

Herpes Lecture

Welcome



Herpes Lecture

- Herpes is a viral disease of dogs both of respiratory and reproductive organs
- This lecture presents

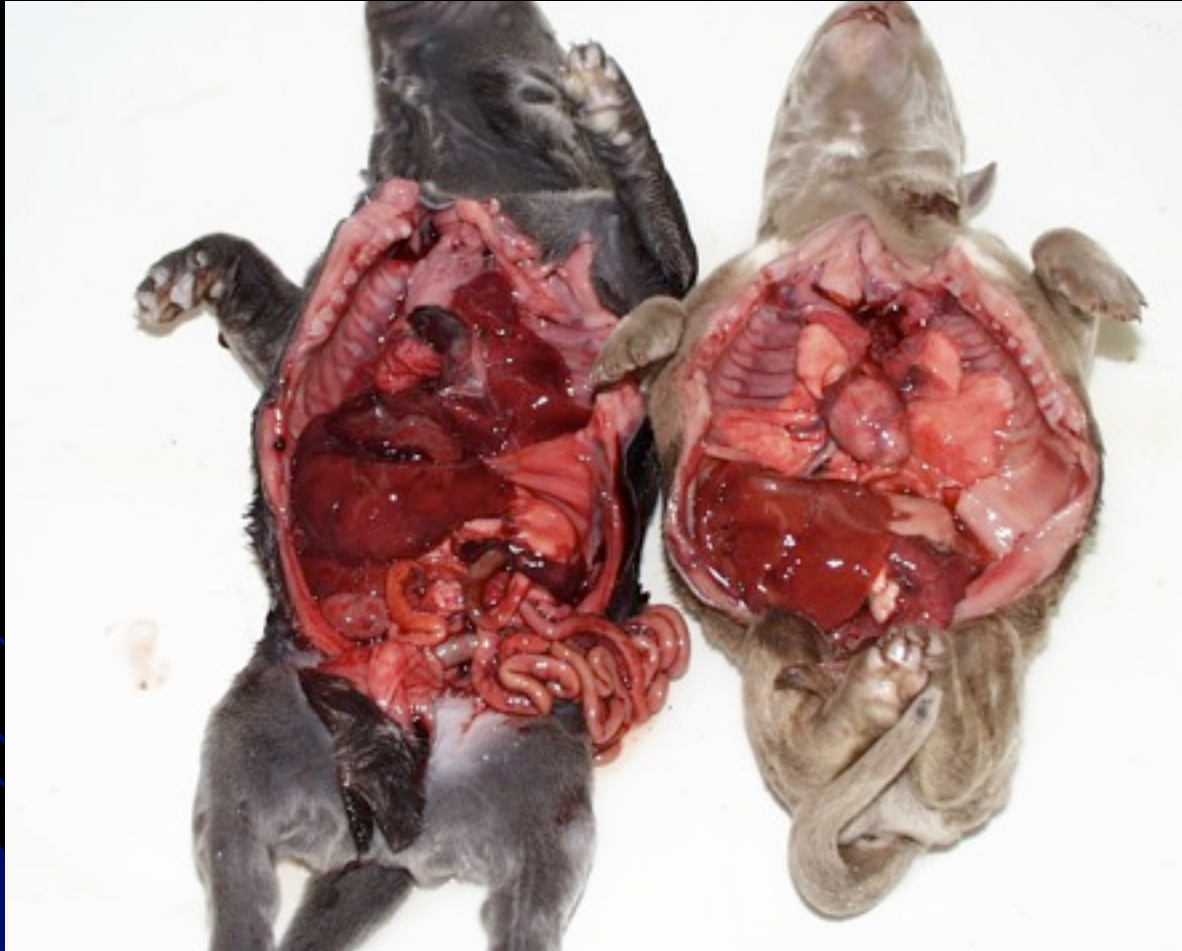
**diagnostic procedures
and treatments.**

Suspected Infected Pups Receiving Treatment



2 Deceased Pups

One Is Herpes Infected



Herpes Infected Pup Pathologic Lungs



2nd Pup Genetic Defect



Treated Herpes Survivors 7 Weeks Old



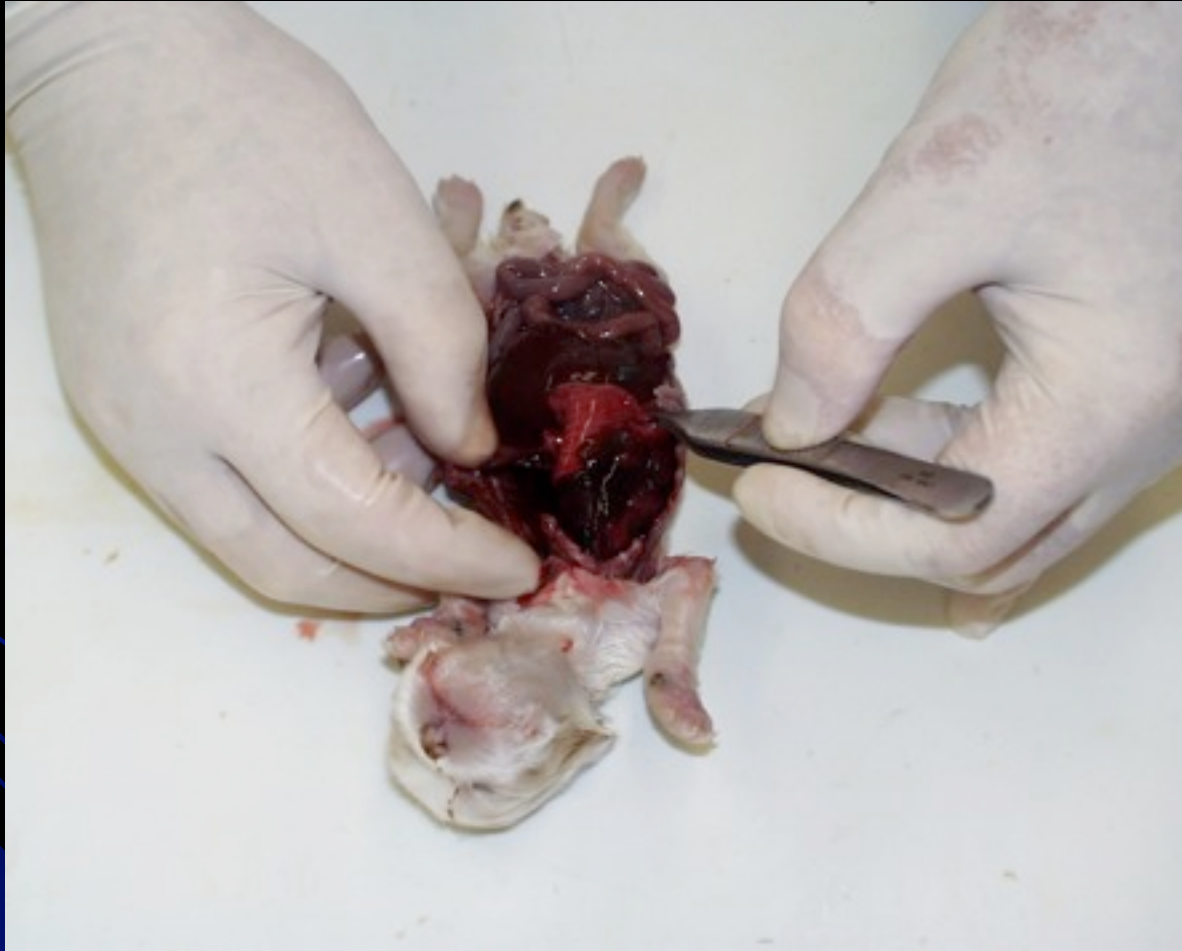
Infected Litter



4th Pup Infected with Herpes



Autopsy Confirms Herpes



HERPESVIRUS INFECTION IN

Fatal illness generally occurs in pups less than one month old; however, occasional cases have been observed in dogs as old as four months of age. Clinical features of the disease consist of the sudden death of apparently healthy puppies after a brief period of illness that usually lasts no more than 24 hours. Most commonly, pups are affected between the first and third weeks of life, with occasional fatal cases occurring after the third week. The disease is most common in puppies one to three weeks of age, but occasionally it occurs in puppies up to five weeks. Viremia is associated with the period during which the puppy's temperature is optimal for Herpes virus replication (95° to 96° F). Healthy puppies become acutely ill, stop nursing, and cry continuously; death occurs within several hours following onset of signs. In puppies that recover, the virus may remain latent for several months, and shedding can recur following corticosteroid therapy. Diagnosis is based on clinical

The Orient Express / June 1989

(first printed in 1965)

From a report by Leland E. Carmichael, D.V.M.

tion of corticosteroids in the treatment. The use of dandruff-removing shampoos and the application of insecticides should be continued to kill the mites and their progeny.

Canine Herpesvirus: Newly Recognized Viral Disease

L. E. Carmichael, D.V.M., Ph.D.

One of the most disconcerting problems encountered by dog breeders is the difficulty in accounting for puppy deaths. Reports during the past decade indicate a remarkable consistency in puppy mortality, averaging about 30%, with highest death rates occurring in pups less than one week of age. Although more than two dozen specific disease conditions have been associated with neonatal mortality, the greatest proportion remain undetermined. The enigmatic condition commonly called the "fading puppy syndrome" is frequently cited as a cause of death. It is not entirely clear, however, whether "fading pups" constitute a distinct disease condition or whether the term is descriptively applied to pups that appear healthy at birth and then die suddenly 5 or 4 days later without indications as to the cause.

In an effort to determine the cause of unexplained deaths in young puppies from various locations in central New York, there were brought to our attention puppies that had died from what appeared to be a septicemic disease which could not be attributed

to recognized bacterial, protozoan, or viral infections. In all instances the virus isolates possessed characteristics of the herpesvirus group, an ubiquitous family of viruses whose members cause disease in man and in lower animals. Diseases in various species caused by herpesvirus range from acute fulminating, and often fatal infections of the newborn to inapparent or persistent infections in adults. Such persistent or latent infections later may be reactivated by various stimuli to cause clinical disease. In contrast to the fatal illness that occurs in young puppies, the disease in adult dogs appears to be mild or inapparent.

Two outbreaks were remarkably similar, for in both instances the bitches were apparently healthy, milk production was adequate, and all pups nursed in a normal manner until a few hours prior to their deaths. The bitches had not whelped previously. Signs of disease in the pups were sudden cessation of nursing, chilling, and continual and painful crying that commenced 6 to 12 hours after illness was first noted. Abdominal pain was a prominent feature. Deaths commenced approximately one week after birth and continued over a 2-week period until all pups had died.

Deaths and runted pups occurred among two litters of "close to term" fetal pups obtained from apparently healthy bitches by caesarean section. In one litter, two of eight pups were diseased. Three of eight pups in the second litter were infected, as shown by virus isolation from their kidneys. Virus also was isolated from the kidneys of the apparently healthy litter-mate fetuses.

In a series of experiments, pups were inoculated at various ages and only pups inoculated when they were less than 2 weeks of age became ill and died. Clinical and pathological features of the experimental infections were virtually the same as those which occurred in dogs infected naturally. Pups inoculated during the first week of life died 6 to 9 days later, regardless of the amount of virus inoculated or the route of inoculation.

The first indication of illness was often a soft, odorless, yellowish-green stool. This sign usually was seen 3 or 4 days before death. Most pups were healthy and active until one or two days before the onset of acute abdominal pain; however, retching and vomiting were seen in some ani-

mals. Abdominal pain was a consistent finding, for even slight pressure applied over the abdominal regions of affected pups caused painful crying. Nursing ceased at this time and breathing became labored; some pups had episodes of gasping shortly before dying. Elevated body temperatures have not been observed. In all instances the course was rapid, most puppies dying 24 to 48 hours after the onset of recognizable signs.

Intravaginal inoculation of pregnant bitches with virus 1 or 2 weeks before whelping resulted in fatal infections of the newborn, although illness was not observed in the bitches. All pups from two bitches inoculated intravaginally died within 2 weeks of birth. Virus was widely disseminated throughout the organs of these pups. It is believed that the puppy infections were acquired during passage through the vagina because virus was isolated from vaginal smears of inoculated bitches for periods up to 7 days but not from urine swabs or from placental tissue. Nevertheless, it appears clear that virus can cross the placenta and cause fetal death.

By neutralization virus tests, the canine herpesvirus was not related to canine distemper, infectious canine hepatitis, or herpes simplex virus. The disease-producing potential of the virus has not been fully explored; however, dogs older than 2 weeks of age developed only mild coryza after intranasal inoculation with large doses of virus. The uncomplicated infection in older dogs therefore probably would not be brought to the attention of a veterinarian. Affected pups usually cry pitifully, and they refuse to suckle even though their mothers appear perfectly normal and have adequate milk. Deaths have not been observed in pups older than three weeks; most deaths occur 7 to 14 days after birth. This viral infection should be suspected when post-mortem examination of pups reveals necrotic and hemorrhagic lesions, especially in the liver, lung and kidneys.

The need for a vaccine has not been evaluated. Prerequisite to any consideration for a vaccine is an understanding of the significance of this virus as a cause of puppy mortality and the extent of its occurrence in the dog population. The contribution of canine herpesvirus infections to other conditions that may occur simultaneously, and the significance of latent infections remain to be studied.



Dr. B. W. Kingery, dean, School of Veterinary Medicine, University of Missouri, Symposium chairman.

