

Retained Fetal Membranes in the Dairy Cow

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Retention of fetal membranes (RFM) for greater than 12 hours after parturition is associated with increased postpartum disease, decreased milk production, reduced reproductive performance, and increased culling rates. Based on an estimated cost of \$244 per affected cow (reduced milk production, discarded milk and treatment expense), RFM cost the U. S. dairy industry approximately \$154 million per year.

In normal cows, massive destruction of collagen and other protein fibers (proteolysis) accompanies uterine involution and expulsion of fetal membranes. Failure of this process appears to be the underlying cause of RFM. Numerous factors have been associated with an increased incidence of the disease:

1. Dystocia - any trauma sustained by the uterus may cause release of chemicals which inhibit proteolysis.
2. Progesterone imbalance - elevated progesterone inhibits collagenase activity and slows uterine involution.
3. Stress - glucocorticoids, released in stressful conditions, stimulate production of progesterone in placental tissue and may block proteolytic activity.
4. Prostaglandin - elevated levels in the prepartum cow lead to RFM.
5. Leucocytes (white blood cells) - reduced leukocytic activity is associated with reduced immune response and increased RFM.
6. Vitamin E/Selenium - deficiencies in these important micronutrients have been associated with RFM.

Management of these important factors at the dairy should help to reduce the development of RFM and improve profitability of the postpartum cow.

RFM are "living" organs that are oxygen-starved and nutrient-deprived. Under stress RFM produce and release chemicals that cause inflammation in the uterus, suppress the immune system, and lead to metritis and infertility. Cows with RFM should be monitored closely for signs of systemic disease. Decreased milk production accompanied by an elevated temperature, depression, and loss of appetite are early signs of systemic involvement. These cows need systemic antibiotics, anti-inflammatory drugs and, possibly, fluid therapy. If the uterus is distended with fluid or gas, indicating the presence of infection, estrogen therapy (ECP @ 4 mg. IM) may stimulate the uterine defense mechanisms. Oxytocin, following estrogen treatment and given at milking time, will stimulate uterine contractions. It is extremely important that a veterinarian is consulted when establishing treatment protocols for RFM.

Management of RFM is controversial and numerous treatment protocols are utilized. It is important to distinguish cows with localized signs of metritis in which intruterine treatments may be effective from those with systemic signs of disease. Each treatment has advantages and disadvantages. (Table 1)

Clinicians at Colorado State University examined the effect of administering prostaglandin or oxytocin immediately after calving in 1400 Holstein cows on 5 dairies to prevent the incidence of RFM. Neither drug affected the incidence of RFM. However, the incidence of RFM, postpartum uterine pathology and reproductive performance varied significantly between the 5 farms (Stevens & Dinsmore. JAVMA Nov 15, 1997). Overall management of cows (nutrition, environment, stress, vaccinations, disease control and breeding management) was far more important than administration of drugs at parturition.

Therapies for RFM

Treatment Advantage Disadvantage

Manual Removal Removes diseased Uterine infections more tissue frequent and severe. Uterine involution and onset of cyclicity is delayed. Hormone Therapy PGF2alpha Reduces incidence of Does not stimulate early RFM after induced expulsion of RFM, calving or c-section. Increase uterine motility, or improve reproductive efficiency.

Oxytocin & Stimulates uterine. High doses create contraction & uterine spasms.

ECP Relaxes cervix, Not shown to effect stimulates immune RFM or improve system and uterine reproductive perfor- oxytocin receptors. mance. Intrauterine (IU) Decrease bacterial Do not affect RFM antibiotics population expulsion or reproductive potential. Milk residue potential.

Tetracycline Inactivates collagenase, delays release of RFM, endometrial irritant. May be detrimental to subsequent fertility;

Penicillin Numerous bacteria resistant

Gentamicin Extended tissue residues

IU Antiseptics Decrease bacterial Endometrial irritant.population. No proven efficacy.

IU Collagenase Does not promote RFM expulsion. No proven efficacy.