Reproduction in the Canine and Feline

Animal Sciences 434
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The Bitch

- Puberty - 6 mo.
- Monoestrus
  - One estrus during breeding season
- Estrous Cycle
  - Proestrus
  - Estrus
  - Metestrus or Diestrus
  - Anestrus

Estrous Cycle (Non-Pregnant)

- Proestrus (9 days)
  - Vulva swollen
  - Bloody discharge
  - Attracted to male but does not mate
- Estrus (9 days, ovulation day 2)
  - Accepts male
  - Straw-colored discharge
- Metestrus or Diestrus (90 days)
  - False pregnancy
- Anestrus (5 months)
  - Sexual inactivity

Hormonal Changes

Days from LH Peak

Estrous Cycle - Pregnant

- Proestrus (9 days)
  - Vulva swollen
  - Bloody discharge
  - Attracted to male but does not mate
- Estrus (9 days, ovulation day 2)
  - Accepts male
  - Straw-colored discharge
- Pregnant Metestrus/Diestrus (50 - 60 days)
  - Pregnancy
  - Parturition (63 days from ovulation)
- Anestrus (5 months)
  - Sexual inactivity
Mating

- Occurs during estrus
- Length of courtship by male is variable
  - Licks vulva
  - Bitch stands with tail to one side
- Mounting
  - Male mounts without erection and penetrates
    - Os penis
  - In vagina, male bulbus glandis engorges, thrusting
  - Male dismounts and turns around but penis remains in vagina “the tie”
  - Ejaculation
  - Tie last 5 min to 1 hour

Canine Mating

- First Stage Coitus (1-2 min)
- The Turn (2-5 sec)

Canine Mating cont.

- Second Stage Coitus (5-45 min)

Mating (cont.)

- Mate 2 times
  - Days 11 and 13 after start of proestrus
    - Sperm lasts up to 7 days in female
- Infertility
  - Often from mating not at appropriate time
- Hormonal detection of ovulation
  - LH increase associated with progesterone >0.5 ng/ml
  - Ovulation progesterone 2-5 ng/ml

Pregnancy

- 63 days (58-68)
  - Range due to dating from breeding not fertilization
- Hormonal Changes
  - Similar to not mated
  - Progesterone maintained higher
  - CL required to maintain pregnancy
  - No placental progesterone
  - Placental relaxin
  - Drop in progesterone triggers parturition
- Detection
  - Adimal palpation at 3 - 4 weeks
  - Ultrasound after day 16
- Parturition
  - Hormones similar to other farm animals

Parturition

- Delayed Parturition
  - Primary inertia
    - Does not show signs of parturition
    - Does not progress from stage 1 - stage 2
    - If green fluid, Caesarian
    - Give oxytocin in several small doses
  - Secondary inertia
    - Uterine exhaustion
    - Oxytocin
Estrus Control

• Induction
  » eCG
• Prevention
  » progestins

Disorders of the Bitch

• Cystic endometrial hyperpalsia (pyometra)
  » Uterus fills with fluid
  » Progesterone increases first
  » Contamination of uterus by vaginal bacteria
  » Toxemia results from absorption of fluid and endotoxins
  » Thirst, vomiting, inappetence, shock, death
  » 4-6 weeks after estrus
  » Bitches >9 years that have not had a previous pregnancy
  » Can be open or closed
  » hysterectomy

Canine Pyometria in 10 year old Bitch

Disorders of the Bitch

• False pregnancy
  » Normal to some extent
  » 60 days after estrus
  » May lactate, gain weight, nesting behavior
• Mammary tumors
  » Thought may be related to similarity to pregnancy and non-pregnancy

Dog Anatomy

Bulbus Glandis

Disorders of the Male Dog

• Hypersexuality
  » Castrate
  » Progesterone
• Cryptorchidism
  » Normal descent at days 7-10 after birth
  » Should be removed if retained for >1 yr.
Artificial Insemination