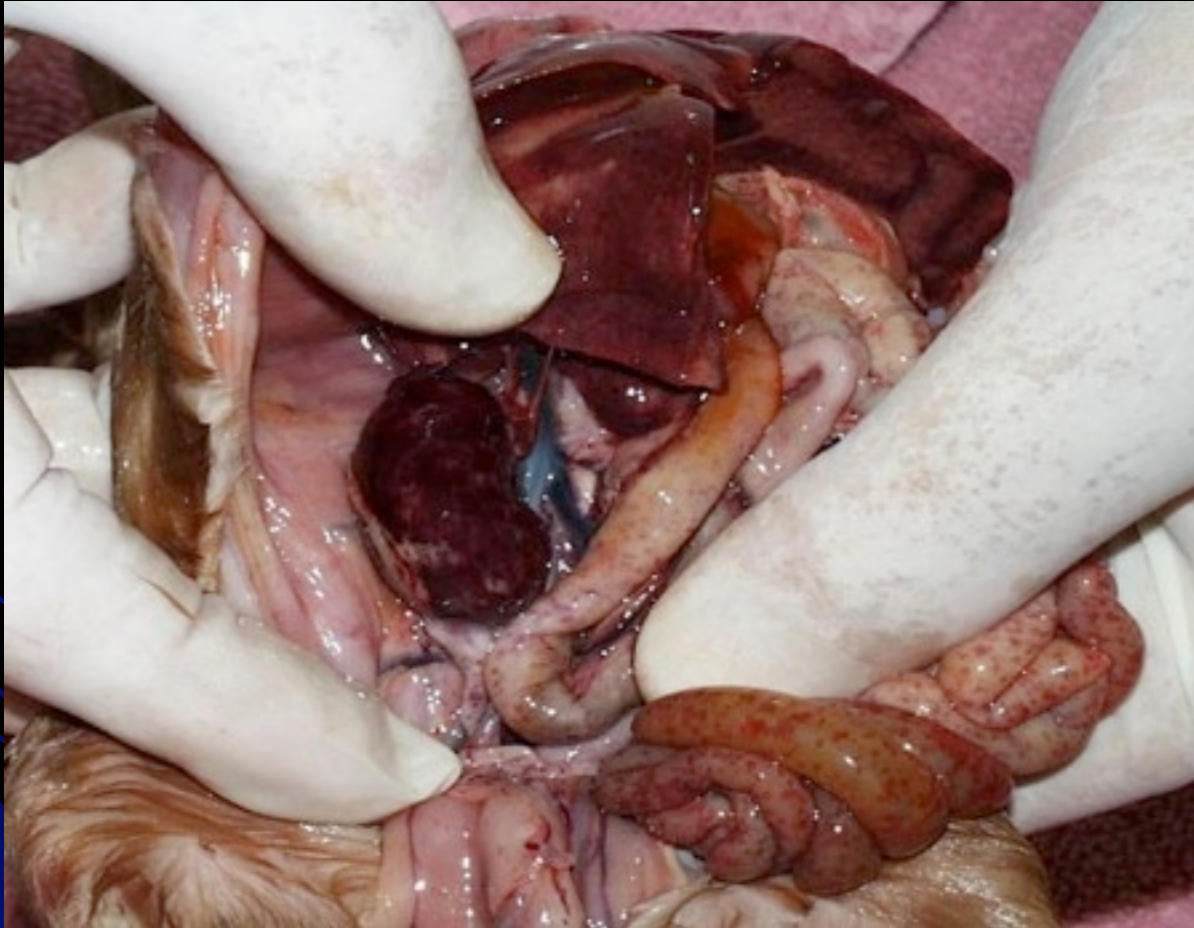
Deceased Herpes Litter



All dead pups should be autopsied. Cause of death cannot always be decided but best chance of finding cause.



Lesions of Kidneys and Intestines



Lungs & Stomach



COUNTY OF LOS ANGELES • DEPARTMENT OF HEALTH SERVICES
PUBLIC HEALTH PROGRAMS
COMPREHENSIVE HEALTH AND VETERINARY SERVICES

12824 ERICKSON AVENUE • DOWNEY, CALIFORNIA 90242 • PHONE 922-8801

LABORATORY INVESTIGATION REPORT
134611# Alson Sears 565 West Avenue I Lancaster, CA 9353^

10-22-86 Case Record No.. Report Date_

Canine- Yorkie #2 necropsy tissues
Species Specimen

HISTOPATHOLOGICAL report

There is a severe diffuse subacute and hemorrhagic bronchitis, bronchiolitis and interstitial pneumonia* The other tissues are normal. The pneumonitis in this and littermate pup look like **viral pneumonitis***

Lungs, Intestines & Stomach



Litter Deaths



SERVICES

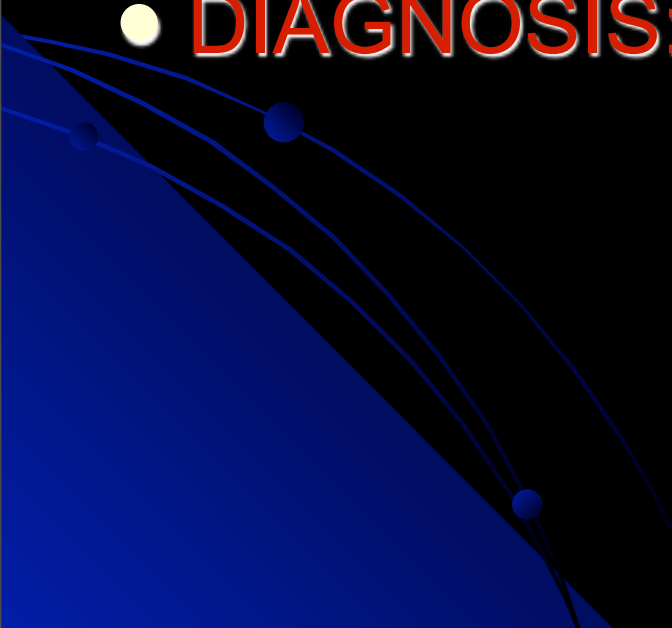
PUBLIC HEALTH PROGRAMS

COMPREHENSIVE HEALTH AND VETERINARY SERVICES

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LABORATORY INVESTIGATION REPORT

- HISTOPATHOLOGIC REPORT:
- There is a severe diffuse subacute bronchitis, bronchiolitis and interstitial pneumonitis. All other tissues are normal.
- **DIAGNOSIS: Pneumonitis**



