

SPONTANEOUS ABORTION AND PREGNANCY LOSS IN DOGS

BASICS

OVERVIEW

- “Abortion” is the delivery of one or more fetuses before it is (they are) capable of surviving outside of the uterus
- “Pregnancy loss” is the death of the embryo, reabsorption of early fetuses, mummification (shriveling or drying up of the fetus, like a mummy), abortion, stillbirths, and outcomes of difficult birth (known as “dystocia”)
- The “bitch” is a female dog

GENETICS

- No genetic basis for most causes of abortion
- Low levels of thyroid hormone due to infiltration of lymphocytes into the thyroid gland resulting in destruction of thyroid tissue (known as “lymphocytic hypothyroidism”); lymphocytes are a type of white-blood cell that are formed in lymphatic tissues throughout the body; lymphocytes are involved in the immune process—single-gene recessive trait in borzois

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs

Breed Predispositions

- Familial (runs in certain families or lines of animals) low levels of thyroid hormone due to infiltration of lymphocytes into the thyroid gland resulting in destruction of thyroid tissue (lymphocytic hypothyroidism) reported in borzois—prolonged interval between “heat” or “estrous” cycles, poor conception rates, abortion mid-pregnancy or gestation, stillbirths
- Many breeds considered at risk for familial (runs in certain families or lines of animals) low levels of thyroid hormone (known as “hypothyroidism”)

Mean Age and Range

- Infectious causes, medications causing abortion, fetal defects—seen in all ages
- Cystic endometrial hyperplasia (CEH), a condition in which the lining of the uterus thickens abnormally and contains fluid-filled sacs or cysts—bitch usually is greater than 6 years of age

Predominant Sex

- Females

SIGNS/OBSERVED CHANGES in the ANIMAL

- Failure to deliver or whelp on time
- Delivery of recognizable fetuses or placental tissues
- Decrease in abdominal size; weight loss
- Lack of appetite (known as “anorexia”)
- Vomiting, diarrhea
- Behavioral changes
- Discharge from the vulva that contains blood or pus; the “vulva” is the external genitalia of females
- Disappearance of fetuses previously documented by physical examination (palpation), ultrasound examination, or X-rays
- Abdominal straining, discomfort
- Depression
- Dehydration
- Fever in some patients

CAUSES

Infectious Disease

- *Brucella canis*—bacteria that causes reproductive problems in female and male dogs; disease called “brucellosis”
- Canine herpesvirus
- *Toxoplasma gondii*, *Neospora caninum*
- *Mycoplasma* and *Ureaplasma*
- Miscellaneous bacteria—*E. coli*, *Streptococcus*, *Campylobacter*, *Salmonella*
- Miscellaneous viruses—canine distemper virus, parvovirus

Uterine

- Cystic endometrial hyperplasia (CEH, a condition in which the lining of the uterus thickens abnormally and contains fluid-filled sacs or cysts) and inflammation with accumulation of pus in the uterus (known as “pyometra”)
- Trauma
- Tumors or cancer
- Medications that are toxic to the developing embryo
- Chemotherapeutic agents

- Estrogens
- Steroids—high dosages

Ovarian

- Prostaglandins—substances that have many effects on the female reproductive tract, one of which is the breakdown of the “corpora luteum” or “yellow body” that develops at the site of ovulation in the ovary and produces the female hormone, progesterone, which supports and maintains the pregnancy; breakdown or lysis of the corpora luteum decreases levels of progesterone and disrupts support of pregnancy
- Dopamine agonists—medications that mimic dopamine (a nervous system “messenger”) that leads to a decrease in the hormone, prolactin, and to lysis of the “corpora luteum” or “yellow body” via suppression of prolactin; drugs include bromocriptine and cabergoline
- Insufficient secretion of progesterone by the “corpora luteum” or “yellow body” during pregnancy, leading to pregnancy loss (known as “hypoluteoidism”)—abnormal function of the corpora luteum in the absence of fetal, uterine, or placental disease: progesterone concentrations less than 1 to 2 ng/ml

Hormonal Dysfunction

- Low levels of thyroid hormone (hypothyroidism)
- Excessive levels of steroids produced by the adrenal glands (known as “hyperadrenocorticism” or “Cushing’s disease”)
- Environmental factors—hormone or endocrine-disrupting contaminants have been documented in people and wildlife with fetal loss

Fetal Defects

- Lethal genetic or chromosomal abnormality
- Lethal organ defects

RISK FACTORS

- Exposure of the brood bitch to animals carrying disease
- Old age
- Genetic factors

