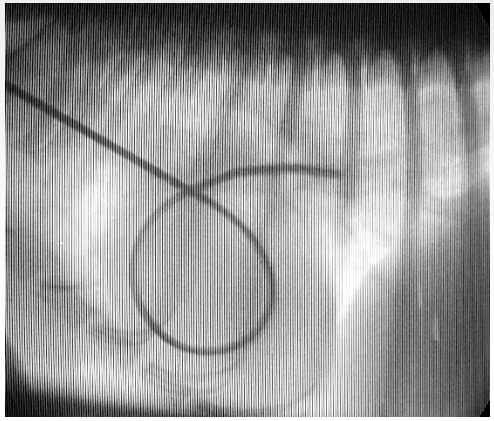


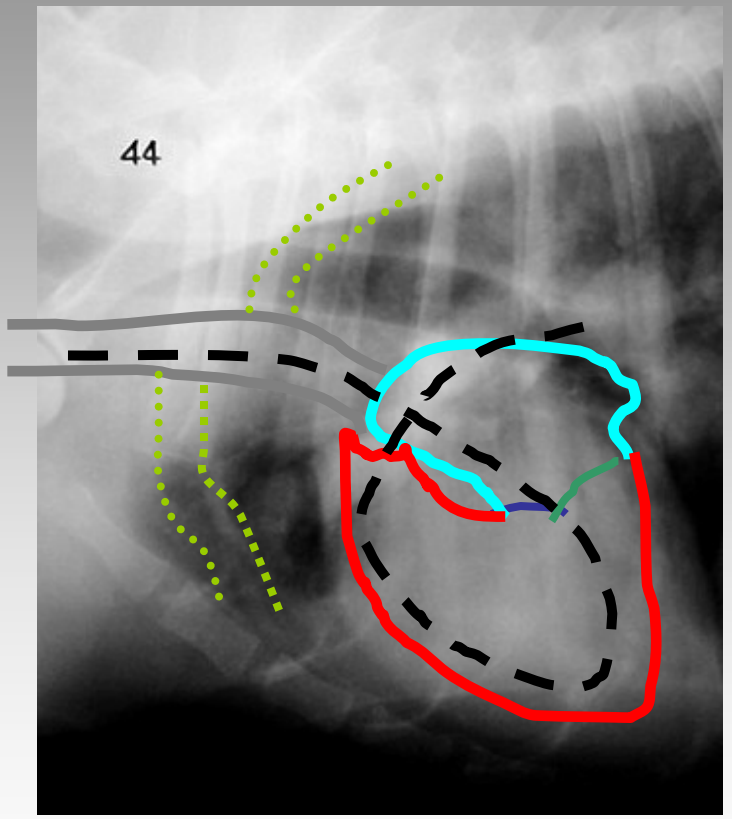
SICUREZZA

Mortalità peri-operatoria

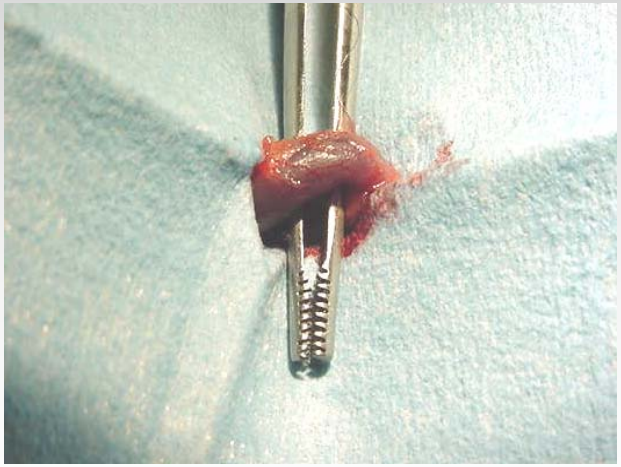
- Sindrome della vena cava 2.1 %
  (815 cani)
- Casi cronici 0%
  (3280 cani)

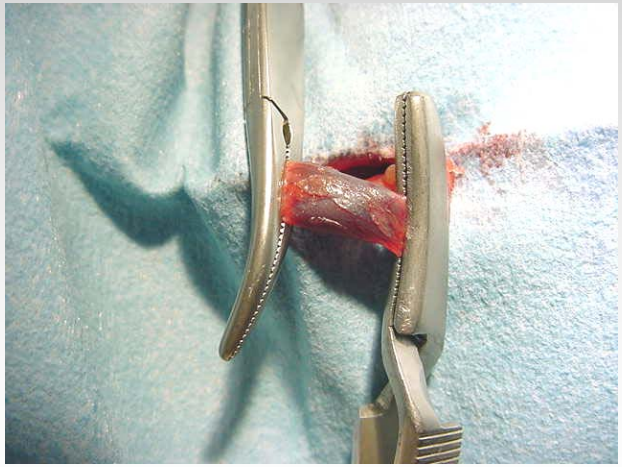
Tecnica





Tecnica





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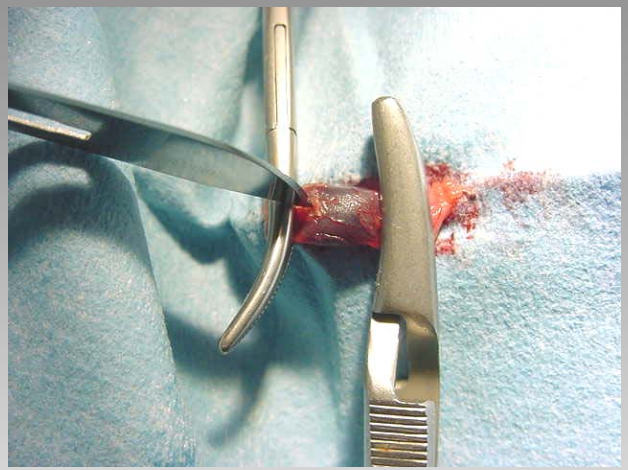