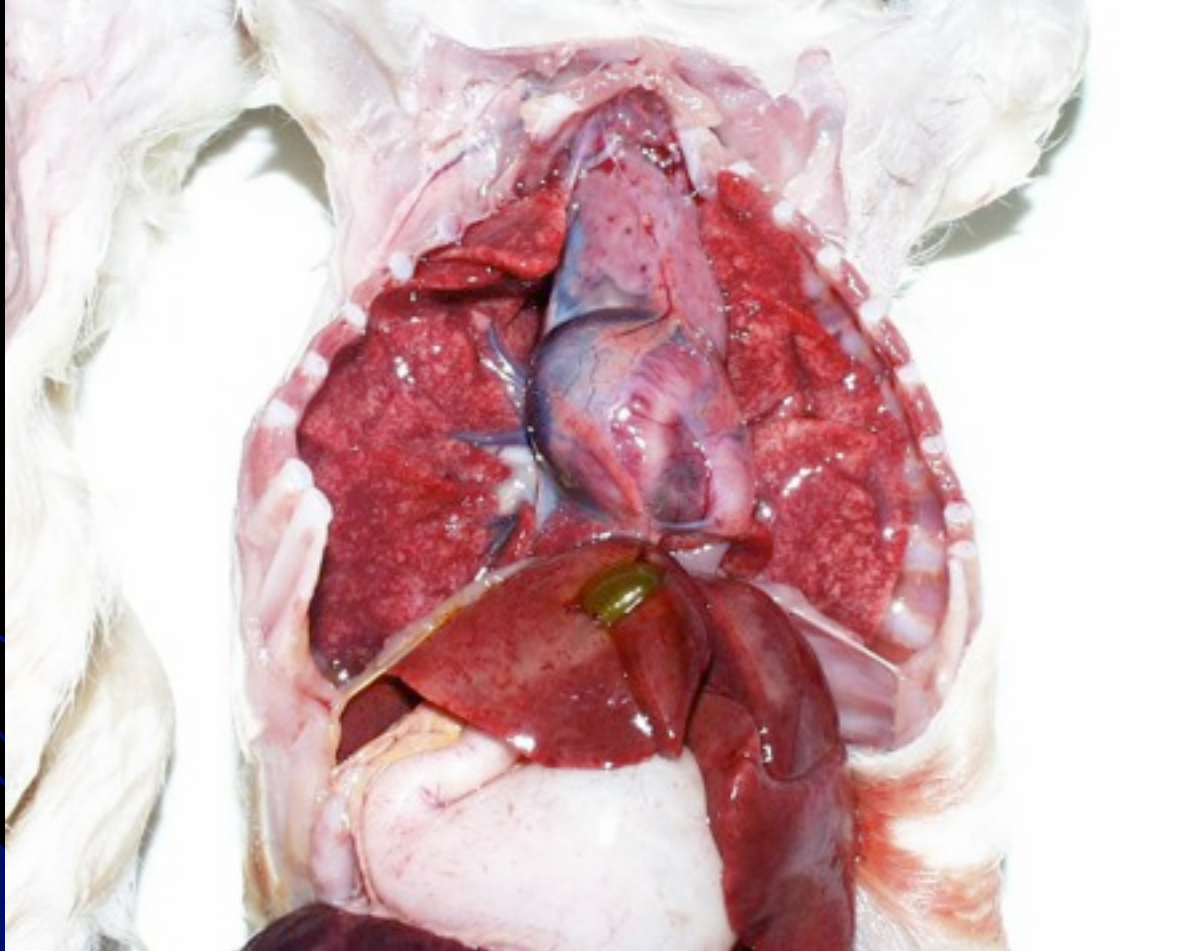
Lungs & Intestines



Lungs



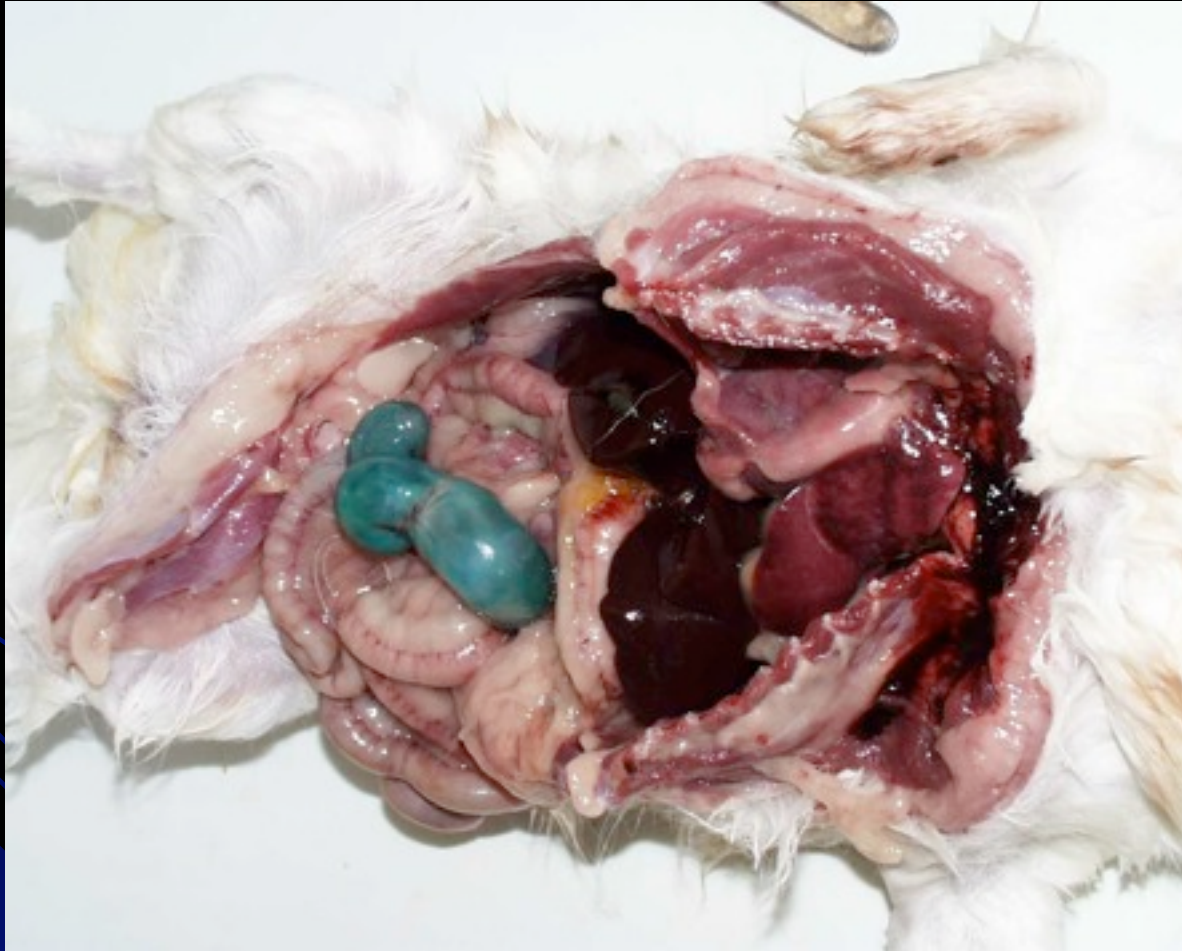
Lungs



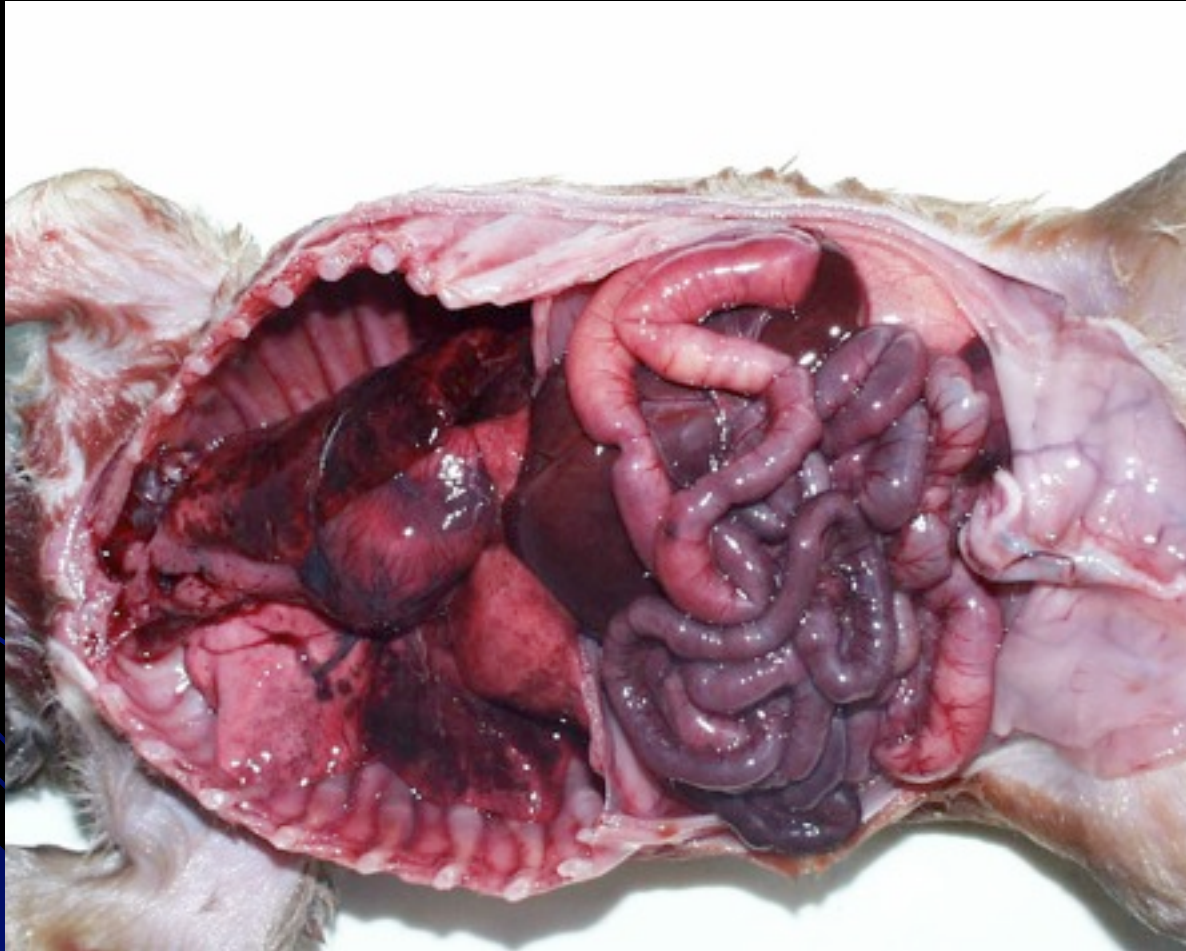
Lungs



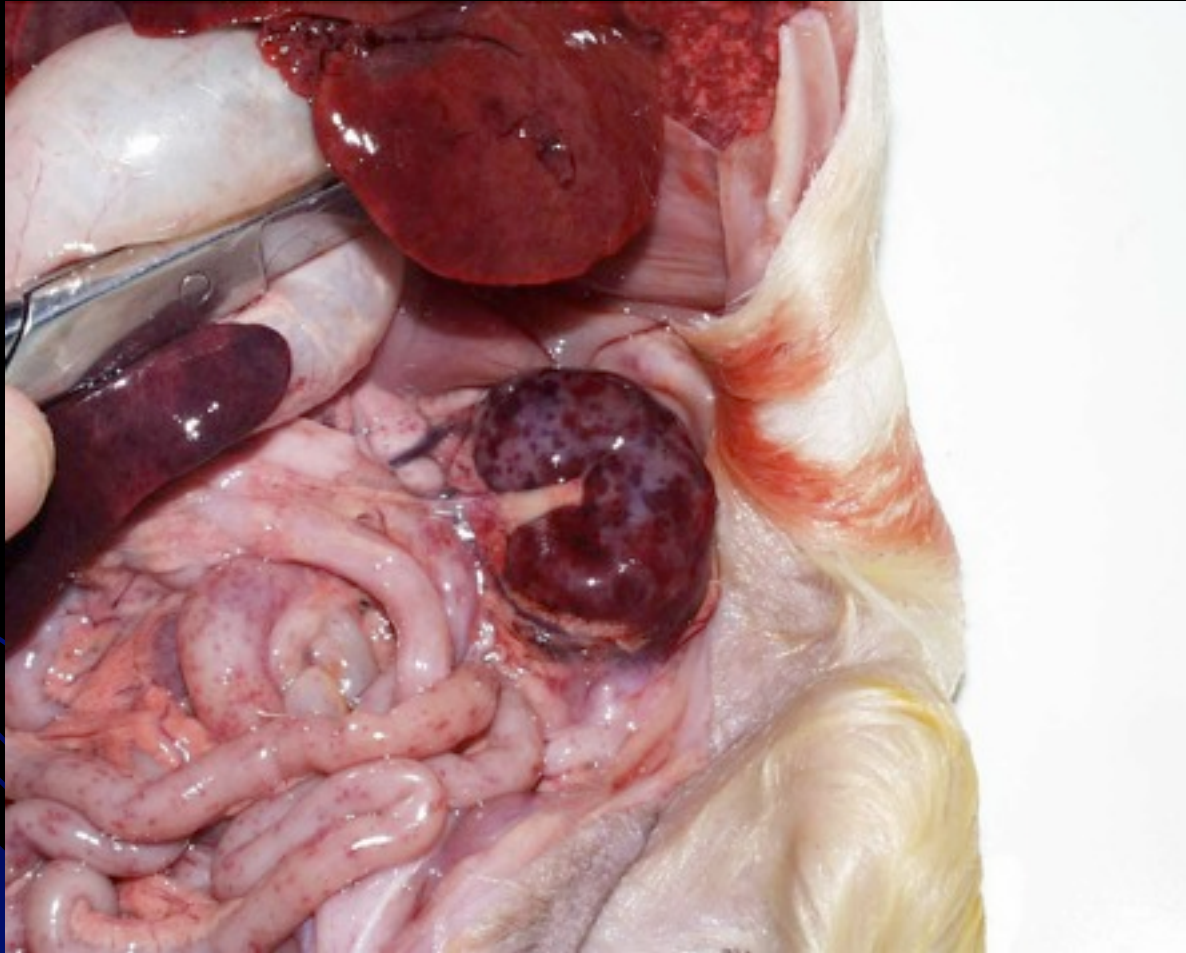
Lungs & Intestines



Lungs & Intestines



Kidney



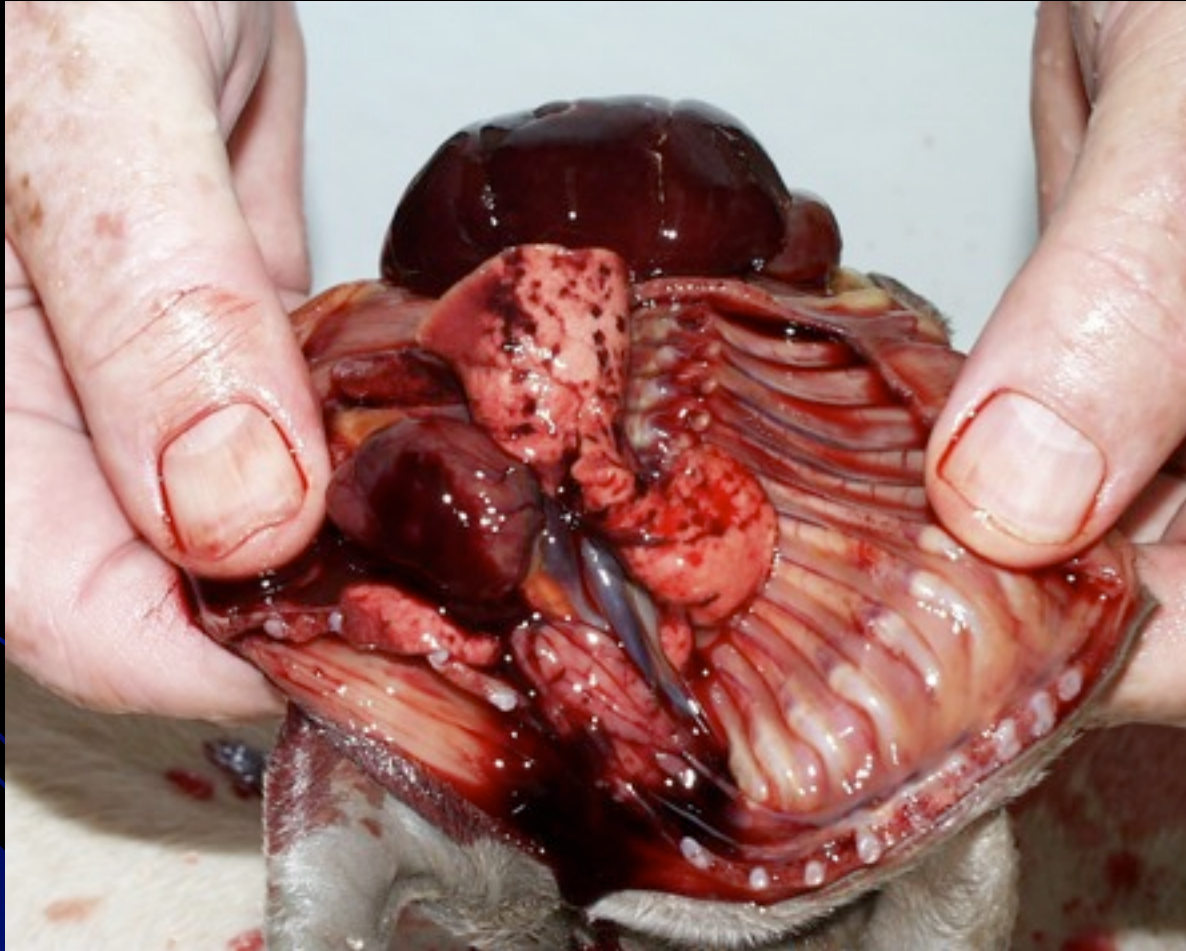
Lungs & Stomach



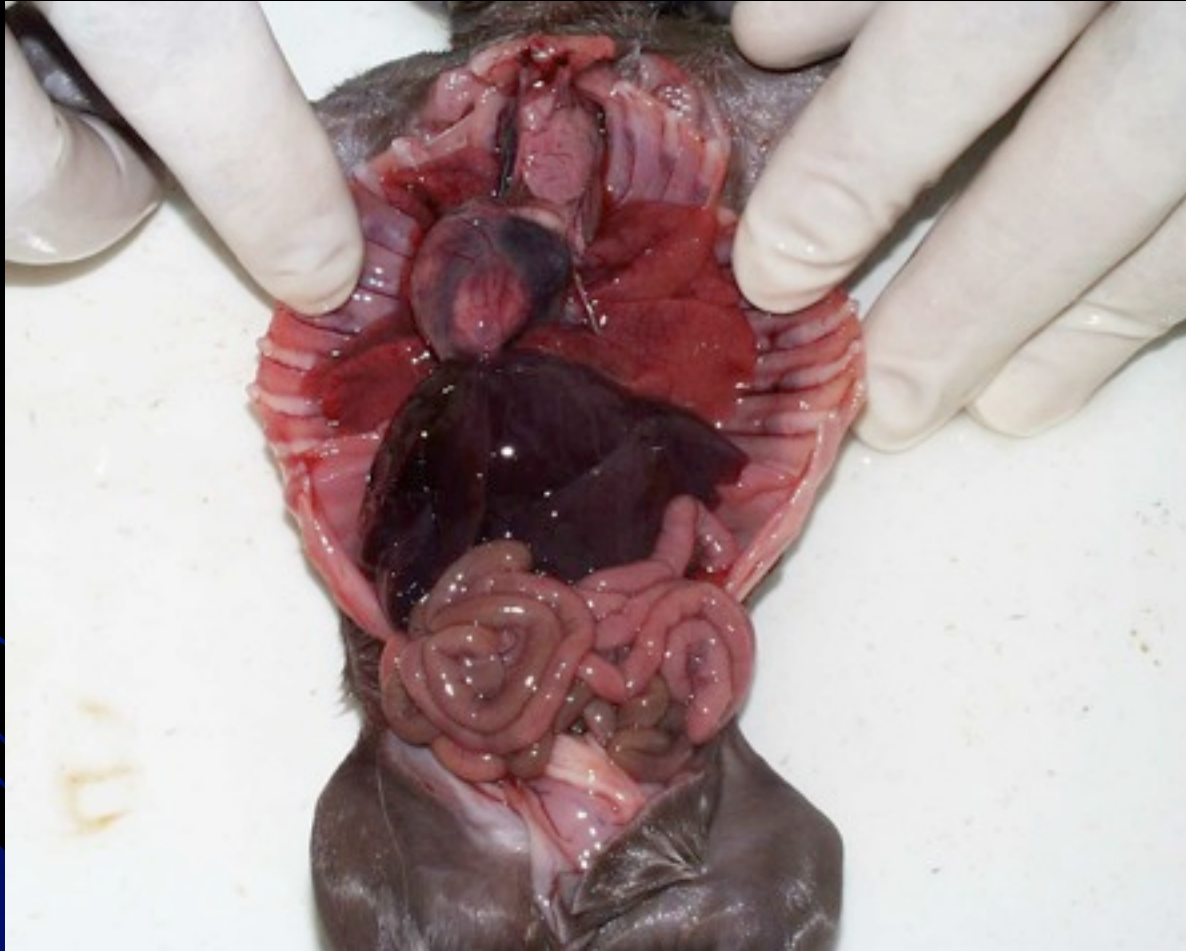
Lungs & Intestines



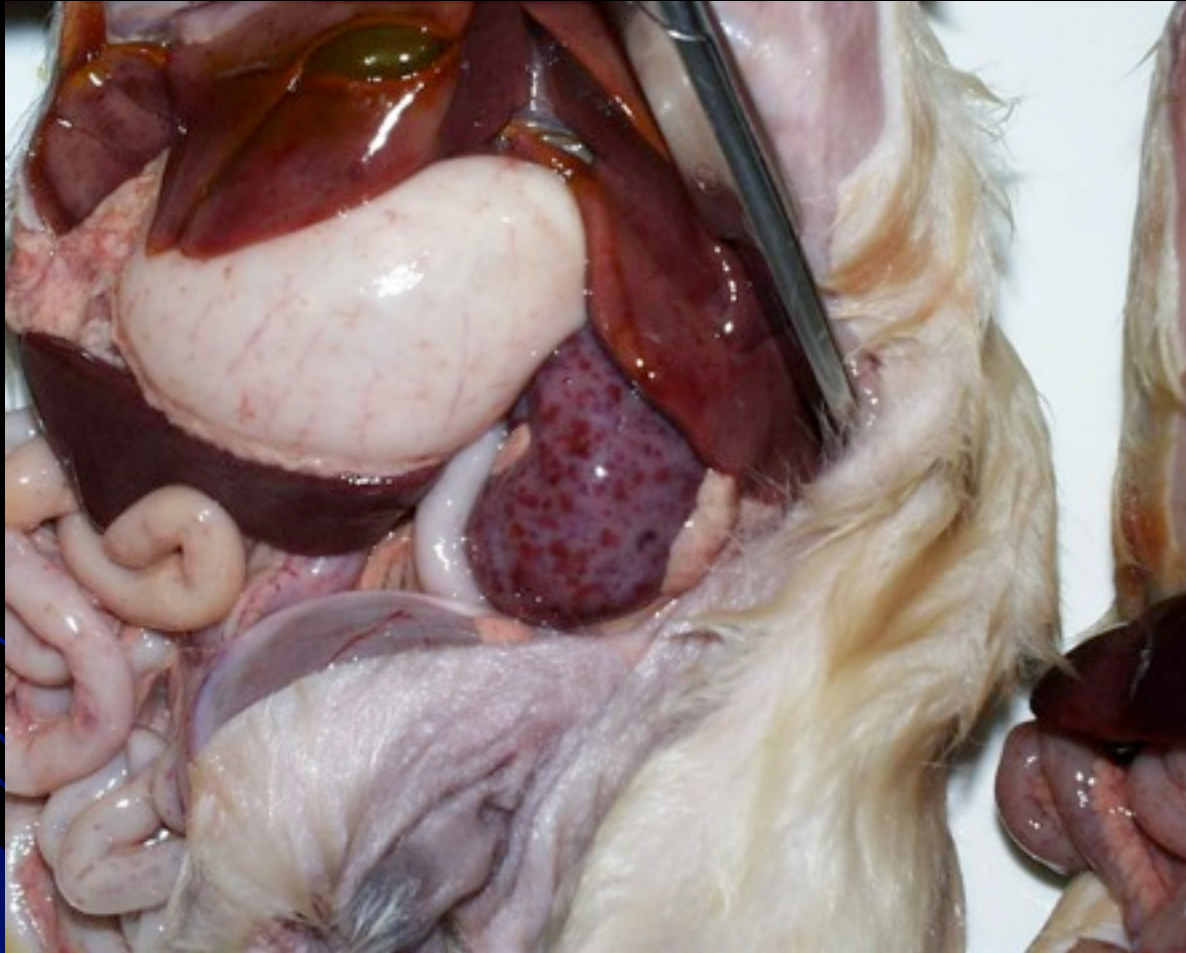
Lungs & Intestines



Lungs



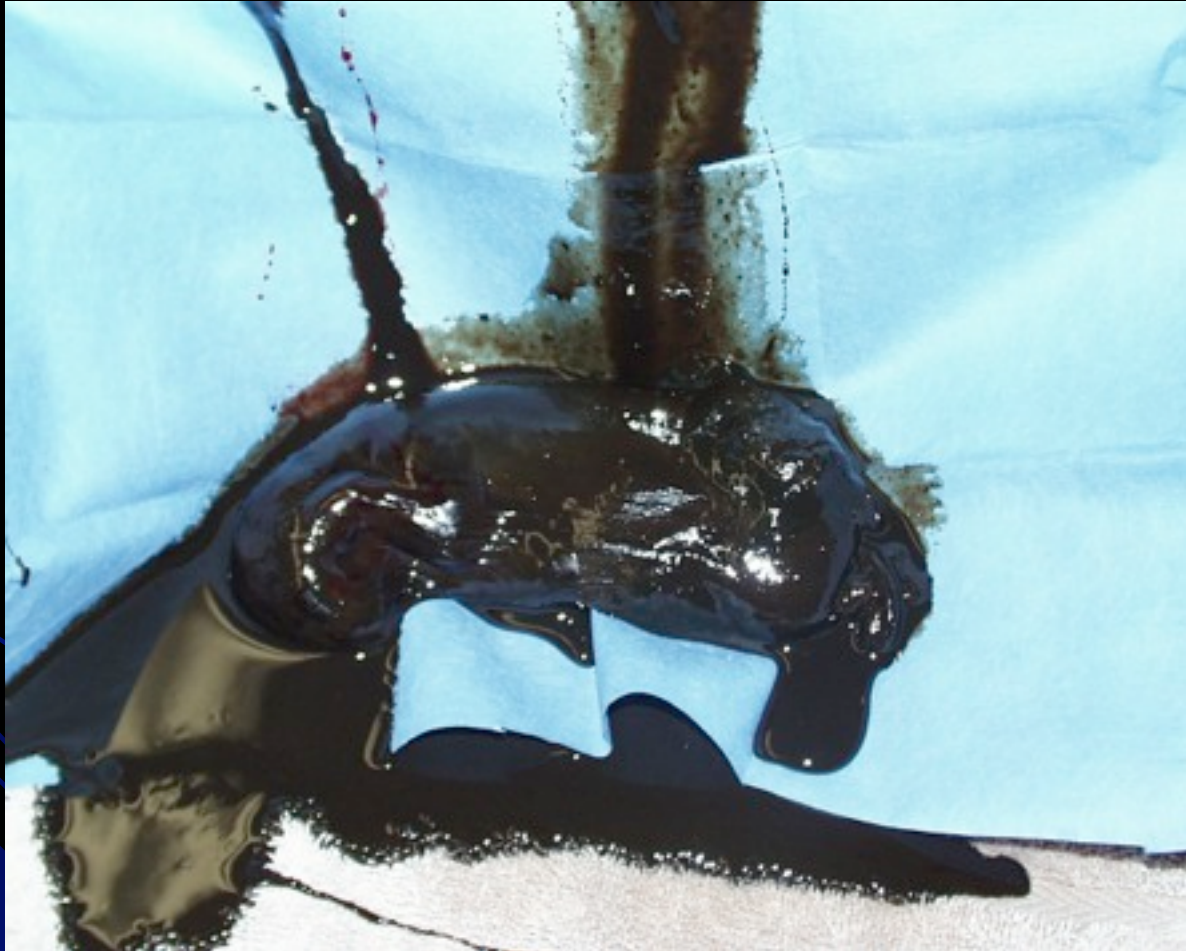
Bloated Stomach & Kidney



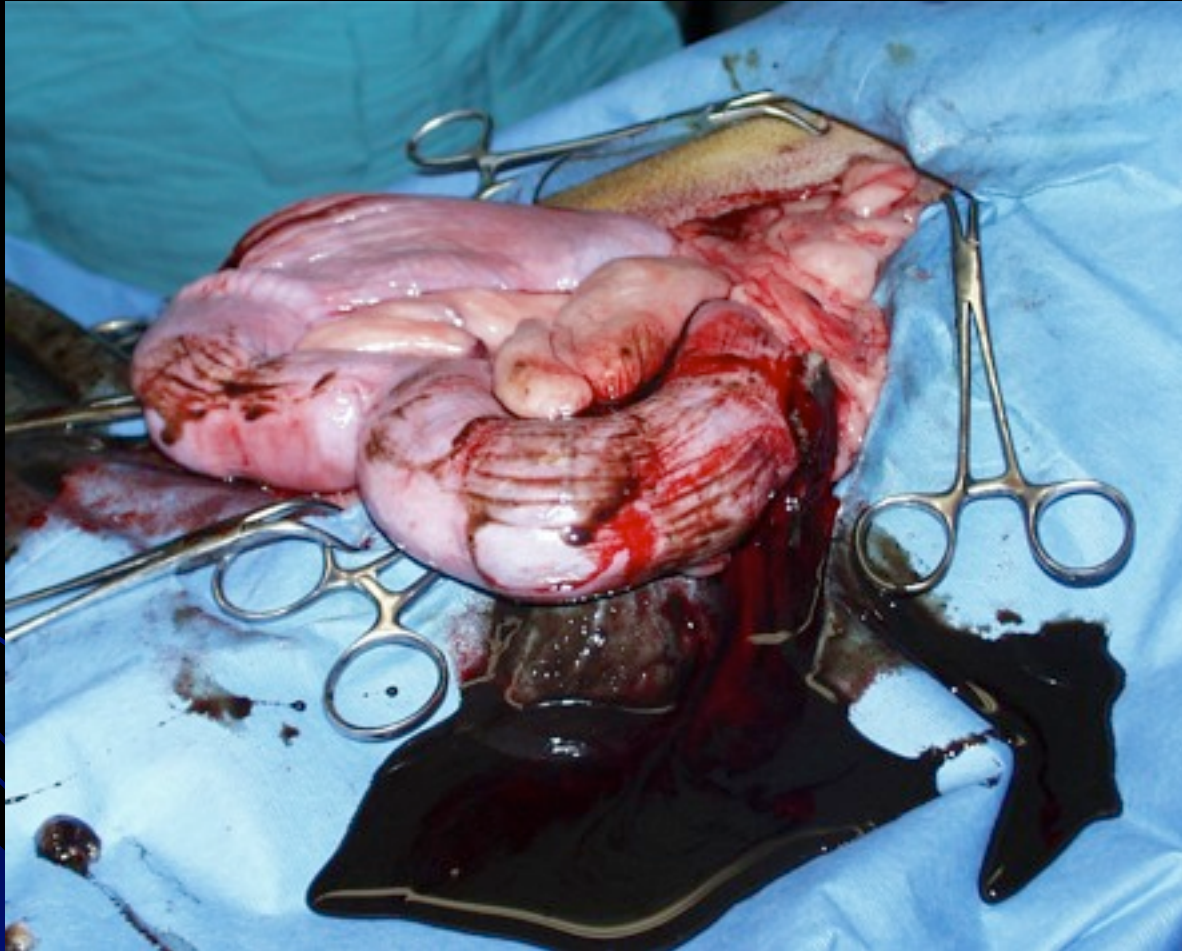
Herpes abortion

- In the literature section of this disc you will find several fine articles on herpes abortions in dogs.
- This usually occurs at about 52 to 54 days of gestation
- To date we have found no way to deal with this problem

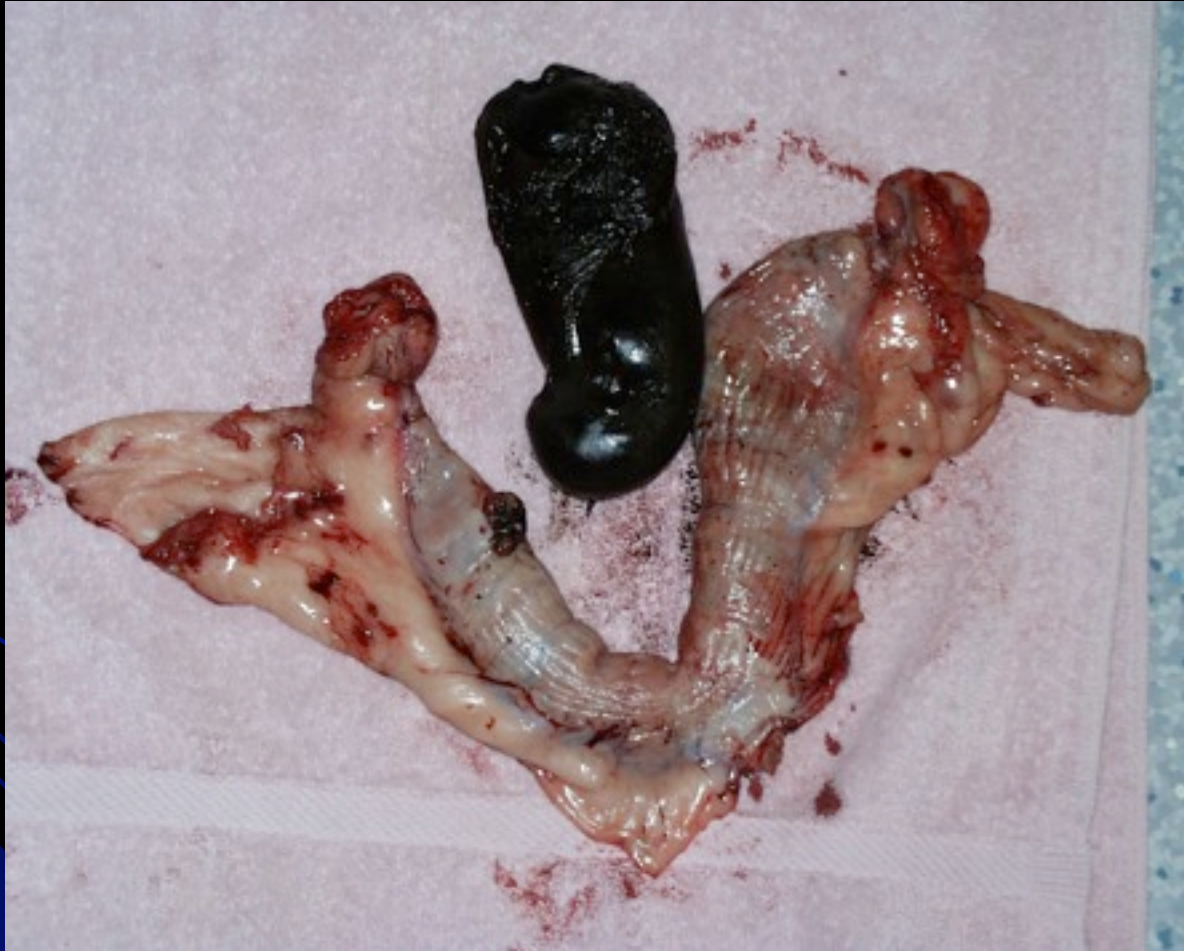
