

Metritis and Endometritis



IRM-22

Dairy Integrated Reproductive Management

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Metritis and endometritis are inflammations of the uterus. Metritis involves the endometrium (the lining of the uterus), the underlying glandular tissues and the muscular layers. Endometritis involves only the endometrium and the underlying glandular tissues. Commonly, metritis is used to indicate both conditions. A clinical or subclinical form of metritis may be present.

Clinical metritis may be either acute, appearing quickly and generally affecting the cow's appetite and milk production, or chronic, persisting over a long period. Clinical metritis may be detected by rectal palpation as an increase in size and thickness of the uterine wall. A purulent (contains pus) vaginal discharge may or may not be present.

Subclinical endometritis is not detectable by rectal palpation. More commonly it occurs in the chronic rather than the acute form. No vaginal discharge is evident. Sometimes examination with a speculum will reveal a purulent discharge, but not always. Cultures of the uterus may or may not verify a microbial infection. For example, many times the repeat breeder is negative on culture. Subclinical endometritis can be positively diagnosed by microscopic examination of a uterine biopsy.

Controversy exists over the effects of metritis and endometritis on fertility in cattle. Responses of individual animals to intrauterine treatment are quite variable. Some respond well to medication and conceive while others do not. Other factors such as nutrition (Fact Sheet IRM-14), hormonal imbalances and overall health of the animal must be considered.

Most cases of metritis and endometritis are initiated during the period from calving to the time the uterus returns to normal size. The process by which the uterus returns to its normal non-pregnant size is called involution. Involution in the cow varies from 26 to 56 days after calving, with an average time of 42-47 days.

It is important that optimum hygiene and sanitary management are followed during the period of involution to minimize the risk of infection. The cow is extremely vulnerable to infection during this stressful period. When acute metritis is present, it usually subsides 2 to 3 weeks after the infection has been cleared. However, acute metritis may develop into a chronic condition, which persists for a longer period.

Cause

A large number of microorganisms have been implicated as causes of metritis. Bacteria, viruses, fungi and protozoa have been cultured from uteri when metritis has been present. Microorganisms enter the uterus through several routes.

- Most commonly organisms, particularly bacteria and fungi, contaminate the uterus during calving or the early postcalving period. The reproductive tract is very susceptible at this time, especially if trauma or lesions in the vagina or vulva are present, and the animal's natural defenses are lowered. Any assistance or manipulations performed during parturition can easily introduce organisms into the uterus.
- Infection in the uterus may result from an infection elsewhere in the body such as **infectious bovine rhinotracheitis (IBR)**, **bovine viral diarrhea (BVD)** or **leptospirosis** which then spreads to the uterus (systemic infections).
- Infection also can enter the reproductive tract during natural breeding with a bull (venereal). The two most common venereal diseases are **campylobacteriosis (vibriosis)** and **trichomoniasis**. Infection can be transmitted either by an infected bull or carried by the bull to a susceptible female from an infected female.

Semen-borne infections are less common types of infections. However, these infections are especially dangerous if cows are inseminated when not in estrus (Fact Sheet IRM-10).

The resistance of the uterus to infection is much lower during the period of non-estrus as compared to during estrus. It is important to be certain that the cow is in estrus at the time of insemination and the semen is infection free.

In general, artificial insemination studs certify their semen to be free of certain diseases.

- Certain organisms such as **ureaplasmas**, **mycoplasmas** and **Hemophilus somnus** are common inhabitants of the vagina (Fact Sheet IRM-1) which can cause metritis. These organisms appear to be a more common cause of metritis in parts of the country than some causes listed previously.

Diagnosis

It is very important to diagnose and treat metritis early in the post-calving period. Every cow should receive a postpartum examination early in lactation as part of a routine herd health program (Fact Sheet IRM-18).

Clinical metritis and endometritis can frequently be diagnosed by the presence of a purulent vaginal discharge. This should be confirmed by a veterinarian on rectal palpation. Further diagnostic techniques such as vaginal examination, uterine culture or biopsy may be necessary. The criteria noted on palpation and vaginal exam include the size of the uterus as related to time of calving, thickness of the wall of the uterus and the presence, color, odor and consistency of fluid draining from one or both horns.

A history of calving trauma, dystocia (difficult calving, Fact Sheet IRM-20), retained placenta (Fact Sheet IRM-21) or a purulent vaginal discharge during the postcalving period supports the diagnosis of endometritis. Observations by the inseminator may confirm the presence of pus, indicating possible inflammation of the uterus.

Small amounts of pus-like material on the insemination pipette and whitish vulvar discharges within 12 to 24 hours following natural breeding are not necessarily signs of metritis. Inflammation of the cervix (cervicitis) and vagina (vaginitis) also produce abnormal discharges. Unless fluid can be palpated in the uterus, further examination using a vaginal speculum is necessary.