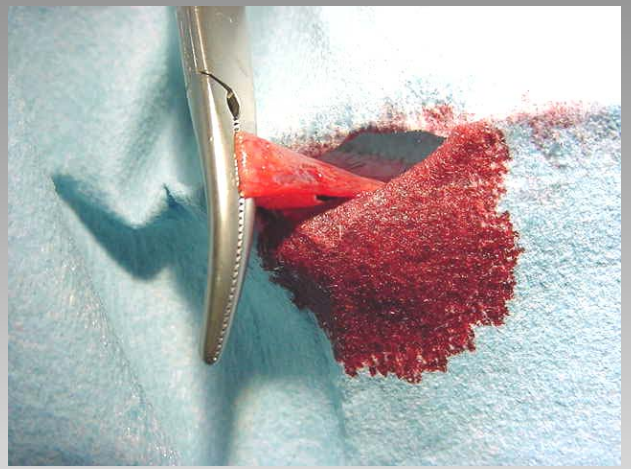

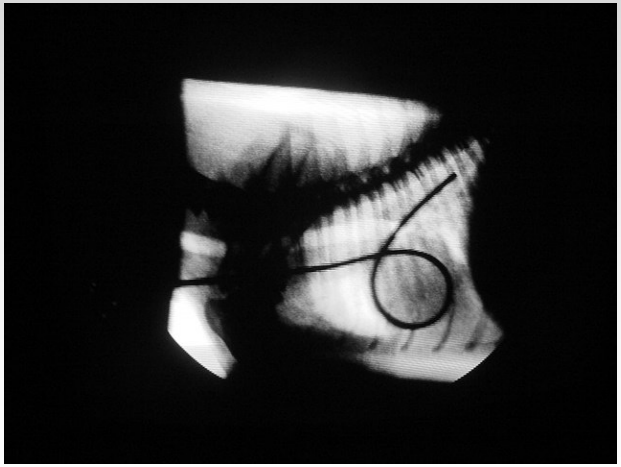

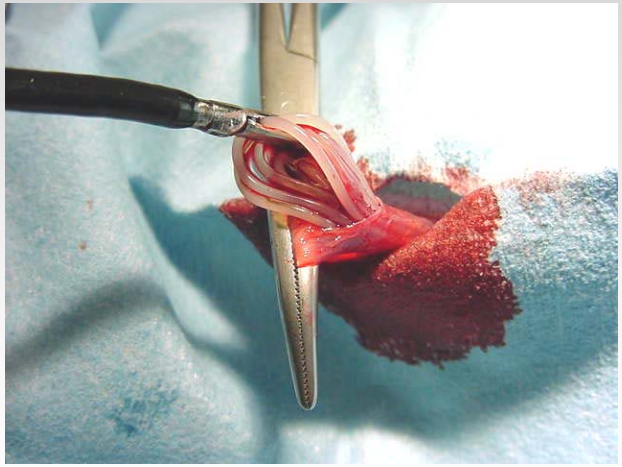

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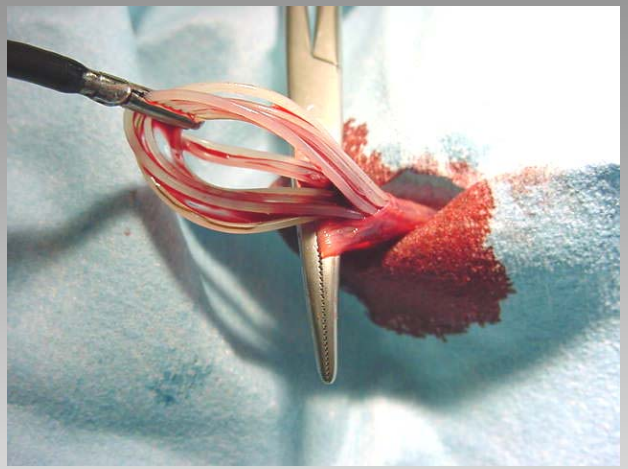