Aborted Pup



C-Section Herpes Pup



Aborted Pup



REM HISTOPATH
CONSULTING 0 0 8 2

Accession Number: Hospital Name: Owner's Name: Pet's Name: Species:
DOCTOR:

97-605Sex:FEMALESEARS ANIMAL HOSPAge:53 daysXXXXXXXXXXXXFax #:1
(661)942-5661FAME PUPPYTele #:1 (661)948-5911DOGDDate:04-01-1997SEARS
MICROSCOPIC DESCRIPTION:

Kidney:

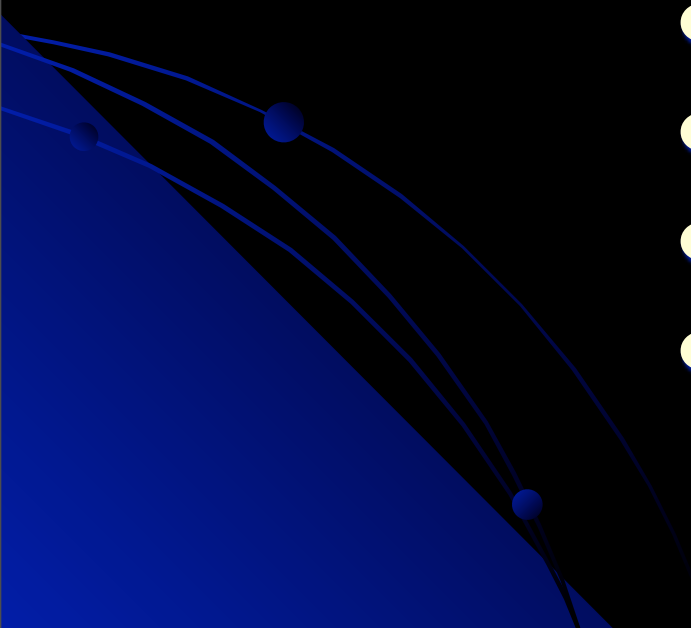
Severe autolysis with acidophilic intranuclear inclusions (in two cells)

Some large areas of kidney parenchyma were relatively intact enabling interpretation. A careful, detailed examination revealed the presence of herpes-compatible inclusions in only 2 cells. Normally, this small number of inclusions would not be clinically significant, however, the fact that this animal was aborted is strong secondary evidence of Herpes infection.

