

Postpartum Reproductive Problems and Therapy in Dairy Cows

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Abstract: This study aims to establish the distribution of reproductive problems encountered during the postpartum period in dairy cows and to explore the effects of treatment procedures on reproductive performance. In the study, the ratios of assisted birth, RFM and metritis are found to be 24, 31 and 29%, respectively. Antibioqram tests performed on cows with metritis revealed that 6 cows were hypersensitive to oxytetracycline, 4 cows to enrofloxacin, 2 cows to gentamicin and 1 cow to amoxicillin. From among 45 postpartum cows used in the study, 28 (62.2%) tested positive for pregnancy. About 6 out of 11 cows giving assisted birth (54.5%), 7 out of 14 cows treated for RFM (50%) and 6 out of 13 cows (46%) treated for metritis were found to be pregnant.

Key words: Postpartum problems, retained fetal membrane, metritis, cow, reproductive problems, therapy

INTRODUCTION

Uterine disorders, primarily nonspecific uterine infections reduce the reproductive efficiency of dairy cows. In some herds, 40% of the postpartum cows may be diagnosed with and treated for uterine infections (Lewis, 1997). A Retained Fetal Membrane (RFM) in dairy cows is defined as the failure to expel the fetal membranes by 12-24 h after calving (Fourichon *et al.*, 2000). Average incidence of RFM ranges from 3-12% of normal calvings (Eiler, 1997; Grohn and Rajala-Schultz, 2000). A meta-analysis of publications on reproductive disorders by Fourichon *et al.* (2000) revealed a negative impact of RFM on reproductive performance during the current lactation. Frequent occurrence of metritis after RFM was identified as the main reason for reduced fertility of cows having RFM (Laven and Peters, 1996; Grohn and Rajala-Schultz, 2000). Postpartum metritis can be characterized by pyrexia >10 days postpartum with a fetid, purulent vulvar discharge, often associated with delayed involution the uterus (Sheldon and Dobson, 2004).

Uterine infections are generally classified according to clinical signs and degree of severity (Thurmond *et al.*, 1993). The term uterine infection is used to indicate that the uterus is contaminated with pathogenic organisms. Endometritis indicates that the endometrium is inflamed and when inflammation occurs after the puerperal period, endometritis is considered to be the least severe classification of uterine infection. Metritis indicates that all layers of the uterine wall are inflamed and pyometra

indicates that purulent exu-date has accumulated in the uterine lumen. Endometritis, metritis and pyometra are related (i.e., they may develop sequentially) and are often collectively called the metritis-pyometra complex or the metritis complex (Bartlett *et al.*, 1986; Lowder, 1993). During the puerperal period, perhaps 90% of the cows develop a mild, nonpathological endometritis (Arthur *et al.*, 1989; Olson *et al.*, 1989) which seems to be a characteristic of uterine involution (Paisley *et al.*, 1986). Typically, all palpable uterine fluids (lochia) are voided during the first 2 weeks postpartum (Olson *et al.*, 1989).

The consequences of uterine infections vary considerably among cows and reports. The consequences range from no detectable effect on any measure of productivity to premature culling and death of the cow. Fortunately, few cows die from uterine infections. The culling rate during lactations with metritis was 26.6% but was 20.5% in lactations without metritis; cows with metritis were 1.3 times more likely to be culled than were cows without metritis (Bartlett *et al.*, 1986). Metritis complex detected after day 50 postpartum decreased the median productive life of cows by 6-8 mo (Beauveau *et al.*, 1995).

Treatments for endometritis and metritis are controversial and an in-depth description is beyond the scope of this review. Intrauterine infusion of various antimicrobial-antibacterial compounds is a traditional treatment but based on current evidence, intrauterine infusions do not seem efficacious and may be harmful (Paisley *et al.*, 1986; Gilbert and Schwark, 1992; Thurmond *et al.*, 1993; Pugh *et al.*, 1994). In addition,

intrauterine antimicrobial-antibacterial compounds may reach the systemic circulation and leave residues in milk (Gilbert and Schwark, 1992; Lowder, 1993). The purpose of this study is to establish the distribution of reproductive problems encountered during the postpartum period in dairy cows and to explore the effects of treatment procedures on reproductive performance.