TREATMENT

HEALTH CARE

- Most bitches should be confined and isolated pending diagnosis
- Hospitalization of infectious patients preferred
- *Brucella canis*—highly infective to dogs; bacteria shed in high numbers during abortion; suspected cases should be isolated
- Outpatient medical management—medically stable patients with noninfectious causes of pregnancy loss, hormonal disorders, or disease of the lining of the uterus (known as “endometrial disease”)
- Partial abortion—may attempt to salvage any remaining live fetuses; administer antibiotics if a bacterial component is identified
- Dehydration—use replacement fluids, supplemented with electrolytes if imbalances are identified by serum biochemistry blood tests

ACTIVITY

- Partial abortion—cage rest

DIET

- No special dietary considerations for uncomplicated cases

SURGERY

- Spay or ovariohysterectomy—preferred for stable patients with no breeding value

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Prostaglandin (PGF_{2α}, Lutalyse®)—stimulates and evacuates the uterus; also may consider Estrumate® (cloprostenol)—not approved for use in dogs; discuss the risks and benefits of treatment with your dog’s veterinarian
- Antibiotics—for bacterial disease; initially institute broad-spectrum antibiotic; specific antibiotic depends on bacterial culture and sensitivity testing of vaginal tissue or postmortem examination of fetus(es)
- Progesterone (Regu-Mate®) or progesterone in oil—for documented cases of insufficient secretion of progesterone (female hormone necessary to support pregnancy) by the “corpora luteum” or “yellow body” (hypoluteoidism) only
- Oxytocin (hormone that stimulates uterine contractions)—for uterine evacuation; most effective in the first 24 to 48 hours after abortion

FOLLOW-UP CARE

PATIENT MONITORING

- Partial abortion—monitor remaining fetuses with ultrasound examination to determine if they are continuing to live and develop; monitor general (systemic) health of the bitch for remainder of pregnancy
- Vulvar discharges—check daily; for decreasing amount, odor, and inflammatory component; for consistency (increasing mucoid content is good prognostically)
- Prostaglandin (PGF_{2α})—continued for 5 days or until most of the discharge ceases (usually 3 to 15 days)
- *Brucella canis*—monitor after spaying and antibiotic therapy; yearly serum testing to identify reappearance of bacteria (extremely difficult to eliminate infection successfully, even if combined with spaying or ovariectomy)
- Low levels of thyroid hormone (hypothyroidism)—treat appropriately; spaying recommended (possible genetic nature of hypothyroidism should be considered)

PREVENTIONS AND AVOIDANCE

- Brucellosis (disease caused by *Brucella canis*) and other infectious agents—surveillance programs to prevent introduction to kennel
- Spay or ovariectomy—for bitches with no breeding value

POSSIBLE COMPLICATIONS

- Untreated inflammation with accumulation of pus in the uterus (pyometra)—generalized disease caused by the spread of bacteria in the blood (known as “septicemia” or “blood poisoning”), presence of poisons or toxins in the blood (known as “toxemia”), death
- Brucellosis (disease caused by *Brucella canis*)—infection and inflammation in other organs of the body, such as the vertebrae (diskospondylitis) and eye (endophthalmitis, recurrent uveitis)

EXPECTED COURSE AND PROGNOSIS

- Inflammation with accumulation of pus in the uterus (pyometra)—recurrence rate during subsequent cycle is high (up to 70%) unless pregnancy is established
- Cystic endometrial hyperplasia (CEH, a condition in which the lining of the uterus thickens abnormally and contains fluid-filled sacs or cysts)—recovery of fertility unlikely; and inflammation with accumulation of pus in the uterus (pyometra) is a common complication
- Hormonal dysfunction—often manageable; familial (runs in certain families or lines of animals) aspects should be considered
- Brucellosis (disease caused by *Brucella canis*)—guarded prognosis; extremely difficult to eliminate infection successfully, even if combined with spaying or ovariectomy

KEY POINTS

- If brucellosis (disease caused by *Brucella canis*) is confirmed as the cause of pregnancy loss, euthanasia is recommended owing to lack of successful treatment and to prevent spread of infection; may try spay or ovariectomy and long-term antibiotics with long-term monitoring
- If brucellosis (disease caused by *Brucella canis*) is confirmed as the cause of pregnancy loss, a surveillance program for kennel situations should be developed and implemented
- If brucellosis (disease caused by *Brucella canis*) is confirmed as the cause of pregnancy loss, zoonotic potential should be considered; a “zoonosis” is a disease that can be passed from animals to people
- Primary uterine disease—spay or ovariectomy is indicated in patients with no breeding value; cystic endometrial hyperplasia (CEH, a condition in which the lining of the uterus thickens abnormally and contains fluid-filled sacs or cysts) is an irreversible change
- Infertility or pregnancy loss—may recur in subsequent “heat” or “estrous” cycles despite successful immediate treatment
- Prostaglandin treatment—discuss possible side effects of prostaglandins with your pet’s veterinarian
- Infectious diseases—establish surveillance and control measures