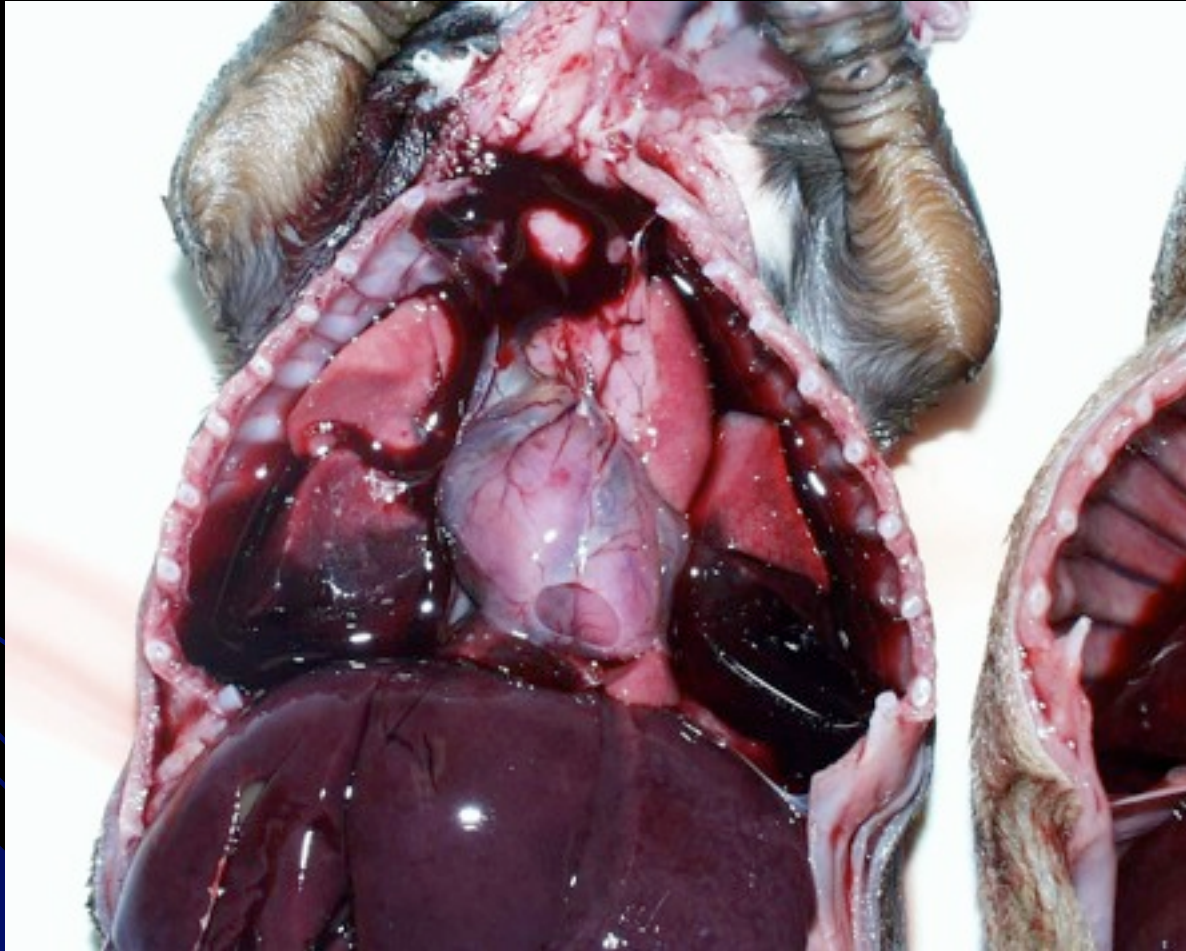
SLIDE (S) REVIEWED BY Dr. Richard E. Moreland Veterinary Pathologist

Other Causes of Death

- Distemper
- Hepatitis
- Parvo
- Toxoplasmosis
- E-coli
- Chlamydia
- Anasarca (walrus pup)
- Genetics