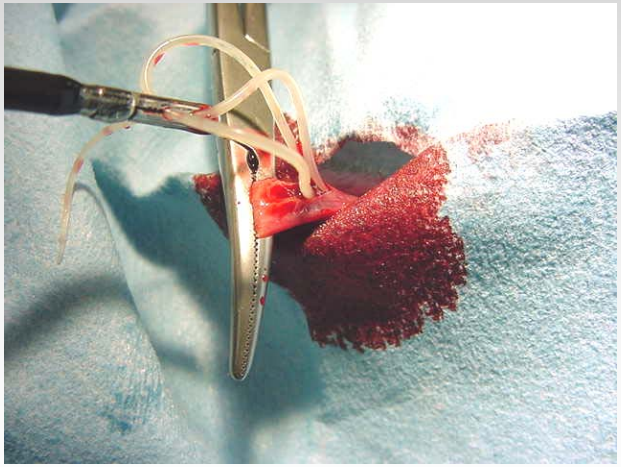

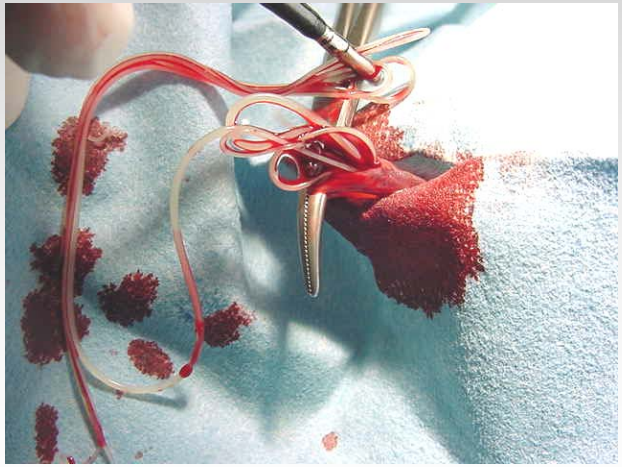

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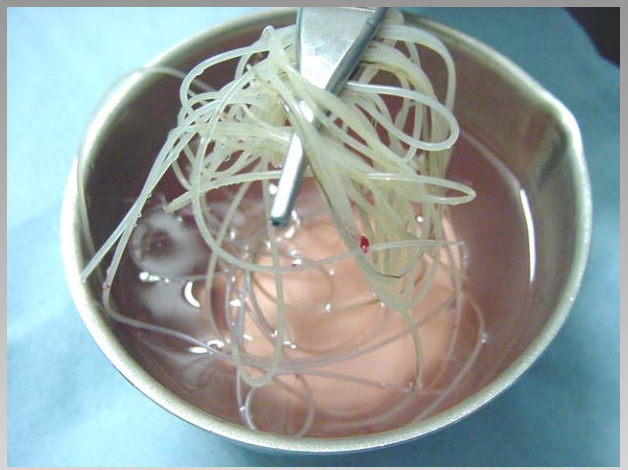
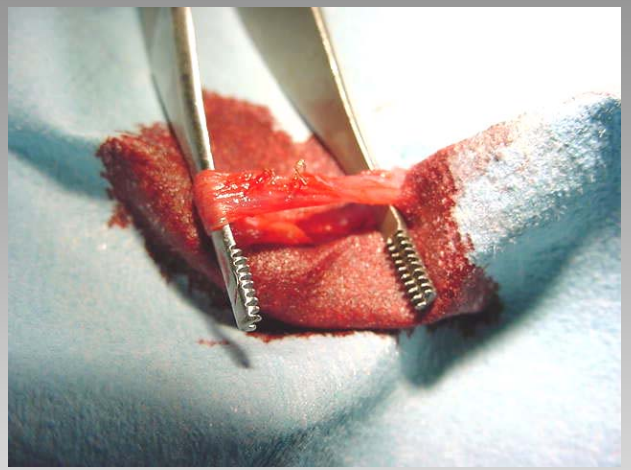
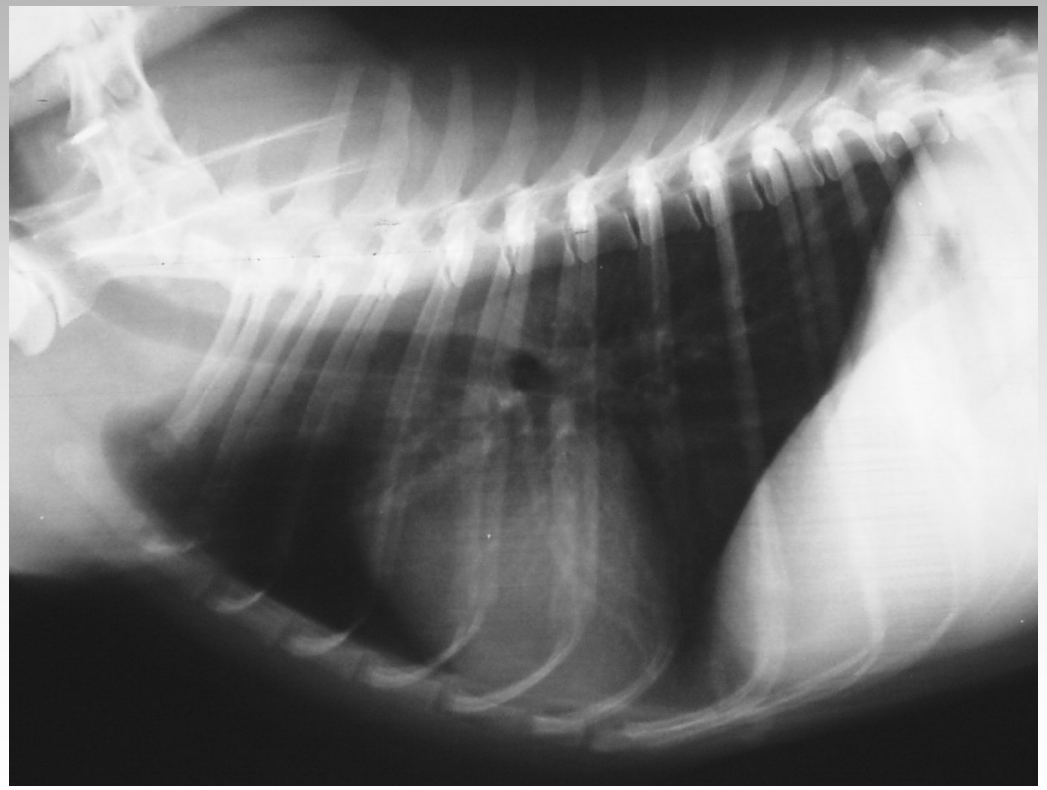


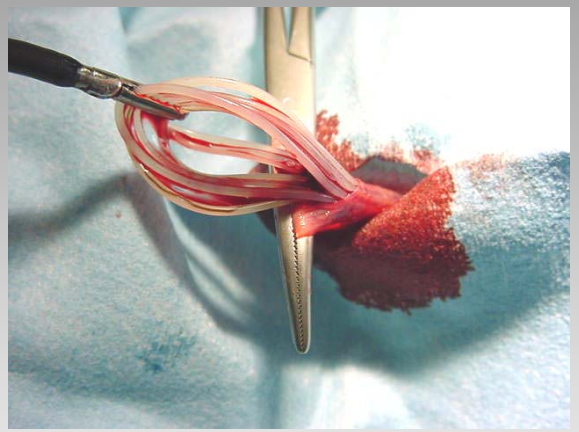


Ecocardiografia trans-esofagea

Zoe

Femmina 5 anni **Nessun sintomo**
Microfilaremia assnete Ag Positivi alto itolo.
Elevata carica ad ecocardiografia





Efficacy of long-term monthly administration of ivermectin on the progress of naturally acquired heartworm infections in dogs.

Venco L, Mc Call JW, Guerrero J, Genchi C

Vet Parasitol. 5;124(3-4):259-68 2004

- **Tempi > 18 – 24 mesi**
- **Imprevedibilità del tromboembolismo**
- **Monitoraggio attento**
- **Non consigliata nei soggetti sportivi/attivi**
- **Non consigliata nei soggetti con alterazioni polmonari**

Terapia alternativa (“soft kill“)

- Doxiclina 10 mg/kg s.i.d per 30 giorni
- Ivermectina (dosaggio per profilassi) 2 volte al mese per 10 mesi

CHEMIOPROFILASSI

Lattoni macrociclici a macrolidi semisintetici

(Ivermectine-Milbemicine) Prodotti fermentazioni batterica. Inibiscono lo sviluppo delle L3 infestanti eventualmente inoculate nei primi 30-40 giorni

- Ivermectina **Formulazionie Orale**
- Moxidectina **Formulazionie Orale e “Spot on“**
- Selamectina **Formulazionie spot on**
- Milbemicina **Formulazionie Orale**

somministrazioni mensili

- Moxidectina **Iniettabile a lento rilascio (annuale)**

Gatto ospite suscettibile ma non ideale per *D.immitis*

infestazione caratterizzata da:

