

Heritable Aspects of Cat Breeding

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FEMALES

Cystic Endometrial Hyperplasia (CEH)

- ◆ Disorder of proliferative and degenerative changes in lining of uterus (endometrium) associated with aging; chronic subclinical condition; common in queens over 5 yrs and maiden queens over 3 yrs
- ◆ Important cause of infertility; may be familial tendencies
- ◆ Progesterone causes thickening of uterine lining and decreases the immune response in the uterus
- ◆ Estrogen causes dilation of the cervix during heat
- ◆ Repeated pseudopregnancies (false pregnancies) may predispose queen to CEH
- ◆ Diagnosis: queen is not ill but fails to conceive; ultrasound may detect thickening of uterus; definitive diagnosis only with biopsy of uterus
- ◆ No treatment for uncomplicated CEH; endometritis (CEH plus bacterial infection) may respond to prolonged antibiotic treatment

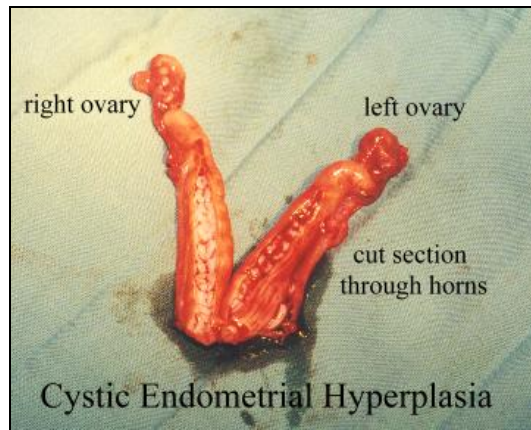


Photo 1: Severe cystic endometrial hyperplasia

Pyometra

- ◆ Typically occurs following a heat, when bacteria from vagina invade uterus with CEH
- ◆ Vagina normally has bacteria present; vaginal cultures therefore hard to interpret; most common bacteria are *E. coli* and *Streptococcus*
- ◆ Clinical signs: vulvar discharge, depression, dehydration, anorexia, fever, weight loss, distended abdomen

- ◆ Diagnosis: increased white blood cells on a complete blood count, enlarged uterus on x-rays or ultrasound
- ◆ Treatment: IV fluids may be needed, oral antibiotics (enrofloxacin or amoxicillin + clavulanate) plus spay or prostaglandin treatment
- Antibiotics alone, vaginal douches not effective
- Spay: best for queens not valuable in a breeding program
- Prostaglandin therapy: only for open-cervix pyometra; complication rate low
 - Candidate queens are under 6 years, in good health (no asthma), no retained fetal material, no complications (i.e. uterine torsion)
 - Prostaglandin F2 α (dinoprost, Lutalyse[®]) 0.1 to 0.25 mg/kg SC daily for 5 to 7 days
 - Monitor for: rising fever, abdominal pain, systemic illness, uterine rupture
 - Assess success of treatment by monitoring white blood cell counts, ultrasound
 - Side effects common, especially first day: restlessness, vocalizing, panting, vomiting, diarrhea, salivation, intense grooming of flanks and vulva; lasts 15-20 minutes
 - Vet should re-examine cat 1 and 2 weeks post-treatment: clear vulvar discharge by day 7, normal by 14 days; if bloody or purulent discharge persists, treat again
 - Re-breed at next heat!
 - Prolonged antibiotic therapy needed (4-6 weeks)
 - Pregnancy rates after treatment range from 71-86%; recurrence rate of 14% within 1 year in treated cats has been reported
 - Familial tendencies, especially in queens affected at under 1 year of age; consider removing these queens from the breeding program

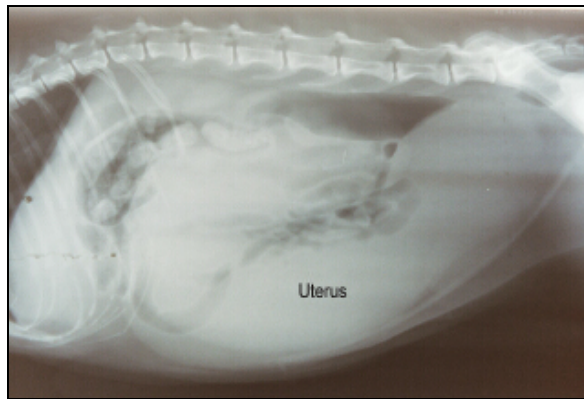


Photo 2: x-ray of queen with enlarged uterus due to pyometra

Dystocia (painful, slow or difficult delivery)

