

## VET 433C Repro Learning Objectives

### Lecture 66 Clinical Aspects of Female Reproduction

#### **Know what test is a biomarker for estrogen levels**

-Vaginal cytology

#### **Know what phenomena, unique to the female dog, permits estimation of the 12-24 hr LH surge**

- Pre-ovulatory luteinization, LH surge prior to rise in progesterone
- **Progesterone!**
- **Start producing progesterone from their ovaries prior to ovulation, happens day of LH surge**
- **If we are running daily progesterone testing and see it elevate above baseline, we know the LH surge has happened!**

#### **Understand that besides identification of the fertile window in the female dog, other valuable information is yielded by performing ovulation timing**

- Allows us to know what her **due date** should be in addition to identifying her fertile window

#### **Recommend appropriate infectious disease testing for breeding dogs**

- **Vaginal cultures are not ideal**
- Aerobic and mycoplasma growth interpreted as abnormal; treatment with antibiotics and holistic advised
- Negative growth is abnormal but desired by breeders
- Role of normal flora is misunderstood
- Abuse of antibiotics

#### Canine brucellosis

- Gram negative aerobic intracellular coccobacillus
- **Zoonotic**
  - o Abortion
  - o Infertility
  - o Orchitis/epididymitis
  - o Testicular atrophy
  - o Meningitis, uveitis, discospondylitis
- Oral and venereal transmission from contaminated body fluid
- Screening is always indicated, even in maidens, before each breeding (female) and at least annually (male) and before semen exportation
- Early screening is key due to false positives, requiring additional testing

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- Best testing is a two-step serial approach: a high-sensitivity screen (Cornell multiplex, ELISA, 2ME-RSAT) followed by a highly specific confirmatory test

### Canine Herpesvirus (CHV-1)

- Mild to increased respiratory signs from upper airway infection
- Risk factors
  - Exposure of a naïve female to CHV-1 during the last three weeks of gestation
  - Exposure of naïve pups during the first 3 weeks of life
    - Abortion/respiration
    - Neonatal puppy mortality is high up to 3.5 weeks of age
  - Screening
    - Documentation of positive CHV-1 serology generally indicates adequate immunity and maternal antibodies
    - Negative CHV-1 serology
      - Quarantine (3 week rule) prior to gestation
    - Vaccination?
      - Canine herpesvirus vaccine – EU licensed \*Not in US\*

### **Understand what the earliest time after an incidental breeding that medical termination of pregnancy should be undertaken and why**

- 25-30 day ultrasound pregnancy evaluation
- Medical or surgical intervention based on results
  - After 35 days of gestation
  - Before 8<sup>th</sup> week of gestation
- Why
  - Misalliance
  - Genetic disease
  - Pregnancy contraindications
    - Immune-mediated dz
    - Pregnancy ketosis
- Surgical OVH
- Medical

### **Additional Information**

Anestrus 7-9 months no interest in male dogs

Proestrus – bitch is interesting to male dogs but she is not interested in breeding

Estrus – Bitch will permit breeding

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Diestrus – post-ovulation female is under the influence of progesterone and is no longer receptive to the male dog

### Lecture 67 Disorders of Female Reproduction

#### **Be able to name the most important rule out for puppy vaginitis**

- Vulvar discharge, mucoid to purulent, +/- perivulvar dermatitis
- Otherwise asymptomatic for genitourinary tract disease
- Onset ~ 6 weeks of age
- Days to months duration
- Common

#### Rule outs

- Puppy vaginitis
- **Urinary tract infection**
- Vaginal foreign body
- Urinary incontinence from “plumbing” issues
- Initial estrous cycle
- Pyometra

#### Diagnostic plan

- Dictated by history and physical exam findings
- Urinalysis, culture/sensitivity if... you think there may be a UTI
  - o Cytology of discharge
  - o Urinalysis
  - o Vaginal cytology

#### Therapy

- Benign neglect
- Tincture of time
- Cleanse the perivalvar area
- Resolves with time and maturation
- Avoid abx – usually don’t help
- Probiotics likely ineffective
- Good prognosis!

This is different than chronic vaginitis in the adult female dog (most if not all have had an OVH)

- Extensive perivulvar dermatitis
- Granulomatous uterine stump

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- Vaginal foreign body
- Chronic UTI with urethritis, vestibulitis, vulvitis
- Cystic, urethral, vaginal or vestibular neoplasia
- Strictures
- Most cases are idiopathic and are commonly estrogen responsive

### **Be able to name the stage of the estrous cycle most commonly associated with pyometra and for what reason**

Disestrous – progesterone

Heat cycle within the past 1-2 months! \*Seen more in dogs with frequent heat cycles

### **Be able to list the 4 criteria to consider when deciding about the appropriateness of medical management of pyometra**

1. Young, valuable breeding dogs or cat that will be bred at the next cycle
2. Stable
3. If open
4. Always hospitalized and owner is willing to pursue OVH if things go south
5. Bactericidal antibiotics (C&S)
6. Prostaglandins
  - a. PGF2
  - b. Cloprostenol
  - c. +/- antiprolactins
7. Appropriate supportive care (antiemetics, IVF)
8. Careful monitoring
9. OVH if deteriorating

Medical treatment is not going well why is transfer cell transfer medications given to a pregnant dog cat concern because they are fetuses even as blastocysts are exposed and fetuses are unable to metabolize drugs as well as the adult animal two rule outs for postpartum fever anorexia lethargy that mastitis metritis