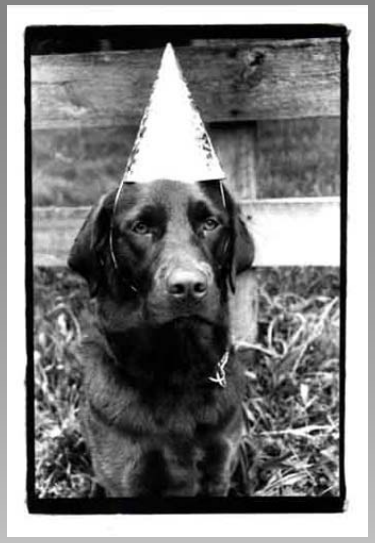
Prevalenza più bassa rispetto al cane

Bassa carica parassitaria

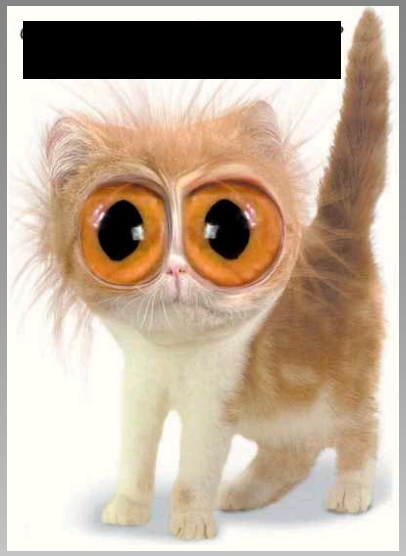
Vita più breve dei parassiti

Microfilariemia rara e transitoria *(non è reservoir)*

Risposta imprevedibile all'infestazione



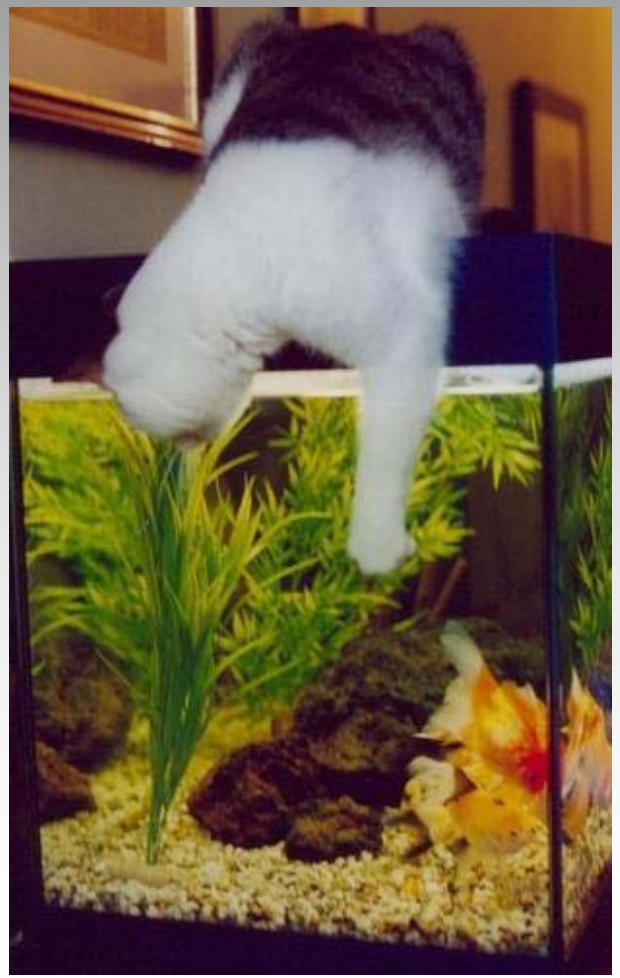
- Malattia cronica
- Talvolta episodi acuti nelle fasi avanzate
- Sintomi tipici



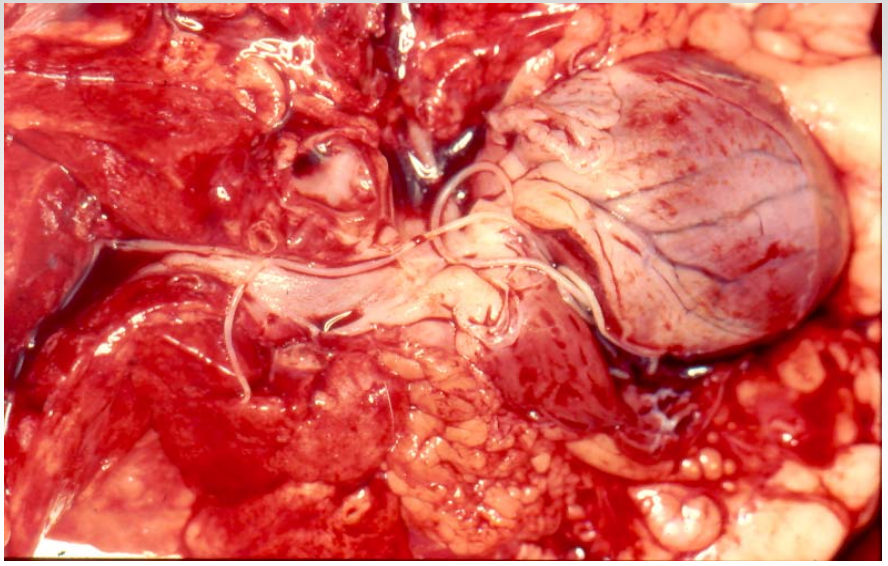
- Malattia acuta
- Talvolta forme croniche
- Nessun sintomo tipico