- ◆ Study by Gunn-Moore and Thrusfield in UK (1995): overall incidence 5.8%; highest incidences in Siamese, Persian, Devon Rex; associated with breeds having very short & wide or very long & narrow heads
- ◆ Study by Ekstrand and Linde-Forsberg, Sweden (1994): 155 dystocia cases; 67% were of maternal origin (uterine inertia); 30% were of fetal origin (malpresentations, deformities); Persian cats highest incidence; medical treatment successful in only 30% of cases
- ◆ Causes of dystocia:

1. Maternal factors: age, obesity, low blood sugar, low blood calcium, narrow pelvic canal (due to conformation, previous pelvic fractures)
 2. Fetal factors: large fetal head, true breech presentation, deformed/dead fetuses, small litters (fetus often very large, decreased stimulus for labor)
 3. Uterine inertia: two types
 - a) Primary: most common, uterus never develops effective contractions, cause unknown but factors include familial tendencies, older, overweight, inactive queens, stress, ill health
 - b) Secondary: contractions start out normally, but weaken due to uterine fatigue, most common in large litters
- ◆ Consider removing queens with primary uterine inertia from the breeding program

MALES

Mating Behavior

- ◆ Successful stud cats must be physically, socially and sexually mature; age at maturity varies with breed
- ◆ Breeding problems associated with: inexperience/immaturity, nervousness, new environment, improper breeding technique, malpositioning, health problems (i.e. dental disease, orthopedic conditions), hair rings around shaft of penis, poor libido, other stressors (i.e. showing, travel, social conflicts)
- ◆ Giving supplemental testosterone will not help increase libido
- ◆ Shy nervous males with poor libido should not be used for breeding

Cryptorchidism

- ◆ Failure of one or both testicles to descend into scrotum and remain there by 7-8 months of age
- ◆ Terminology:
 - ◆ Cryptorchid: failure of one or both testicles to descend
 - ◆ Monorchid: total absence of one testicle
 - ◆ Anorchid: total absence of both testicles
- ◆ Unilateral (affecting one testicle) most common; tomcat may be fertile; should not be used for breeding
- ◆ Inheritance suggested to be recessive and polygenic; example of a sex-limited trait (expressed in male, carried by females and males)
- ◆ Both sire and dam of an affected cat should be considered to be carriers; some full siblings will also be carriers
- ◆ No treatment proven to cause a retained testicle to descend; torsion of spermatic cord and testicular tumors rare in cat
- ◆ To confirm retained testicle: check for spines on penis
- ◆ Animal Medical Center study, New York (1991):
 - Overall rate of cryptorchidism: 3.8%
 - Most represented breed: Persian (20%)
 - Most cases unilateral (90%), left and right sides equally affected
 - 50% of retained testicles inguinal, 33% intra-abdominal
 - 2 cats were monorchid (1 Burmese, 1 Abyssinian)

- ◆ Michigan State University study (1980-1989):
 - Overall rate of cryptorchidism: 1.7%
 - 2 monorchids out of 1,345 cats
 - Most represented breed: Persian (29%)
 - Most cases unilateral (78%)
 - All bilateral cases were intra-abdominal and had no sperm present

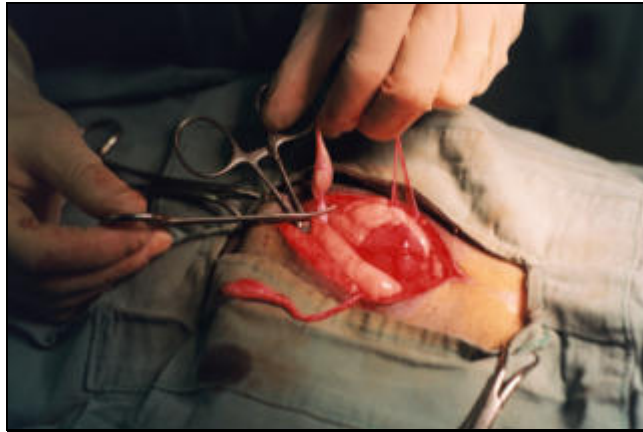


Photo 3: Bilateral abdominal cryptorchid

BREED SPECIFIC DATA

- Little investigation has been made into the reproduction of pedigreed cats.
- Only a handful of studies in the literature that have addressed reproductive patterns in domestic cats, covering such things as litter size and kitten mortality.
- Generally, these studies have used data from colonies of domestic cats kept for research purposes.
- Important to generate breed specific data for many reasons:
 - Determine what is average for litter size, birth weights, etc.
 - Determine frequency of problems like stillbirths, dystocia
 - Identify congenital defects
- Breeders can help by working with researchers or breed clubs on breed-specific projects