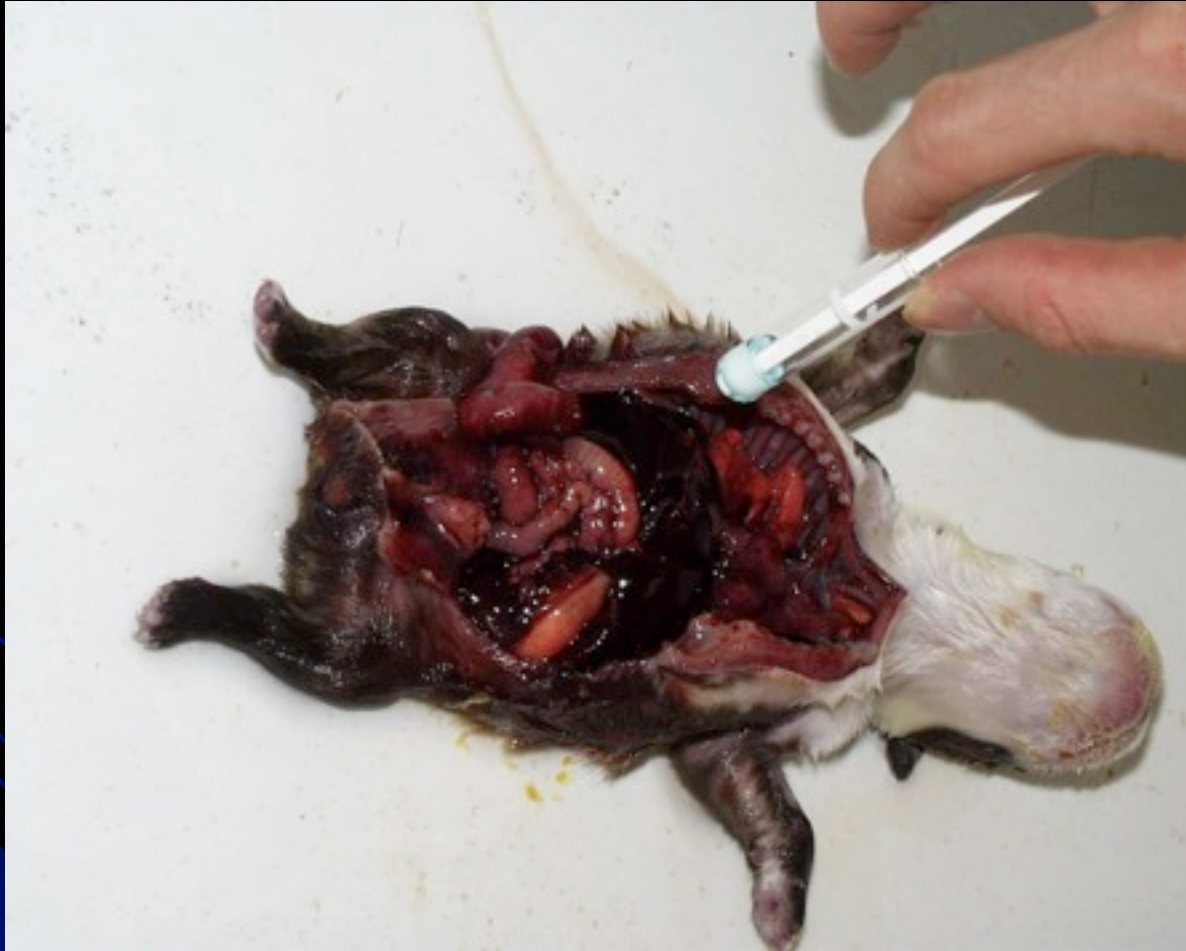
Anasarca



Purulent Chest



Parvo Death



Parvo Death



Intestinal Infection

E-Coli Infection



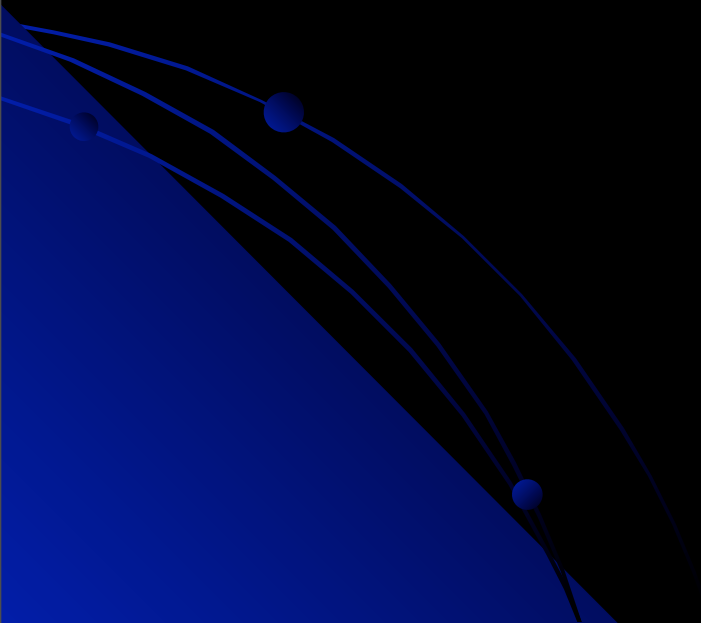
unknown



Enteritis

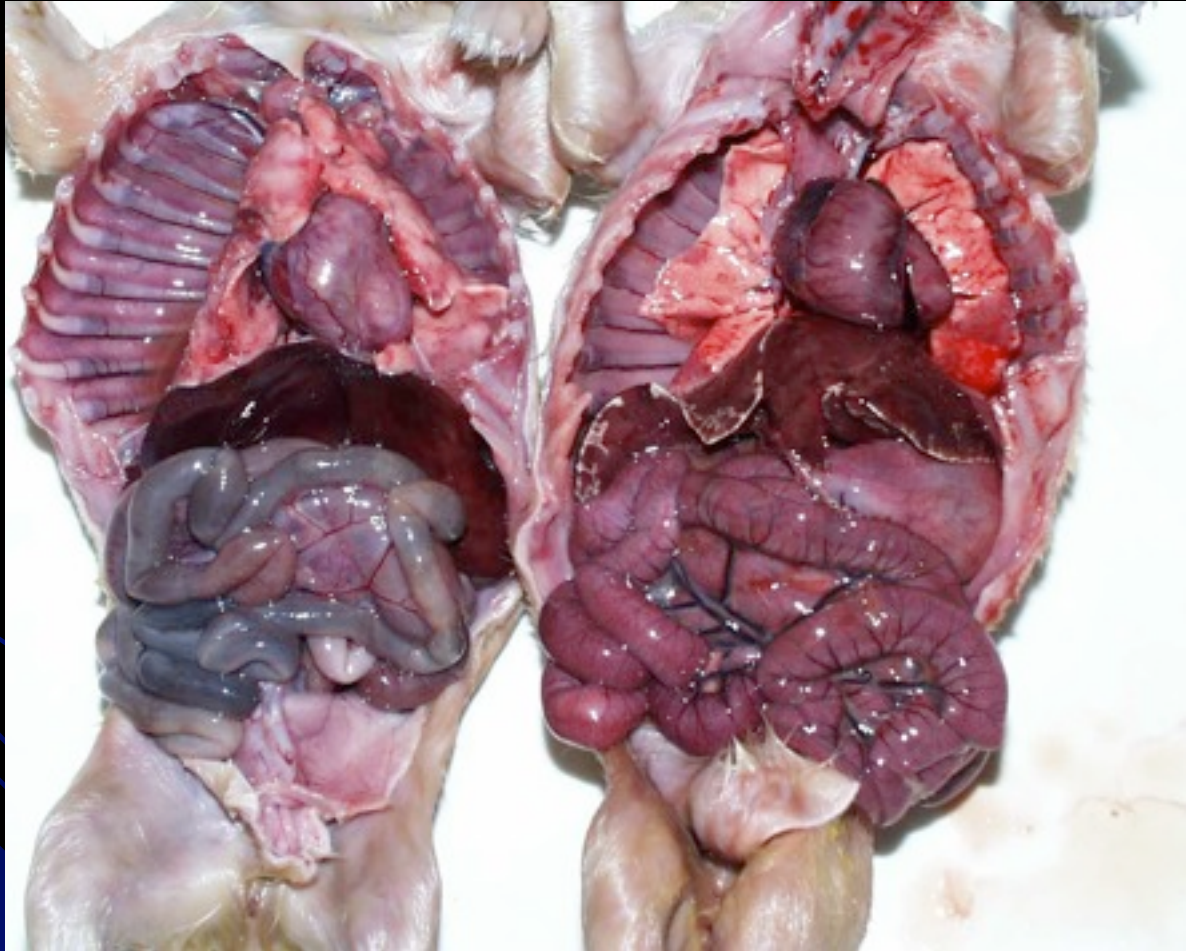


What do you see





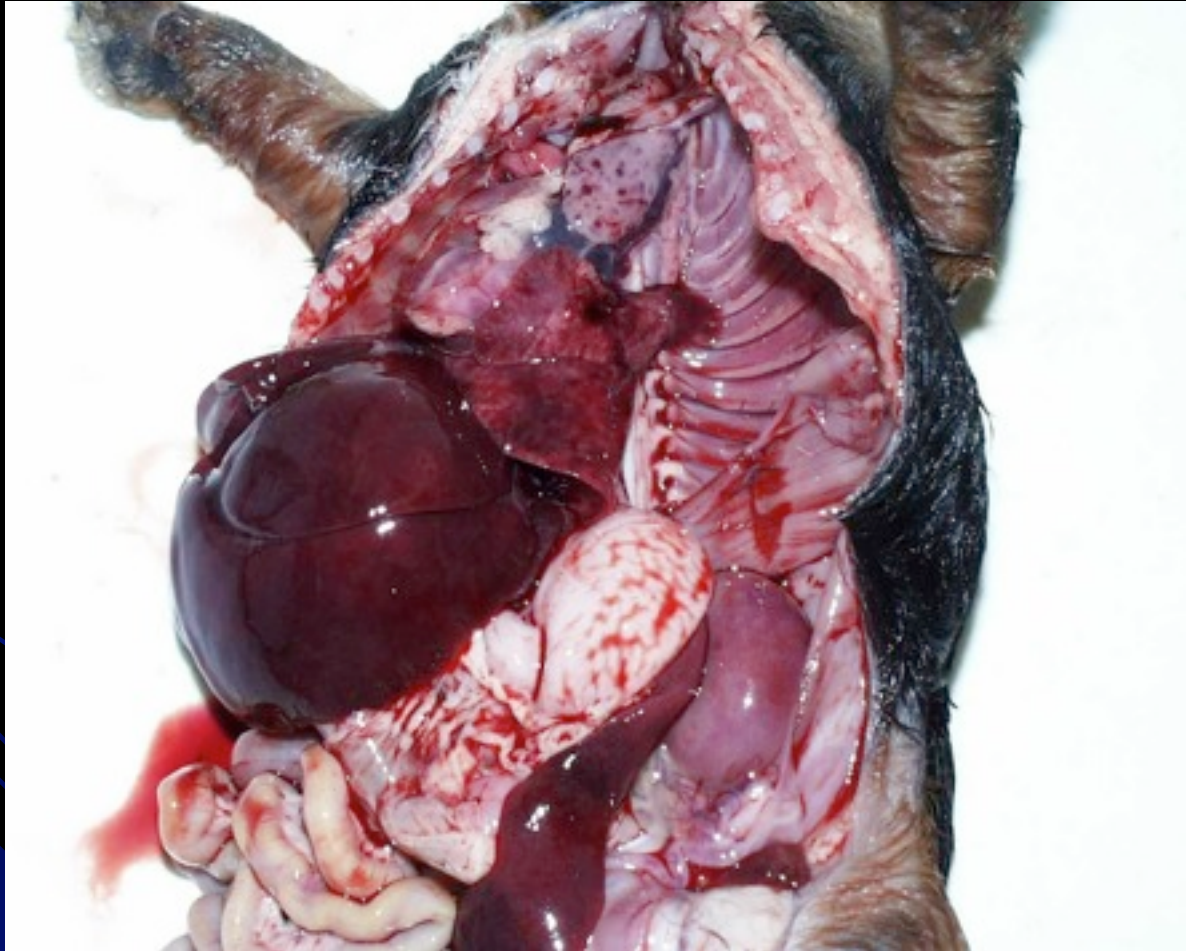


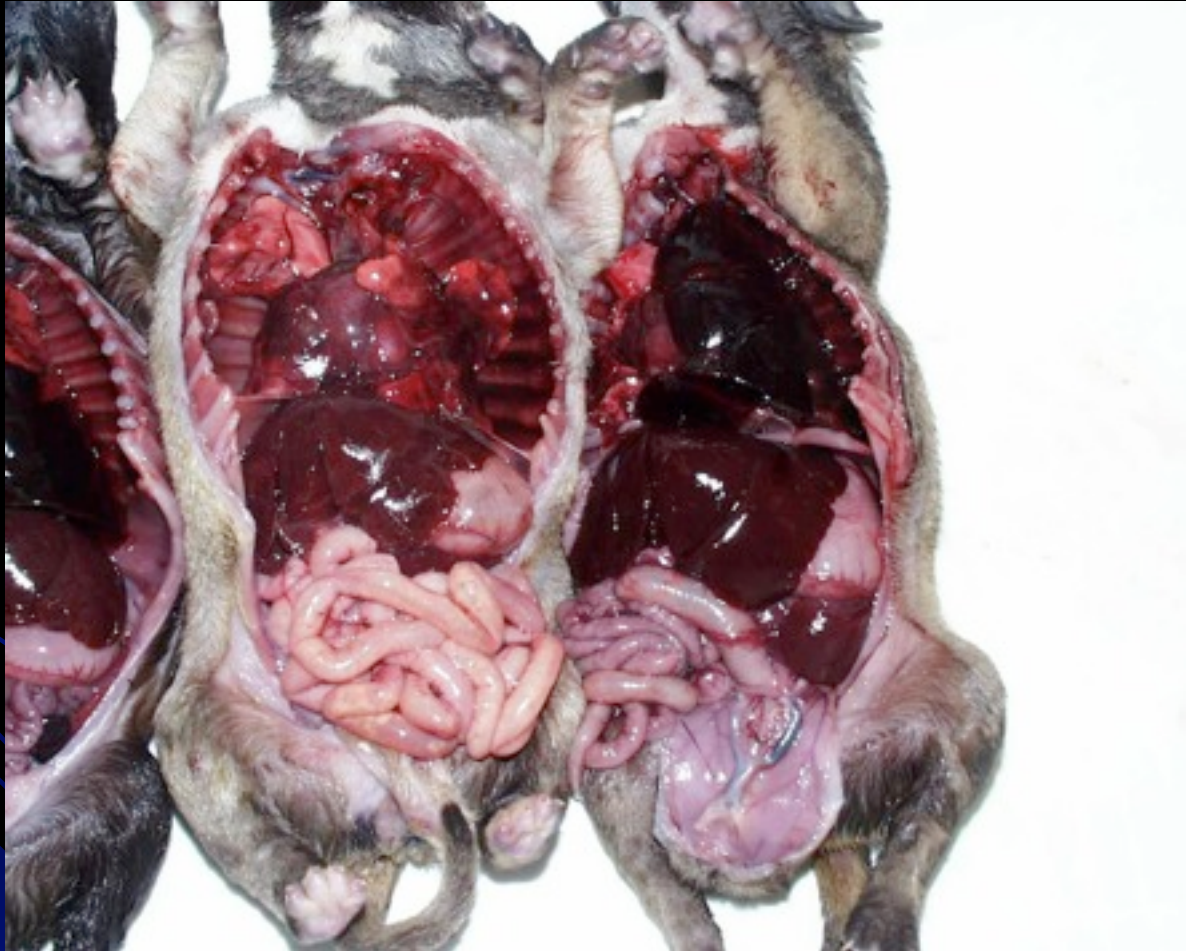






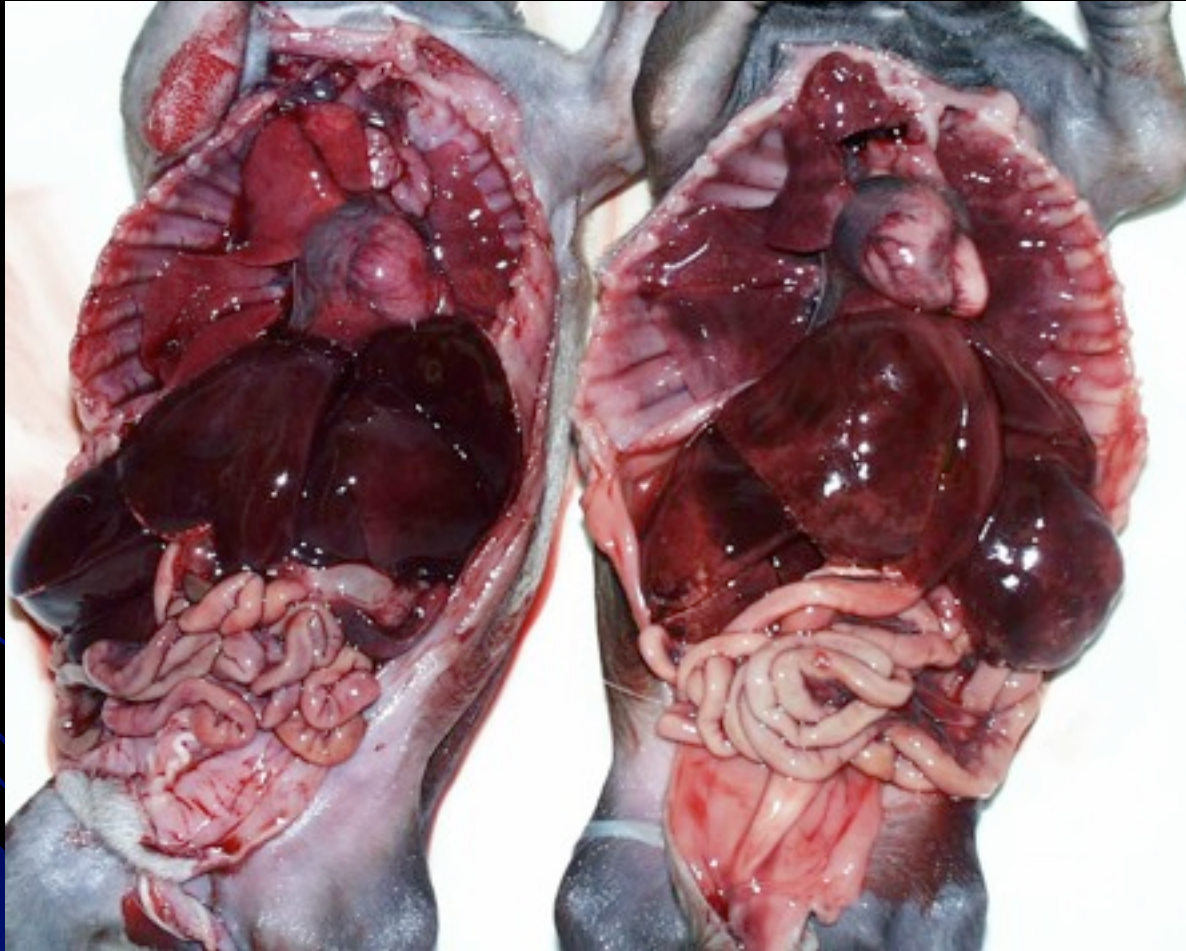










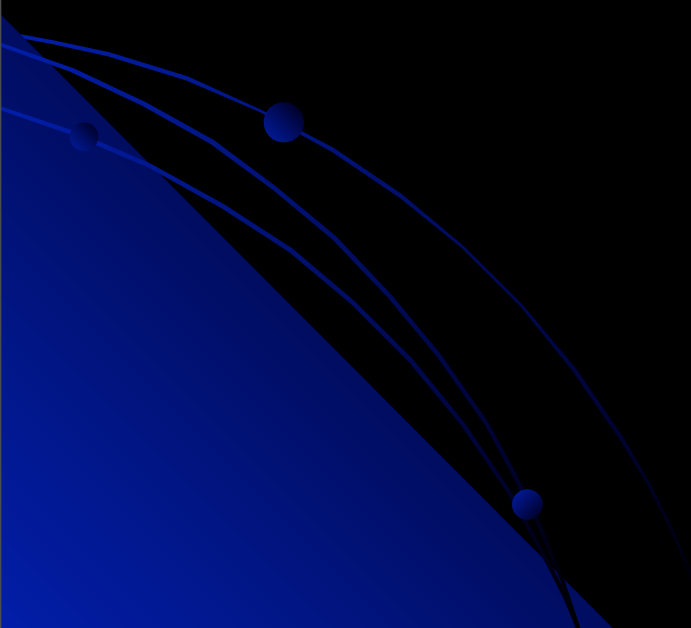


HAPPY PUPPIES



TREATMENTS for pups at risk

- Dr. Bell, DVM
- Acyclovir Treatment
- Dr. Sears DVM
- Anti Viral Serum



Treating at risk litters prevention

INTERNATIONAL LABRADOR DIGEST CANINE HERPES

Ron Bell, DVM - The Labradors of Borador

This article appeared in the first issue of the ILI) and is copyrighted - it may not be reproduced without written consent.

R. Bell DVM

- Weigh pup 2-3 lbs.
- ACYCLOVIR POWDER IN CAPSULES
- (mix 200 mg capsules in 10 cc of warm water. The powder will not dissolve but is suspended. Give $\frac{1}{2}$ cc (10mg) to each pup every 6 hrs until 3 $\frac{1}{2}$ weeks old.)
- Place in incubator
- Give fluids orally

Dr. Bell D.V.M.

- Having saved pups from certain death does not guarantee that you will not see reproductive lesions in dogs before puberty. We see lesions in the prepuce (balanophthitis) and vaginal lesions.
- None of these will show signs of respiratory disease.
- Most survive.

A W SEARS DVM

Newborn pups from suspected kennels or dams with herpes virus can be treated with a subcutaneous shot of 1 cc of

Antiviral Serum

per pup immediately after birth and repeated in 24 hrs. This will reduce the death rate substantially.

Rx of Individual Sick Pups.

- Weigh pup 1 to 3 lbs
- Give 1 cc of **12 hr NDV induced serum** to pups every 12 hrs for 3 treatments
- **LASIX** one drop per Oz orally (*to control lung edema*)
- **KAON** one drop per Oz orally every 3 hrs (*to control loss of K⁺*)
- **CHLOROMYCETIN** 0.05 cc per Oz once (*to control secondary lung infection*)
- **GANGCYCLOVIR**_0.1 cc per pup sub Q every 12 hr's.
- INCUBATOR 96* (keep in for 24 hrs)
- FLUIDS GIVEN ORALLY (sugar water works as well as formula)

Treated Survivor



Treated Survivor



Pound early Spayed Dog 5 months old



Vaginal Lesions Scoped



Vaginal Lesions



Vaginal Lesions



Rx of Acutely Infected Vaginal Lesions

- Vancyclovir given 4 times daily for one week.
- This will reduce but not eliminate vaginal lesions.
- Very Expensive