Forme cliniche

ASINTOMATICA



MORTE IMPROVVISA

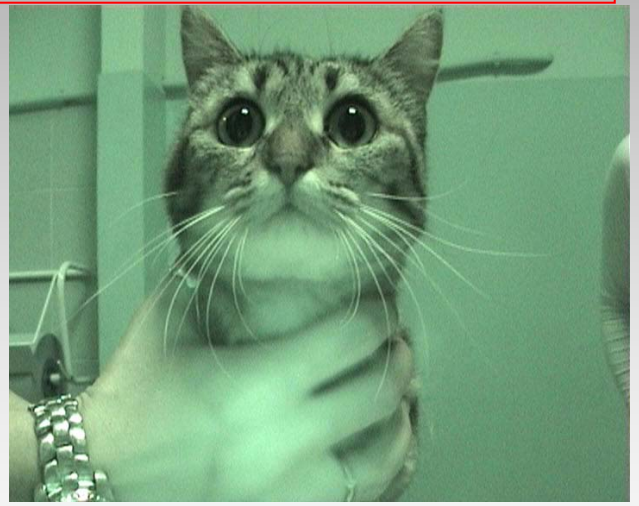


ACUTA

Dispnea

Tosse Vomito

Emottisi Sincopi



CRONICA

Tosse Vomito

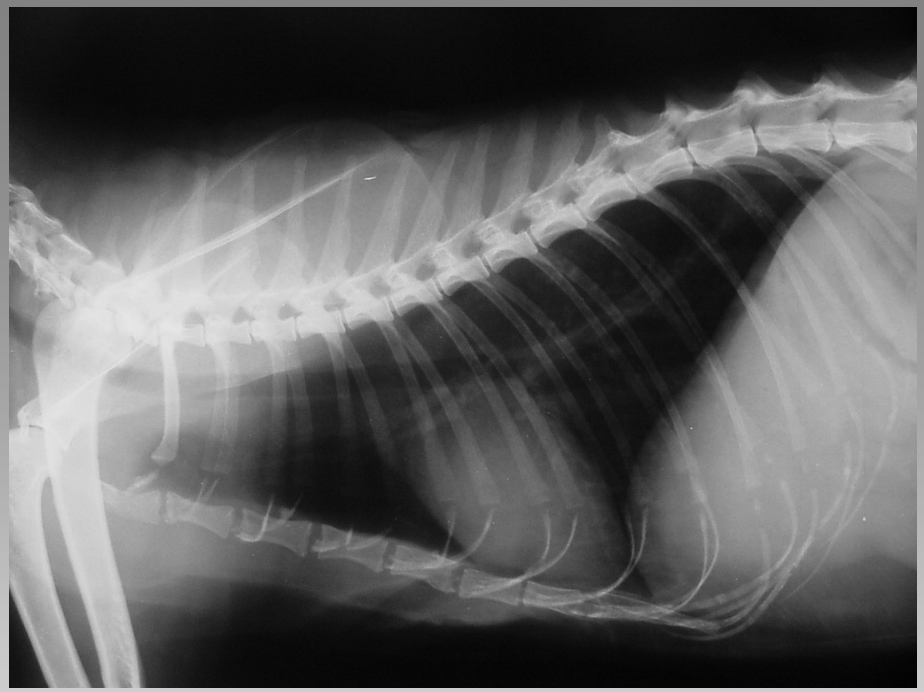
Dimagrimento

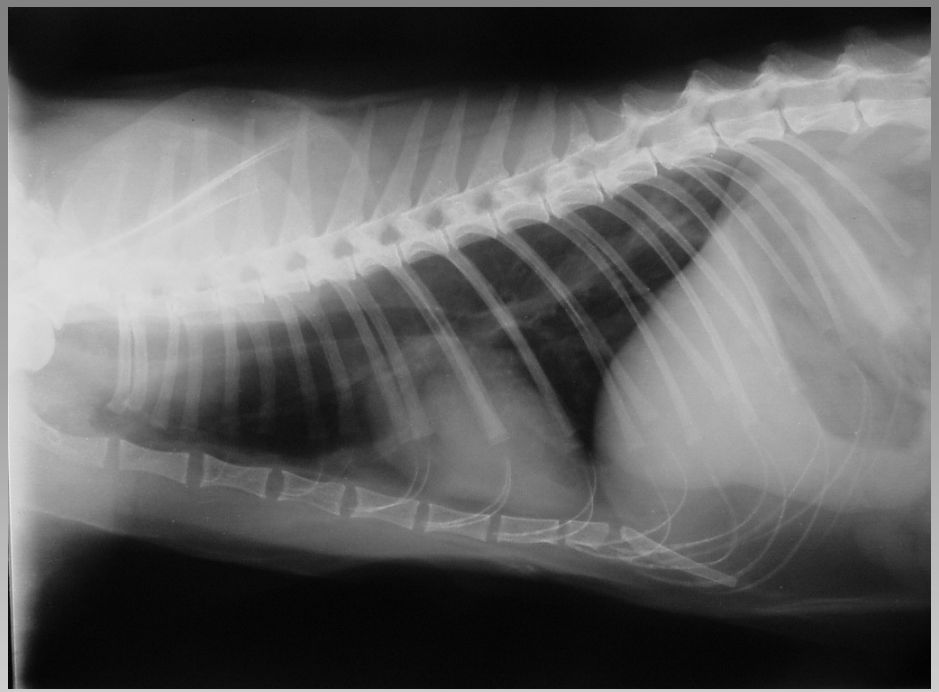
Diarrea

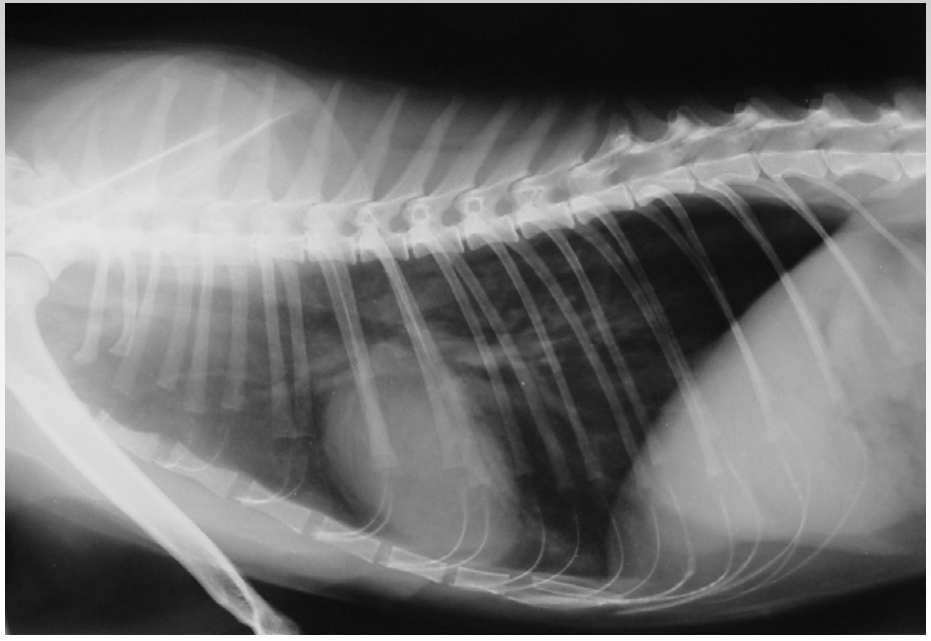
DIAGNOSI DIFFICOLTOSA

Ray Dillon

If you’re not seeing Heartworm positive cats in your clinic, rest assured that Heartworm positive cats are seeing you



