Small Ruminant Abortion—Recognizing It, Managing It, and What to Do Next

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Introduction

Reproductive failure in small ruminants, including sheep and goats, poses significant economic concerns for livestock producers. Identifying the underlying causes of reproductive issues can be challenging, as they may affect either an entire herd or a single animal. The complexity of diagnosing reproductive failures requires a thorough understanding of potential causes, diagnostic approaches, and management strategies.

Causes of Reproductive Failures

One potential cause of reproductive failure is fetal hydrops, a condition that can stem from placental or uterine disease, which may result from the consumption of legumes containing high levels of estrogenic compounds, hypothyroidism due to iodine deficiency, or ingestion of goitrogens. The excessive abdominal weight associated with fetal hydrops can lead to prepubic tendon rupture. Diagnosis through ultrasound is crucial, and treatment generally involves induction and supportive care.

Rupture of the prepubic tendon is another issue that can occur when a dam is pregnant with multiple fetuses, experiences fetal hydrops, or suffers abdominal trauma. Management may

include the use of a girdle/truss, reducing rumen fill, and possibly reducing salt or trace mineral intake. If the dam can be supported through pregnancy, an elective C-section might be necessary. Culling the female should also be considered if her condition is severe.

Vaginal prolapse, which is more common in ewes than in goats, typically occurs during the last three weeks of gestation in multiparous dams. The ventral vaginal floor usually protrudes, often due to low-quality forage increasing abdominal filling and forcing the vulva out. Contributing factors include high estrogen content in some legumes, obesity, and genetic predispositions. Treatment involves cleaning and repositioning the vagina, using sutures or a prolapse retainer. Given the hereditary nature of vaginal prolapse, it is essential to avoid breeding affected females.

Uterine prolapse generally occurs within 12 to 18 hours of lambing or kidding and is associated with conditions that weaken the dam or cause difficult deliveries, such as hypocalcemia. Treatment includes the use of hypertonic solutions or sugar to reduce edema, and closing the prolapse with a Bühner stitch. NSAIDs for inflammation and oxytocin to aid uterine contractions are also recommended.

Retained fetal membranes (RFM) should normally be expelled within 6 to 12 hours post-parturition. Intervention during parturition may lead to retained membranes, and early treatment with oxytocin, prostaglandins, antibiotics, and anti-inflammatories is advised. Selenium and vitamin A deficiencies, obesity, hypocalcemia, and dystocia are other causes of retained membranes.

Metritis and endometritis, though less common in small ruminants, can occur as a sequel to RFM. Diagnosis is typically based on clinical signs such as thin, watery, brown to red vaginal discharge, and systemic symptoms. Treatment involves broad-spectrum antibiotics,

prostaglandins, and NSAIDs. While inter-uterine antibiotics were once used, their application is now discouraged due to potential damage to the uterine tube.

Pyometra, though uncommon, can follow metritis or occur due to prolonged luteal phase and retention of the corpus luteum (CL). Diagnosis through ultrasound shows echogenic intrauterine fluid, and treatment includes prostaglandins to lyse the CL and oxytocin to clear the uterus.

Pregnancy toxemia, also known as twinning disease or ketosis, typically occurs in the final trimester of a multiple fetus pregnancy. It results from an inability to meet metabolic energy demands. Factors such as body condition at breeding and adequate feeding throughout pregnancy are crucial in preventing toxemia. The condition is categorized into primary, obesity, starvation, and secondary pregnancy toxemia. Management involves correcting energy imbalances, electrolyte disturbances, and supportive care with propylene glycol, thiamine, and fluids. In severe cases, induction or C-section may be necessary.

Plant toxicities can also lead to reproductive failures. For example, Veratrum californicum, when consumed early in gestation, causes congenital abnormalities. Locoweeds and broomweed are associated with abortion or weak offspring. Ergot alkaloids can decrease reproductive efficiency, and estrogen-producing plants like clover and alfalfa can lead to infertility and other reproductive issues.

Pseudopregnancy, also referred to as mucometra, hydrometra, or “cloud burst,” occurs due to a prolonged luteal phase, particularly in dairy goats. This condition may manifest as parturition-like signs or prolonged return to estrus. Diagnosis through ultrasound reveals fluid in the uterus, and treatment includes multiple doses of prostaglandins.

Cystic ovarian disease, more common in goats, is characterized by behavior changes and abnormal cycles. Treatment involves hCG or GnRH to stimulate ovulation.

Most Common Causes of Infectious Abortion

When discussing infectious causes of small ruminant abortion, it is imperative that we educate our producers and pet owners on handling abortive tissues, fluids and weak lambs/kids to prevent immunocompromised individuals and pregnant women from significant health risks. Proper handling and biosecurity practices can reduce the likelihood of disease transmission and protect the well being of both animals and vulnerable human populations.

Among the most common causes of abortion in small ruminants are *Campylobacter fetus fetus* and *jejuni*, which primarily affect sheep but can also impact goats. These bacteria cause severe placentitis and fetal liver lesions, leading to late-term abortions. Diagnosis is achieved through culture and microscopy, and vaccination along with antibiotic therapy is recommended during outbreaks.

Chlamydophila abortus, a major cause of contagious abortion, leads to late-term abortions with inflamed placenta and necrotic cotyledons. It is spread through aborted products and can be diagnosed through slide smears of vaginal discharge or placenta. Vaccination before breeding can help control outbreaks, though it will not prevent abortions once an outbreak has started.

Coxiella burnetti, known as Q fever, commonly causes late-term abortions. The bacterium is spread through various bodily fluids, and diagnosis involves serology and histopathology. Preventive measures include burning or burying reproductive materials and using tetracycline for treatment.

Toxoplasma gondii, transmitted via cat feces, causes placental necrosis and abortion. Managing toxoplasmosis involves controlling cat populations on farms to reduce infection risk.

Caprine herpesvirus 1 (CpHV-1) predominantly affects goats, causing abortion storms and neonatal deaths. Diagnosis through PCR of fresh tissue samples is recommended, and prevention involves ensuring good herd immunity.

Brucella spp. can cause abortion, weak kids, and mastitis. It is transmitted through contaminated feed or water and can be diagnosed by isolating the bacteria from aborted materials. Infected animals should be culled to prevent spread.

Approach to Abortion Diagnosis

Diagnosing abortion requires careful consideration of multiple factors. Common challenges include autolysis of retained fetuses, incomplete specimens, and undetectable toxic or genetic factors. A thorough history of the aborting animal, including reproductive history and farm management practices, is essential for accurate diagnosis. Detailed specimen submission, including fetal and placental samples, along with a complete clinical history, enhances diagnostic success. Maintaining a good relationship with diagnostic labs and following proper sample handling procedures, such as avoiding freezing and ensuring sterile collection, are critical for accurate identification of the causative agent.

Conclusion

Addressing small ruminant abortion requires a comprehensive approach, combining accurate diagnosis, effective management, and proactive prevention strategies. Understanding the diverse causes and implementing targeted interventions can help producers reduce the impact of reproductive failures and improve herd productivity.