- Bitch does not accept the male
- Shipment of semen
- Minimize the number of breedings
Semen Collection in the Dog

Insemination of the Bitch

• Bitches ovulate around day 10 after they enter proestrus (discharge) or about 1 - 2 days of estrus.
  » Ovulation can be detected by:
    - LH assay (peak LH value + one day)
    - Progesterone assay (>5 ng/ml)
    - Cytology of vaginal smear (>50% cornified cells)
• Remember oocytes in the canine are ovulated as 1° oocytes and must mature in the oviduct to a 2° oocyte before fertilization.
• Fresh or cooled semen, inseminate 2 days after ovulation detected and again 48 - 72 hr latter.
• Frozen semen, inseminate on day 5 - 7 after ovulation
• Uterine insemination better than cervical

Feline Reproduction

• Domestication?
• Female-Queen
• Male - Tom
• Puberty
  - 6 - 9 months
• Estrous Cycle
  » Seasonal
    - January to September
    - House cats may cycle year round

Artificial insemination in the Bitch

Estrous Cycle

• Pro-estrus
  » 1 - 2 days
  » Attracted to males
  » Rubs head and neck on objects
  » Vocalization, posturing and rolling
• Estrus
  » Accepts male
  » 4 - 6 days if male present, 10 days if no male
  » Ovulation 27 hours after mating (induced)
  » Affectionate to aggressive towards owners
**Estrous Cycle**

- Proestrus if queen did not ovulate  
  » 8 - 10 days
- Diestrus after ovulation  
  » Pseudopregnancy - 40 days  
  » Pregnancy - 60 days
- Anestrus 3 - 4 months

**Estrous Cycles Options**

- Proestrus, 0 - 2 d  
- Estrus, 2-19 d  
- Diestrus, 8-10 d  
- Pseudopregnant, ~40 d  
- Pregnant, ~60 d  
- Anestrus, ~30-90 d

**Hormonal Changes in the Queen**

- **Proestrus**  
  » Estrogen increases due to follicular development
- **Estrus**  
  » Estrogen high until ovulation  
  » Ovulation 27 hr after mating (vaginal stimulation)
- **Diestrus**  
  » No Cl if mating does not occur, so no diestrus  
  » Cl produces progesterone (63 days, peak day 20)  
  » If pregnancy does not occur or fails, Cl life only 1/2 that seen in pregnancy.
Mating

• Queens call or vocalize (low moaning sound)
  » Owners may think a sign of illness
• During mating
  » Tom bites neck female
  » With erection penis faces forward

Mating

• Queens call or vocalize (low moaning sound)
  » Owners may think a sign of illness
• During mating
  » Tom bites neck female
  » With erection penis faces forward
  » Only lasts 30 seconds to 5 minutes
  » As male dismounts female gives a loud copulatory call and Tom retreats
  » Mating occurs 6 - 7 times until queen declines
  » May occur for up to 4 days

Pregnancy

• 63 days
• Diagnosis
  » Abdominal palpation day 17 -25

Parturition

• Similar to other species in events and hormonal control
• Dystocia rare - caesarian
• Uterine inertia - oxytocin
Control of Estrus
- Ovariohysterectomy
- Induction of Ovulation
  » HCG
  » Vaginal Stimulation
- Prevention of estrus
  » Progestins

Disorders of the Queen
- Pseudo-pregnancy
  » Mating to sterile male
  » Vaginal stimulation or hormonal stimulation
- Cystic endometrial hyperplasia (Pyometra)
  » Same as in bitch
- Failure to cycle
  » Stress, poor nutrition, disease, inadequate light, cystic follicles

Diseases of the Tom Cat
- Spraying
  » Castration
- Cryptorchid
  » Descended at birth
  » Treatment is castration

Estrus Behavior
- Bitch
  » Present next to lecture material in 2013
- Queen
  » Find next to lecture material when completed.