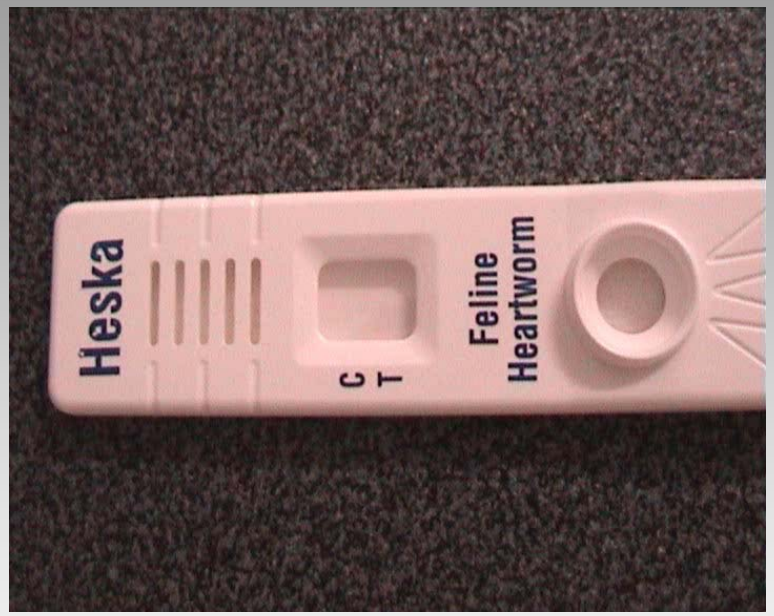




Test anticorpale

sensibilità 95 %

specificità ?



consentono di escludere infestazione se negativi ma necessitano di altre indagini se positivi

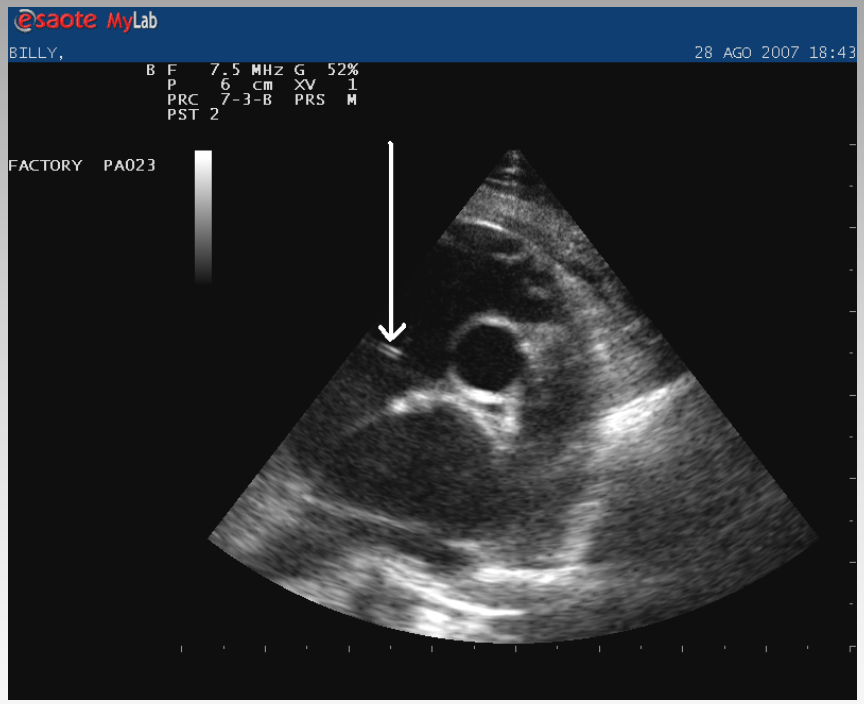
titolazione anticorpi aumenta specificità