In some cases diagnosis of clinical or subclinical endometritis must be confirmed by a uterine biopsy. Microscopic examination of the biopsy tissue can reveal the presence of acute or chronic inflammation of the uterine wall as well as other abnormalities. The uterine biopsy is especially valuable in assessing the repeat breeder's (Fact Sheet IRM-23) future reproductive potential.

Simultaneous biopsy sampling and uterine cultures can positively confirm the presence of endometritis and the presence or absence of organisms in the uterus. Intrauterine therapy with antibiotics or antiseptics when cultures are negative has little value. In fact, some researchers feel unnecessary therapy may have a detrimental effect on conception.

Prognosis

The severity of metritis or endometritis depends on the infectious agent or agents involved, the degree and duration of the infection, the nutritional status and the overall health of the individual animal.

The length of time that inflammation persists affects the prognosis (chance of recovery), as does the degree of infection. A guarded prognosis may be necessary at first, followed by subsequent reevaluation. A microbial culture and a uterine biopsy may be necessary to fully evaluate the condition and give a final prognosis.

Treatment

Dairy producers should discuss the type of therapy to be used with their veterinarian. The general health and nutrition of the cow, systemic involvement, temperature, and the condition of the reproductive tract as determined by vaginal and rectal examination affect response to treatment.

Success in treatment of uterine infections depends on:

- Evacuation of the uterus.
- Susceptibility of the infectious agent to the drug used.
- Concentration and number of times the drug is used.
- Exposure of entire endometrium, cervix, and vagina to the drug.

Evacuation of the uterus contributes to the success of further antibiotic therapy. Evacuation can be done by repeated palpations of the uterus by a veterinarian and/or the use of drugs to expel the fluid or hasten the onset of estrus. Estrus is usually the best way of stimulating uterine contractions and expelling the fluids. Once fluids are expelled, the effectiveness of antibiotics in clearing the remaining infection is improved.

Antibiotic therapy of the uterus is indicated only when uterine infection is present. For example, many repeat breeders (3 or more breedings without conception) are negative when cultured for infectious organisms. Antimicrobial therapy is not effective if organisms are not present and may be irritating and even detrimental to the endometrium.

Identification of the infectious agent and drug sensitivity test results are not routinely performed when determining uterine treatment. Medication is usually selected at random or by previous effectiveness of a drug or combination of drugs in a herd. Broad-spectrum drugs are used most frequently.

Due to different types of infectious agents involved in uterine infections, a set recommendation of drugs is impossible. Ideally, identification of the infectious agent and drug sensitivity is done. Subsequent treatment with an approved drug is the most practical, economical and efficient approach. However, there are no recommended doses on most drug labels for intrauterine therapy.

Therefore, when using most drugs or combination of drugs for intrauterine medication, withdrawal times for milk and/or slaughter after treatment frequently are not available. Withholding time for milk depends on the concentration and number of treatments that a drug has been used.

Most drugs show no appreciable levels in milk 24 hours after intrauterine medication, but some may show detectable levels at 96 hours and even longer. Therefore, it is imperative that the producer works closely with a veterinarian to establish withholding times for milk or meat when medicating the reproductive tract.

The Delvo-P test for detection of drugs in milk is an effective method available for on-farm testing. Test results can be used as an aid in determining proper withholding times for milk.

Some workers recommend diluted Lugol's solution (dilute iodine) as treatment when cultures and drug sensitivities are not done, while others recommend no treatment. It is important to work closely with an experienced veterinarian when selecting treatment for metritis. A close working relationship enables the veterinarian to more fully evaluate all contributing factors to each reproductive problem.

The practice of routinely inserting various types of boluses or capsules into the uterus of each cow after calving may cause more infections than already present. Conservative treatment of postcalving uterine infections is desirable. Many cows with purulent discharges immediately after calving will "self cure" in one to several weeks, especially when these cows return to estrus early post calving. Estrus helps to expel the infection from the uterus. Many veterinarians routinely use hormones such as prostaglandins to induce estrus before treating the uterus with antibiotics.

Antibiotic and antiseptics are not substitutes for sound sanitary and management practices, but are valuable additions when needed. The promiscuous use of antibiotics in uterine infections is not only expensive through loss of milk and cost of drugs but is usually not an effective or efficient practice.

Prevention

A regular herd health program is beneficial in the prevention of many reproductive problems including metritis. Incorporation of a proper vaccination program aids in the prevention of diseases which can cause metritis. Also, metritis is diagnosed and treated early when present, minimizing long, costly dry periods.

If uterine infections are excessive (greater than 20%) in a herd, management of dry and recently calved cows should be thoroughly examined. Adequate housing, nutritionally balanced and palatable rations for the dry and fresh cows, satisfactory calving facilities with optimal ventilation and sanitary conditions, and avoidance of undue stress such as overcrowding and disease are absolute requirements for healthy fresh cows.

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