### **Understand why transplacental transfer of medications given to a pregnant dog or cat is a concern**

- Even pre-implantation exposure
- First month critical for teratogens
- Fetal renal excretion and hepatic metabolism is diminished
- Read the packet inserts, pharmaceutical texts

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- Categories
  - o Believed safe (not conspecifics) \*usually tested in rodents
  - o Problematic
  - o Not evaluated

### **List 2 rule-outs for post-partum fever, anorexia, and lethargy**

1. Metritis – acute postpartum septic inflammation of the uterus
  - a. Retained fetus
  - b. Retained placenta
  - c. Contaminated obstetrics
  - d. Hematogenous-mastitis
2. Mastitis
  - a. Galactostasis
  - b. Febrile, anorexic, lethargic dam
  - c. Cutaneous, exogenous hematogenous sources
  - d. Check the teats daily and make sure that milk can be expressed from each one

### **Lecture 68 Dystocia Diagnosis and Management**

#### **Be able to describe / differentiate the three stages of normal labor**

Stage I: uterine contractions, no pushing

Stage II: External abdominal effort can be seen, accompanying uterine contractions resulting in the delivery of a puppy. 1 hour between puppies and about 9 hours total labor

Stage III: Delivery of the placenta

#### **Understand the three broad categories of dystocia etiologies**

- Material
  - o Uterine abnormalities
    - Herniation
    - Torsion
    - Rupture
    - Excessive fluid accumulation (hydrops)
    - Lack of allantoic fluid
  - o Birth canal abnormalities
    - Narrow, steep pelvic canal
    - Vestibular – vaginal abnormalities
- Fetal
  - o Presentation (cephalad, caudal) are normal
  - o Abnormal posture is problematic

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- diving head up
- Spine closest to dam's spine normally
- Fetal oversize
  - Small litter
  - Prolonged gestation
- Fetal anomalies
  - Malformations
  - Anasarca
  - Hydrocephalus
  - Twins
- Combination

**Be able to name and describe the action of the 2 drugs used most commonly to treat dystocia medically and their logical use**

Calcium Gluconate – improves **strength** of myometrial contractions (local response)

Oxytocin – improves **frequency** of myometrial contractions

**Be able to name 2 absolute indications for Cesarean section**

1. Obstructive dystocia
2. Critical condition of the dam

**Know the likely complication associated with a singleton or markedly small litter size in pregnancy**

Fetal maternal mismatch

### **Neonatal Resuscitation Lecture 71**

**List what the “ABCs” of neonatal resuscitation stand for**

A - Airway

B - Breathing

C – Cardiovascular system

**Be able to name 5 important non pharmaceutical items in a neonatal resuscitation kit**

Warm towels, hair dryer etc.

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- Understand what the main cause of neonatal bradycardia is, and what the first step to correct it is**

Hypoxemia corrected with ventilation

- Be able to name 3 complicating factors which can contribute to a poor resuscitation response**

Hypothermia

Hypoglycemia

Inadequate airway clearance

## Vaginal Cytology Learning Objectives

- Know what test is a biomarker for estrogen**

Vaginal Cytology

If looking for endogenous estrogen / ovarian remnant use AMH test

- Understand why a vestibular sample differs from a vaginal sample**

The vestibule does not appropriately reflect what is happening in the reproductive cycle and does not change under the influence of estrogen and progesterone

- Understand the significance of red blood cells' presence or absence in vaginal cytology**

They may be present, but they may also not be present. Do not base your plan on RBC sighting

- Understand the significance of non-toxic neutrophils' presence in vaginal cytology**

Non-toxic neutrophils in a vaginal cytology indicate **diestrus**. These neutrophils are acting as a “cleanup crew”, and the dog should not be bred if this is seen on cytology because she is out of her fertile window

- Know the special consideration about feline vaginal cytology**

This can be difficult to obtain and cats are also inducible ovulators so obtaining a cytology may induce an LH surge and lead to premature ovulation

- Know why vaginal cytology should always be done on the breeding day(s)**

Backs up the timing and give you some conformation that you timed the breeding right

## Male Reproductive Disorders

**Know 3 differentials for scrotal enlargement**

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1. Testicular enlargement
2. Epididymal enlargement
3. Herniation of abdominal contents

### **Be able to describe expected fertility and libido in a dog or cat with bilateral cryptorchidism vs unilateral cryptorchidism**

Bilateral cryptorchidism - both testes are in the abdomen or in the inguinal canal that that individual will **not be fertile** because of the temperature but it will have **normal libido** because testosterone is being produced versus unilateral cryptorchidism

Unilateral cryptorchid - one testis in the abdomen one in the scrotum will have **normal semen production from the scrotal testis** and **normal libido from both testes**

### **Be able to list common clinical signs of canine benign and cystic benign prostatic hyperplasia which are distinct from prostatitis and prostatic neoplasia**

#### Benign and cystic benign prostatic hyperplasia

- Usually no pain
- Hemospermia can be present but that semen is otherwise normal and it's not purulent
- No pain with ejaculation
- No pain on rectal exam

#### Prostatitis

- pain associated with palpation of the prostate
- purulent prostatic fluid in the ejaculate

#### Prostatic neoplasia

- Should be a very abnormal ultrasound appearance and palpation of a neoplastic prostate

### **Be able to differentiate priapism, paraphimosis and phimosis clinically**

Priapism: erection without sexual stimulation which may be inside or outside the prepuce

Paraphimosis: the extruded penis cannot be returned to the prepuce

Phimosis: the penis cannot be extruded from that the prepuce clinically