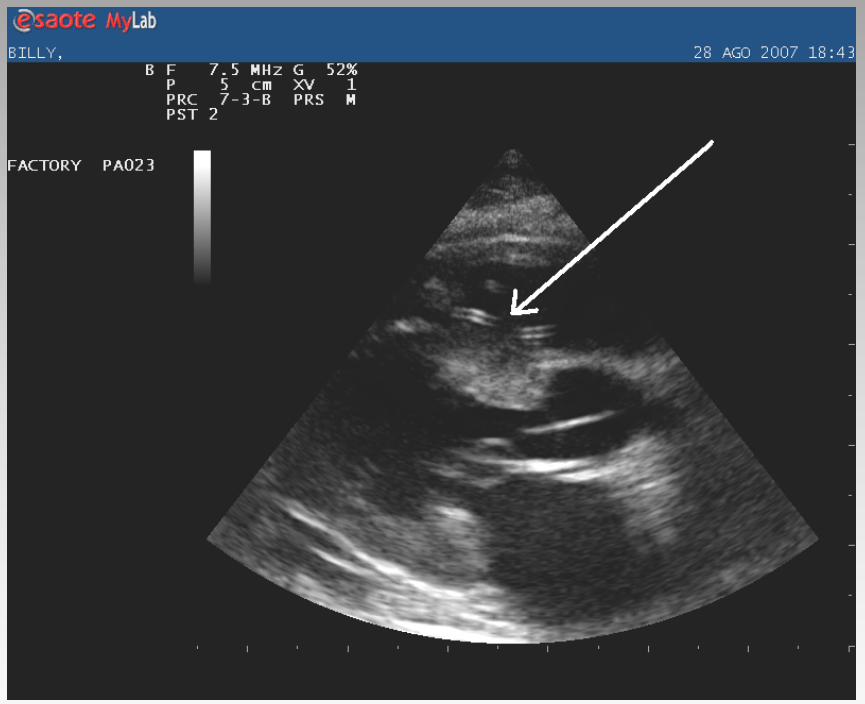
Test antigenici

- solo antigeni
- ✦di sesso femminile
- ✦e vermi maturi

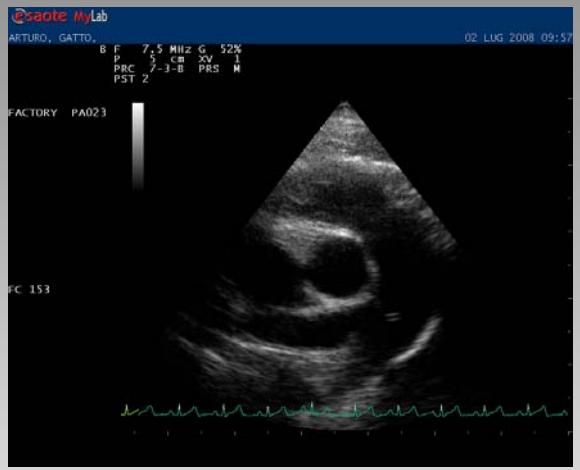
diagnostici in non più del 50% dei casi

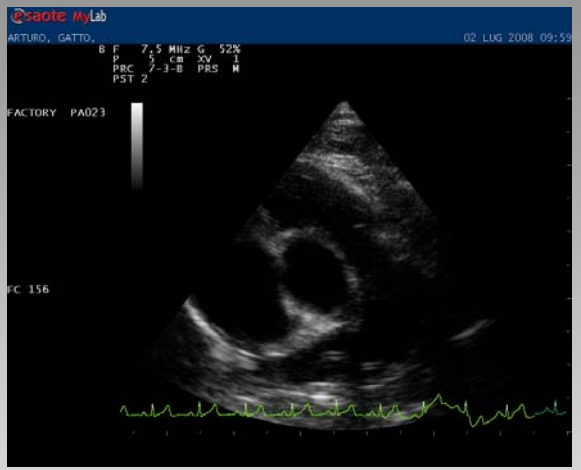
Ecocardiografia
specificità 100 % (?)
sensibilità (operatore e strumento dipendenti) ↑

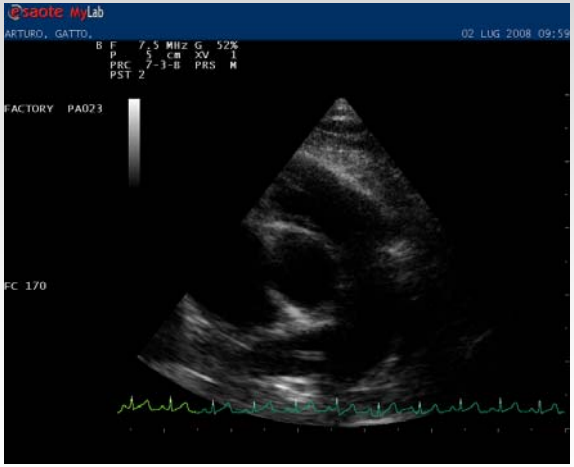


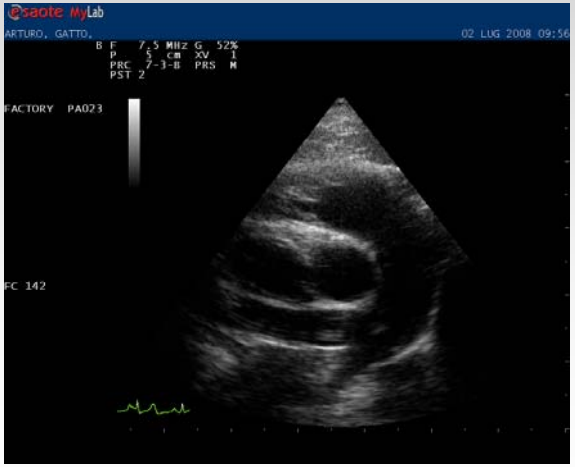


Ecocardiografia









Ecocardiografia

Ecocardiografia

Conseguenze dell'infestazione

- 6 su 34 morte (sintomatologia acuta)
- 28 su 34 self cure
- 7 su 28 sintomatologia acuta

Venco et al : Clinical evolution and radiographic findings of Feline Heartworm Infection in asymptomatic cats

American Heartworm Society Symposium 2007 Washington DC

Heartworm Associated Respiratory Disease (HARD)

- Associata ad arrivo di L4 a livello polmonare
  (3-4 mesi dopo infestazione)

Sintomatologia sovrapponibile ad asma.

Monitorare per FCP gatti “asmatici”

TERAPIA

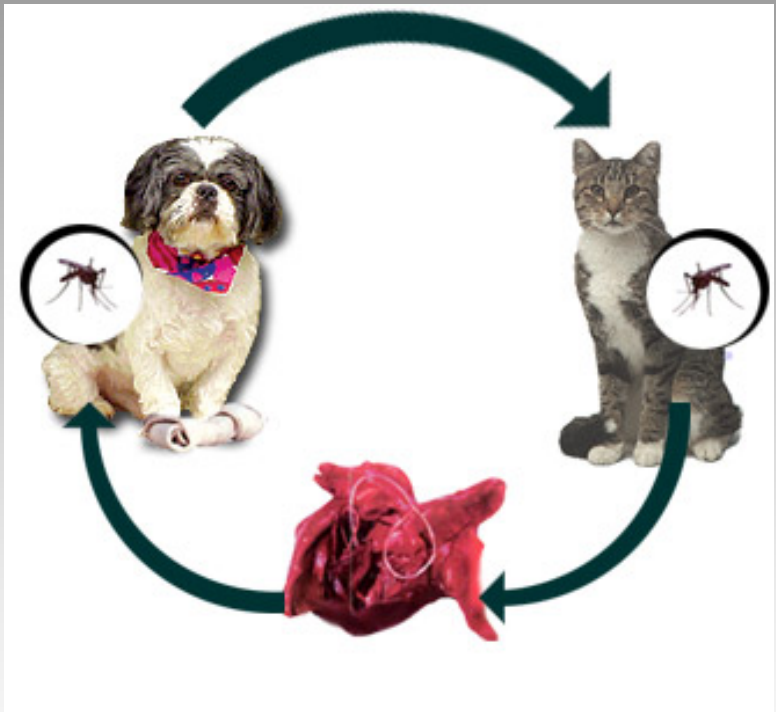
- Melarsomina basso IT (3.5 mg/Kg dose tossica con efficacia incompleta) (Mc Call et al)
- Tioacetarsemide sodica. Non più in commercio. Sopravvivenza media gatti trattati pari a quella di gatti non trattati (Atkins et al.)