MATERIALS AND METHODS

In this study, 45 pregnant Holstein dairy cows aged 4-8 were used. After giving birth, the cows were followed up for assisted birth, Retained Fetal Membranes (RFM) and metritis for 21 days postpartum. Cows with RFM were subjected to routine intra-uterine treatment involving the use of uterine tablets (Baytril® Tablet, Bayer) containing *enrofloxacin* and *procain penicillin G* after 48 h. On the 21 day postpartum, endometrial cytology, antibiogram test and microbiological cultures were performed by collecting endometrial biopsy and uterine swaps from the entire cows. On the basis of the results obtained, cows with bacterial contamination of the uterus and metritis were treated with relevant intrauterine antibiotic application for 5 days. After the end of treatment, the cows that were not bred at first heat were artificially inseminated at second heat. After insemination, the cows were tested for pregnancy on the 35th day by ultrasonography. The RFM and uterine bacterial contamination determination rates and pregnancy ratios for the study population were assessed.

RESULTS AND DISCUSSION

From out of 45 cows used in the study, 11 (24%) had assisted birth, 14 (31%) had RFM and 13 (29%) had uterine bacterial contamination as well as metritis. Out of 11 cows giving assisted birth, 8 (72%) suffered from RFM (Fig. 1). It was observed that 4 out of 14 cows with RFM (28.5%) had metritis while 10 cows (71.5%) tested negative for metritis. Antibiogram tests performed on 13 cows diagnosed with metritis as a result of endometrial biopsy and endometrial swap examination revealed that 6 cows (46%) were overly sensitive to oxytetracycline, 4 (31%) to enrofloxacin, 2 (15%) to gentamicin and 1 (8%) to amoxicillin (Table 1). About 28 (62%) of 45 postpartum cows were diagnosed as pregnant. About 6 out of 11 cows giving assisted birth (54.5%), 7 out of 14 cows treated for RFM (50%) and 6 out of 13 cows treated for metritis (46%) were found to be pregnant. Reproductive performance of dairy cows after the voluntary wait period is highly related to the health status of the uterus after

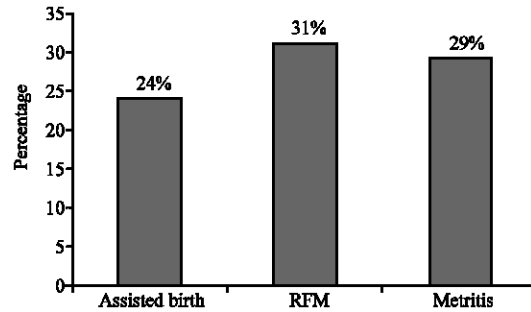


Fig. 1: The rate of assisted birth, RFM and Metritis

Table 1: The antibiogram results of cows with metritis

Antibiogram results	n	(%)
Oxytetracycline	6/13	46
Enrofloxacin	4/13	31
Gentamicine	2/13	15
Amoxicilline	1/13	8

calving. A complex relationship exists among factors influencing uterine health and disease in the postpartum cow (Kasimanickam *et al.*, 2004). Some researches (Griffin *et al.*, 1974; Bekana *et al.*, 1996; Sheldon *et al.*, 2002) evaluated that bacteria can be cultured from samples collected from the uterine lumen of most dairy cattle in the first 2 weeks after parturition in many situations although in some countries the frequency is lower. Although many cows eliminate these bacteria during the first 5 weeks after parturition, in 10-17% of animals, persistence of bacterial infection causes uterine disease detectable by physical examination. In the study, metritis rate was 29%. It was observed that 4 out of 14 cows with RFM (28.5%) had metritis while 10 cows (71.5%) tested negative for metritis. It is thought that treatment with uterus tablets (Baytril® Tablet, Bayer) containing enrofloxacin+procain penicillin G reduces the incidence of metritis in cows with RFM. The fact that 8 of 11 cows giving assisted birth suffered from RFM (72%) indicated that assisted birth is among reasons causing RFM.

Although, uterine infections have negative effects on various measures of productivity in dairy cows, the actual extent of the economic impact of uterine infections is often difficult to measure. Postpartum cows typically develop mild endometritis but most cows are able to clear pathogenic organisms that cause endometritis before any measure of productivity is affected. Aberrant immune function before and after calving seems to predispose some cows to severe uterine infections that reduce fertility and other measures of productivity. Thus, methods for regulating immune function in periparturient cows would seem to have tremendous potential for preventing or treating uterine infections (Lewis, 1997).

CONCLUSION

Data from recent studies indicate that PGF2 α has direct and indirect effects on immune function but the application of those data to the development of methods for preventing or treating uterine infections is still in the early stages. For now, proper attention to facilities maintenance and sanitation and periparturient hygiene, especially during assisted calving may be the best defense.

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