Herpes Unspayed Juveniles

Vaginal Discharge



Herpes Unspayed Juveniles



Herpes Unspayed Juveniles vulvar lesion



Herpes Unspayed Juveniles Vulvar Lesions

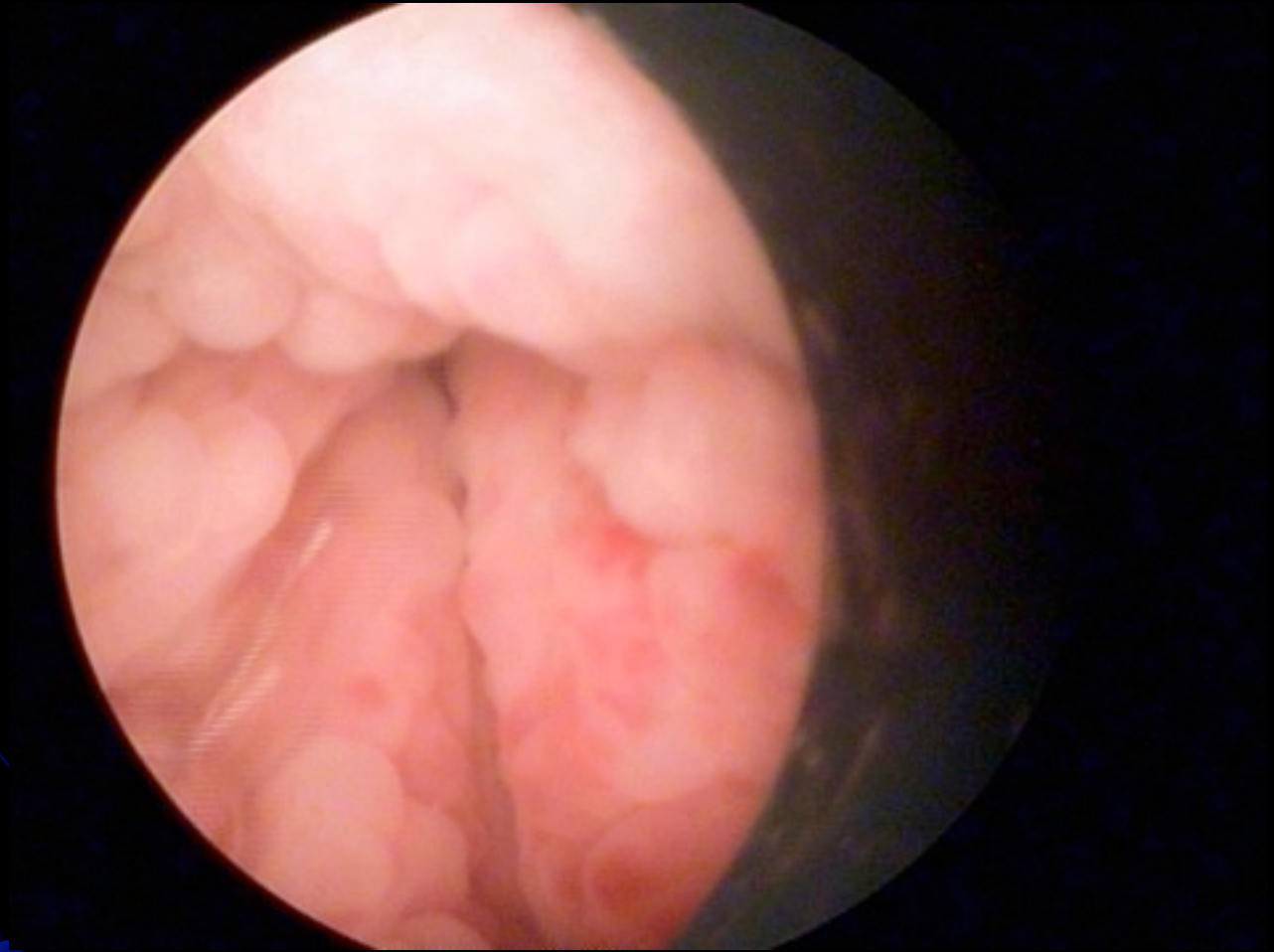


Herpes Unspayed Juveniles Vulvar Lesions



Juvenile Infected Vaginas

Scoped Vesicles



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



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Dogs Spayed before Estrus



Dogs Spayed before Estrus



Dogs Spayed before Estrus



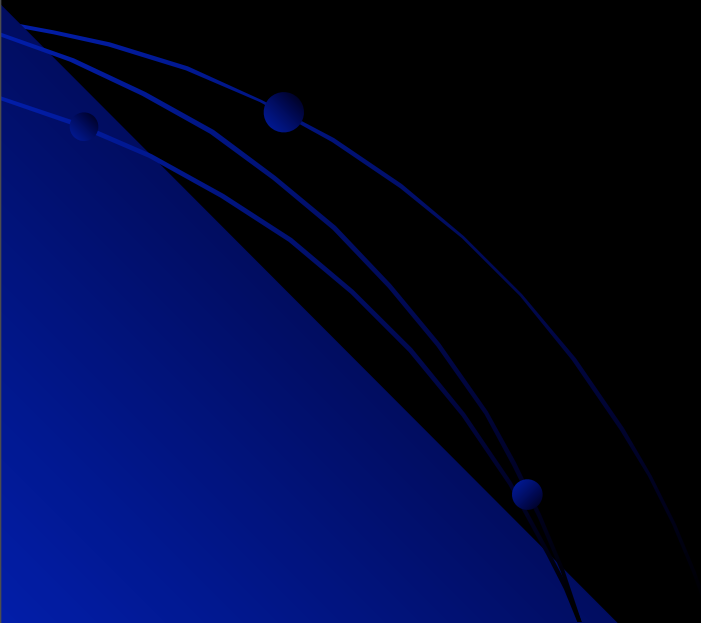
Dogs Spayed before Estrus



Dogs Spayed before Estrus



Acyclovir treatment of herpes vulva



Pre Treatment



Post Treatment 1 week

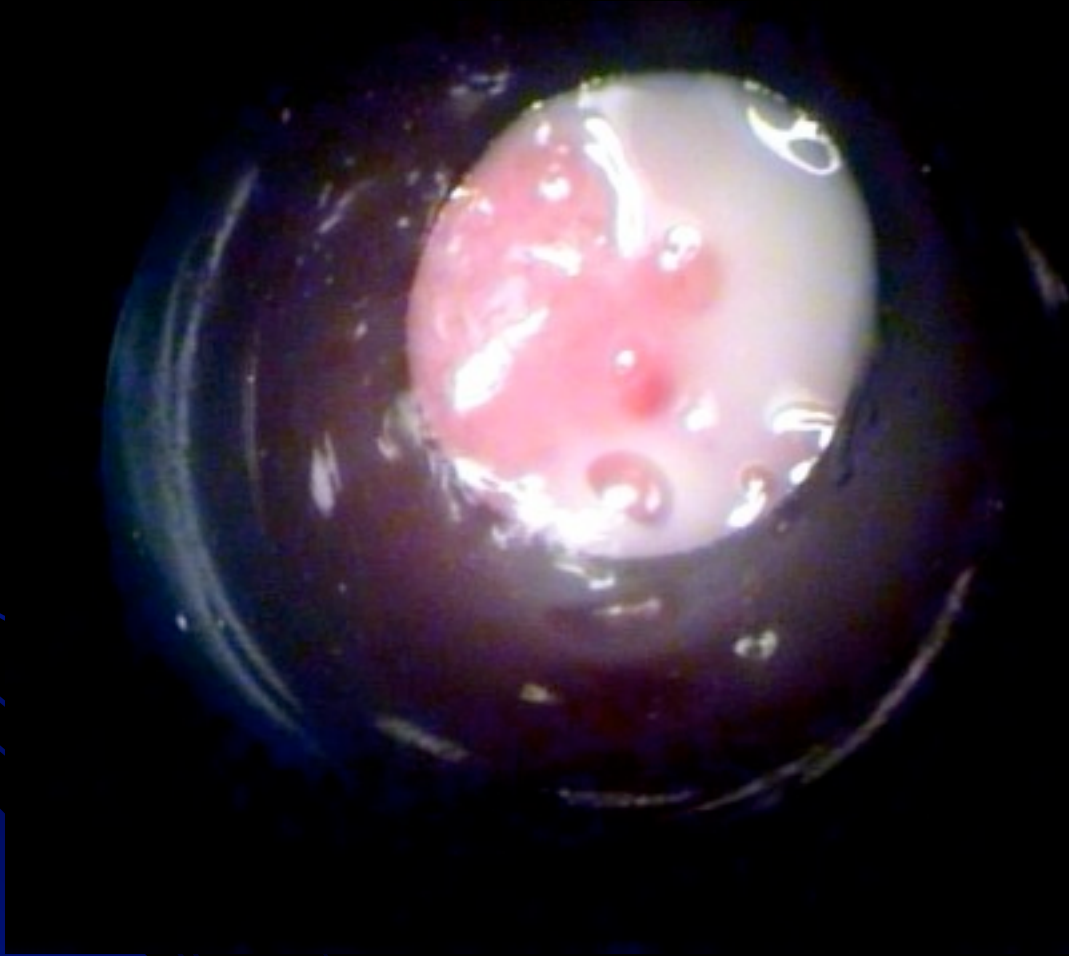


Preputial herpes in male



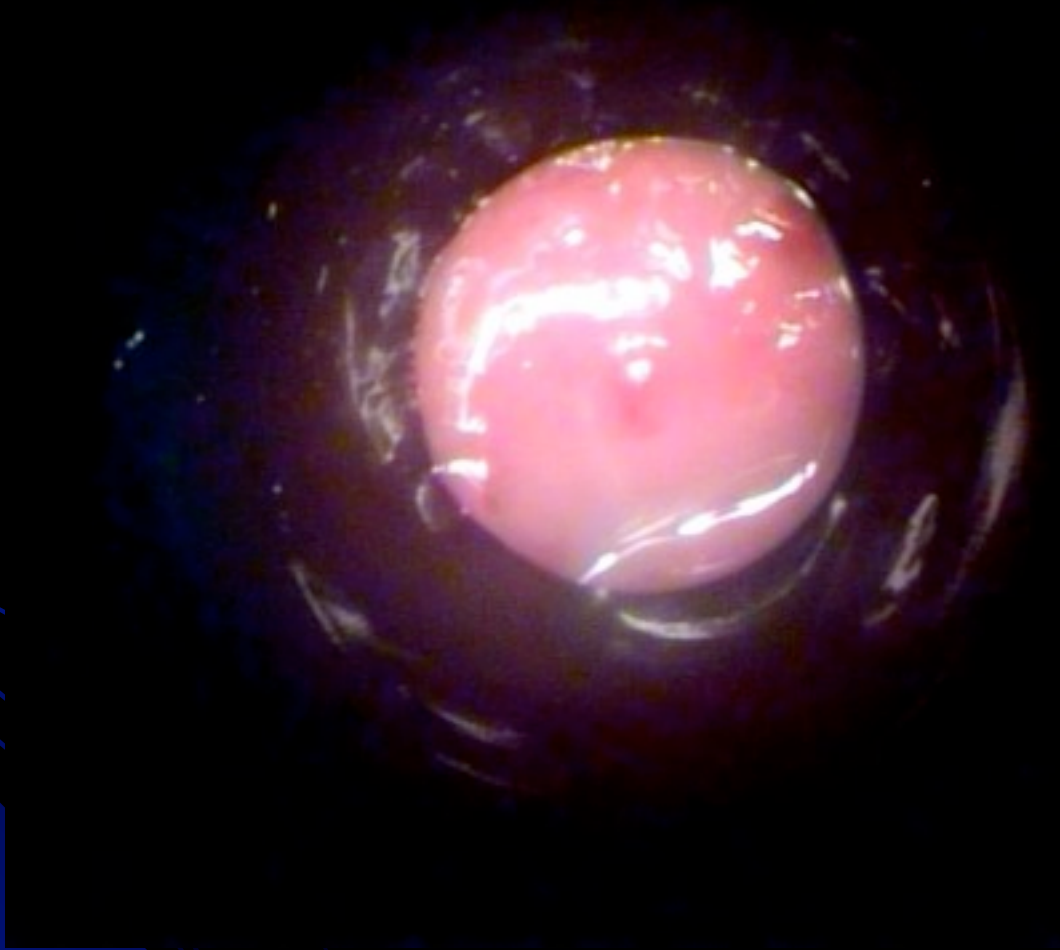
Preputial herpes in male

Scoped Prepuce



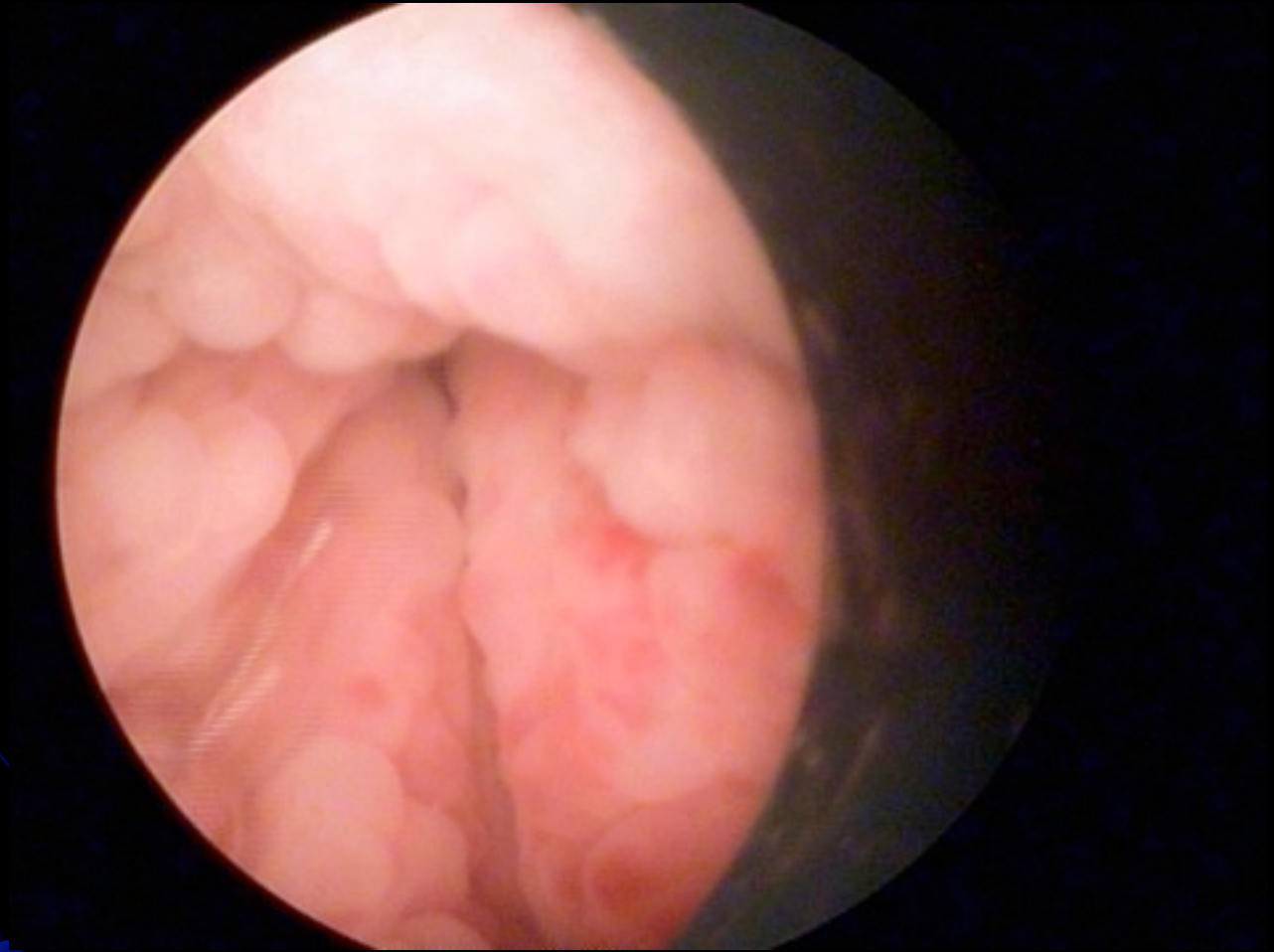
Preputial herpes in male

Scoped Prepuce



Juvenile Infected Vaginas

Scoped Vesicles



ASK THE BOARD

What is your recommendation for a prepubertal puppy with "puppy vaginitis"?

- Spontaneous recovery usually occurs after the first estrous cycle in these cases. I often prescribe a dilute chlorhexidine solution to pacify the pet owner. In my experience, spaying the pet before the first estrus solves the problem.

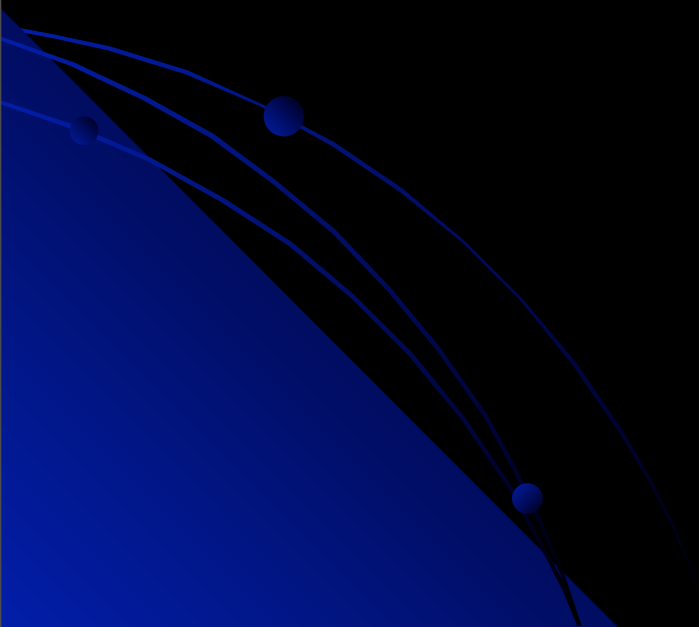


- Ronald E. Whitford, D.V.M. Clarksville, Tennessee

88 Veterinary forum August 1997

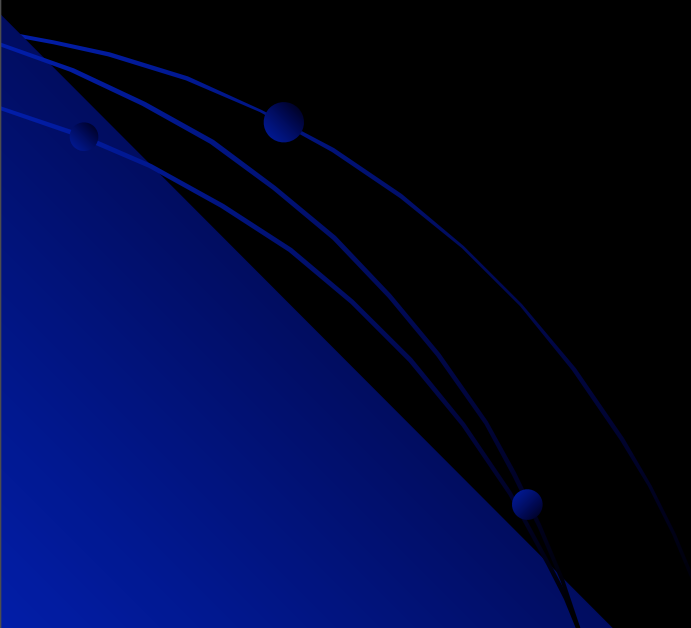
- In my Opinion "this is contradictory advise"

Juvenile dogs with or without lesions



Juvenile dogs with or without
lesions


**DO NOT
SPAY**



Juvenile dogs with or without lesions

- Always allow AT LEAST ONE heat cycle before spaying.
- No effective treatment for Herpes after spaying.
- Cannot tell if they are infected when no lesions appear.
- Many Veterinarians will not agree.
- New Vaccines may help!
- Vancyclovir helps does not eliminate lesions.