- Terapia chirurgica (mininvasiva). Elevata mortalità per dissezione accidentale macrofilarie (shock) (Venco et al)

- **Prednisolone :**

(1-2 mg/Kg) per controllo sintomi fino a “self cure”

Epidemiologia

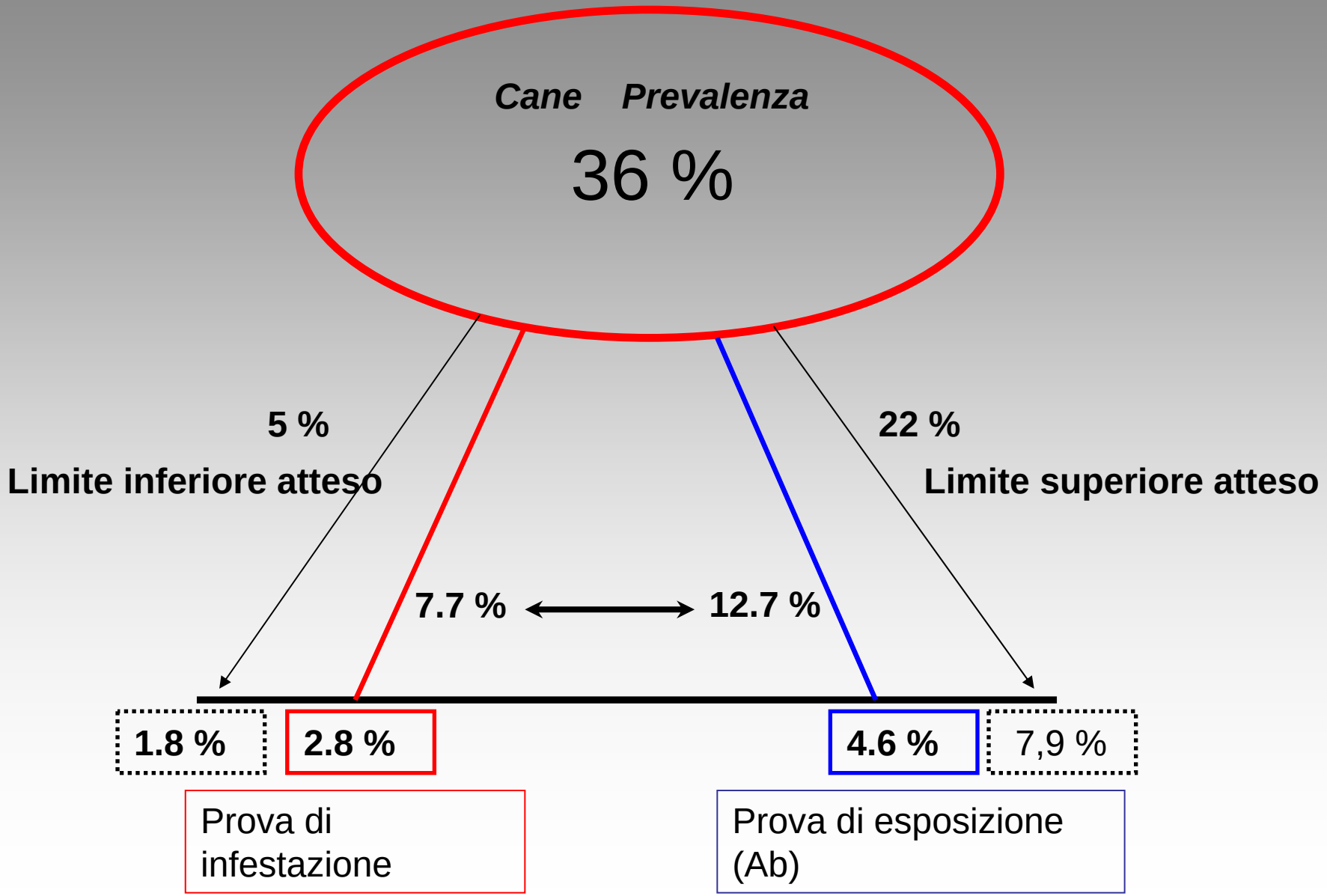


- Prevalenza nel cane (reservoir)
- Minor attrattività del gatto su ospite intermedio (2-4 inferiore)
- Resistenza naturale all'infestazione (Solo il 75% dei gatti può essere infestato in laboratorio)
- Durata di vita della forma adulta del parassita

  (2-3 anni nel gatto: 5-7 anni nel cane)

Valore atteso di prevalenza in un intervallo tra il 5 e il 22% di quella riscontrata nel cane

PREVALENZA 10 % RISPETTO CANE

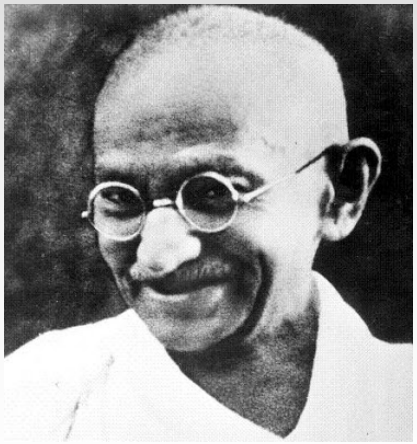


CONCLUSIONI

- **Malattia presente sul territorio**
- ***Malattia grave***
- Problema sottostimato dal medico veterinario
- Diagnosi difficile e terapia causale non possibile
- Profilassi unica opzione (anche in zone a bassa endemia)

FARMACI POLIVALENTI ?

"***The greatness of a nation can be judged***

by the way its animals are treated."

(Mahatma Gandhi)