Fax shows NEGATIVE IgG/IgM

 **SPECIALIZED ASSAYS CLINICAL**
228 12th Ave., So.
P.O. Box 25128
Nashville, TN 37202
415-255-5796
1-800-289-8582

SEARS VET CLINIC
565 WEST AVE I
LANCASTER, CA
7929 FAX

PATIENT
XXXXXXXXXXXXXXXXXXXX

SEX AGE PATIENT ID
F 5

DEATH DATE & TIME
08-APR-96 04:00

FINAL REPORT ☒ Harold W. Ferrell, MD.
Medical Director

PARTIAL REPORT ☐ Medicare No. 3402621

SPECIMEN NO. H3143552 HOSPITAL NO. SEARS DOCTOR RECEIVED DATE 11-APR-96 REGISTRATION NO. T624619

COMMENTS
CALL FAX RESULTS 805-942-5661

REPORT DATE & TIME
16-APR-96 15:30

TEST NAME	RESULTS		UNIT OF MEASURE	REFERENCE RANGE
	OUTSIDE REFERENCE RANGE	WITHIN REFERENCE RANGE		
* CANINE HERPES IgG AB		NEGATIVE		
* CANINE HERPES IgM AB		NEGATIVE		

This dog has Varicella Herpes Virus.

Subj: JAAHA Publication inquiry
Date: 4/17/2002 12:54:42 PM Pacific Daylight Time
From: wjw.ingwersen@sympatico.ca
To: AntiDistemper@aol.com
Sent from the Internet (Details)

Dear Dr. A. W. Sears,

Thank you for your interest in publishing your protocol on treating canine distemper virus infection within the *Journal of the American Animal Hospital Association*. **I have read your protocol summary titled *Cellular Immunity Serum Protocol* and cannot accept your article as currently submitted.** For publication consideration, information must follow the guidelines for authors as detailed in various issues of *JAAHA*. It is also imperative that any suggested, 'new' treatment recommendations be validated through appropriately designed and carried out research protocols before it is disseminated as a valid clinical treatment option for readership consideration. This includes ensuring that the research methodology used meet recognized standards of animal care (usually through the review and acceptance by standing committees on animal care at the respective institution where such investigative work is carried out). This latter point is especially relevant to your protocol because of the off-label use of Newcastle virus vaccine and the induction of shock in recipient dogs.

Unfortunately your article, as submitted, does not meet any of these requirements.

If I can be of any further assistance, please feel free to contact me, either through the e-mail address above or via AAHA at 800-252-2242; ext. 402.

Sincerely,

Walt Ingwersen, DVM, DVSc, Diplomate ACVIM Editor, *JAAHA*

Herpes damage in 4 mo old dog



Vaginal Drainage



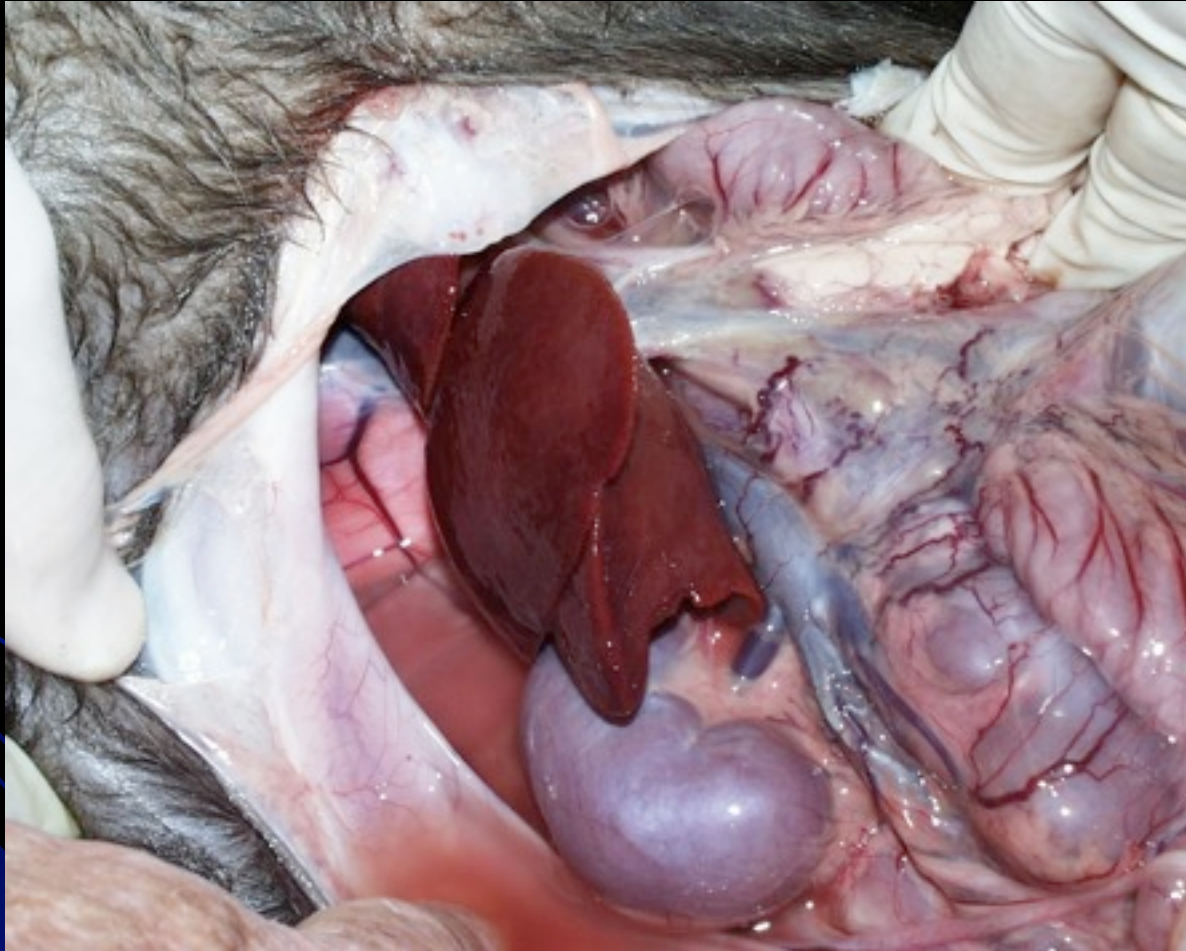
Herpes Infected



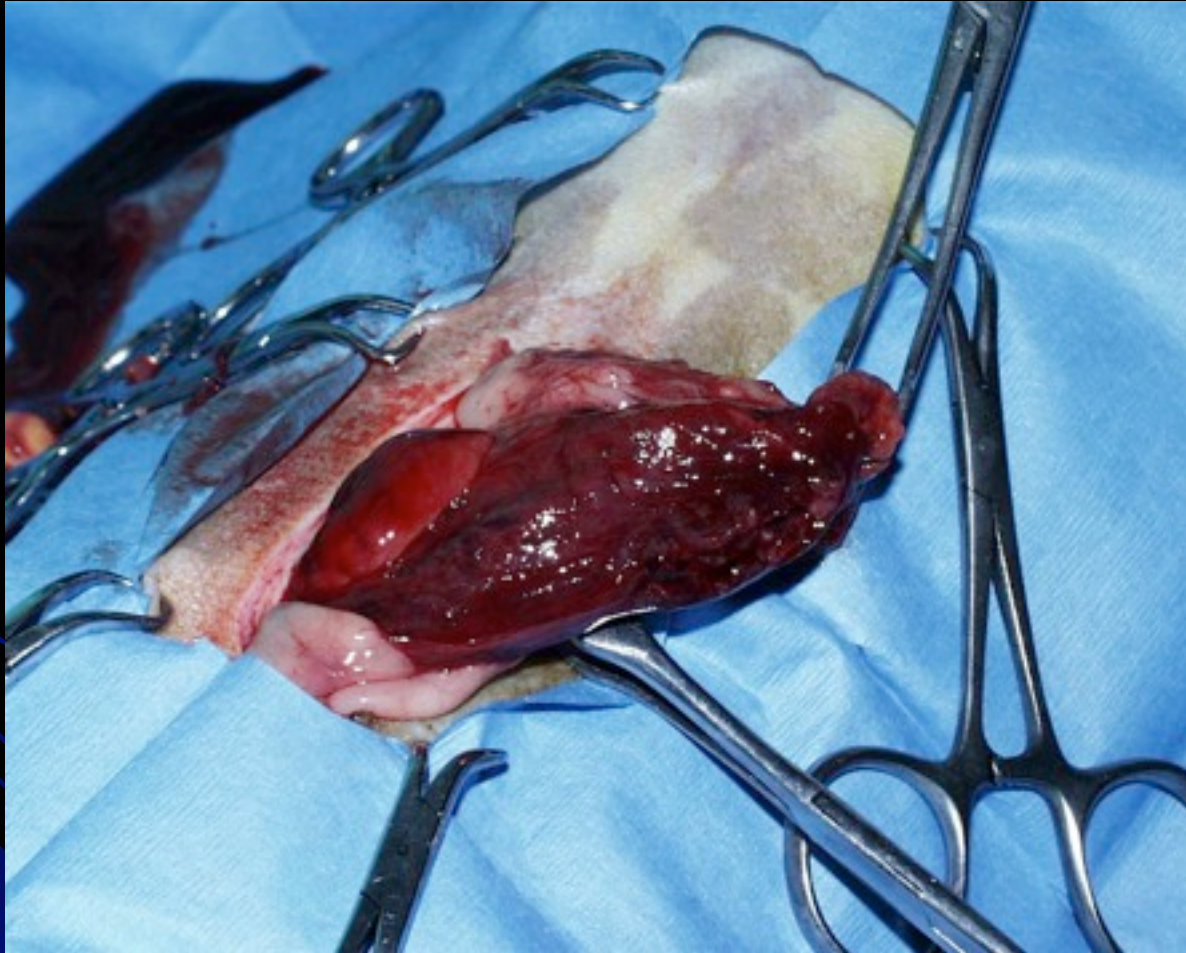
Herpes Infected Abdominal Ascites



No Lesion Found



Interstitial Cystitis Herpes



Interstitial cystitis

- This disease responds to treatment
- Serum 3 cc per lb
- Penicillin $\frac{1}{2}$ cc + prednisone 1 cc
- Repeat for 2-3 days.
- Condition clears.
- Strongly suspect herpes infection

Respiratory Form



Respiratory herpes

- Treat with serum 2 cc per kg every 12 hrs for 3 treatments.
- Highly contagious.
- Isolate any contact dogs and treat preemptively
- New vaccine from Merial may help

X-Ray of Lung with Herpes



E-mail Letter

Subj: **Canine herpes virus**
Date: 5/14/2001 7:15:47 AM Pacific Daylight Time
From: Vonragusk
To; AntiDistemper

Dear Dr. Sears,

I have been searching the internet trying to find out more about canine herpes virus. A friend lost 6 out of 7 puppies to the virus. I know for sure that it was the herpes virus because she had autopies done.

Drug Therapy

Ganciclovir

Clyde S. Crumpacker, M.D.

GANCICLOVIR is a nucleoside analogue of guanosine, a homologue of acyclovir, and the first antiviral drug to be effective in the treatment of cytomegalovirus (CMV) disease in humans.¹⁴ It inhibits not only all the herpes viruses but also the transformation of normal cord-blood in-monocytes by Epstein-Barr virus.^{5 7} In this review, I - outline ganciclovir's mechanisms of action and resistance and discuss the clinical effectiveness of intravenous and oral ganciclovir.

Volume 335 Number 10 New England Journal of Medicine

LABORATORY INVESTIGATION REPORT

Steven Thomason, D.V.M.
565 West Avenue I
Lancaster, CA 93534

Case Record No. 119557

Report Date 12/18/84

species Yorkshire Terr. S

necropsy tissues

HISTOPATHOLOGICAL REPORT

Many alveoli in the lung are flooded with blood, with one fibrin clot noted. Neutrophils and macrophages are loosely packed in otherwise patent alveoli at one edge of the section.

The liver has only the usual glycogen accumulation seen in young animals. The spleen, kidney, and bladder are unremarkable,

Diagnosis: Acute hemorrhagic pneumonia

Antech Diagnostics

17672-A Cowan Avenue Irvine CA 92614 Phone: 800-745-4725

Hemopet 11330 Markon Dr Garden Grove, CA 92841 Tel: 714-891-2022 Fax: 714-891-2123

Accession No. IRAB43639660 Species Canine

Doctor SEARS Breed English Setter

Received 05/11/2003

Reported 05/23/2003 09:01 AM

Test Requested

Results herpes Canine

Herpes Negative @1:4

TEST PERFORMED AT CORNELL DIAGNOSTIC LABORATORY

This dog has vaginal Herpes lesions

ASSAYS CLINICAL
12th Ave., So. P.O. Box 25110 Nashville, IN 37202

SEX AGE PATIENT IDF 5DRAWN DATE ft TIME

08"APR-96 04!00 PARTIAL REPORT

SPECIMEN NO. HOSPITAL NO. DOCTOR H3143552 SEARS 11-APR-96

Harold W. Ferrell,MD 8U Medical Director

□ Medicare No. 3402621

REQUISITION NO.

T624619

REPORT DATE and TIME

16-APR-96 15:30

UNIT OF measure REFERENCE RANGE

**CANINE HERPES IgG AB X CANINE
HERPES IgM AB**

NEGATIVE NEGATIVE

THS DOG HAS VAGINAL HERPES

Antech Diagnostics

17672-A Cowan Avenue Irvine CA 92614 Phone: 800-745-4725
Hemopet11330

Dr Client #20073

Doctor **IRAB43639098** SEARS Species

Breed Canine English Setter Owner Pet Name Received 05/10/2003

Reported 05/23/2003 09:01 AM Test Requested Results Reference Range Units HERPES CANINE

Herpes Negative @1:32

Serum is toxic to cell cultures & so it is not possible to determine if the titer is positive at lower dilutions.

TEST PERFORMED AT CORNELL DIAGNOSTIC LABORATORY

Archives of Virology

ISSN: 0304-8608 (printed version) ISSN: 1432-8798 (electronic version)

Table of Contents

Abstract Volume 143 Issue 8 (1998) pp 1477-1488

A serological study of canine herpes virus-1 infection in the English dog population

M. J. Reading, H. J. Field