

## Incidence of Reproductive Disorders in Dairy Cows

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### Abstract

The incidence of reproductive disorders in dairy cows was evaluated in our study. Post partum cows (n=65) examined at 25<sup>th</sup> and 40<sup>th</sup> days formed the first group (CD group), whereas clinical cases (n=147) presented to the clinical outdoor (CC group) and clinical cases presented at two infertility camps (IC group) (n=134) formed the next two groups. Endometritis was the single largest reproductive disorder recorded in CD group cows followed by ovarian cysts and post partum metritis. Incidence of repeat breeding was highest in group CC cows (53.06%) followed by anestrus (22.44%), metritis (19.04%) and ovarian cysts (5.44%). A nearly similar trend of reproductive disorders was evident in infertility camps. A total of 23.07 and 35.48 percent of repeat breeding cows in CC and IC groups respectively were suffering from endometritis. Endometritis is the most frequent reproductive disorder affecting post partum dairy cows and repeat breeding in dairy cows.

**Keywords:** Anestrus; endometritis; metritis; ovarian cyst; reproduction.

### Introduction

Reproductive efficiency is a critical component of any successful dairy operation, whereas reproductive inefficiency is one of the most costly problems facing the dairy industry today (Fricke, 2000). Reproductive disorders occur frequently in lactating dairy cows and can dramatically affect reproductive efficiency in dairy herds. Some of the most common disorders include ovarian cysts, twinning and early embryonic loss (Fricke, 2000). These diverse disorders result in impaired reproductive function. Deciding whether to breed, treat or cull dairy cows exhibiting one or more of these reproductive disorders is a challenge for both Veterinarians and dairy producers (Saxena, 2004). Repeat breeding syndrome is responsible for long service period and inter-calving interval thereby causing powered milk and calf production resulting in to greater economic loss to dairy industry (Purohit, 2008). The incidence of repeat breeding in India has been reported from 5.5-33.33 percent in cattle (Saxena, 2004). The incidence of various reproductive disorders has been recorded from across India (Selvaraj *et al.*, 2005; Pandit, 2004; Yadav *et al.*, 2004; Kumar *et al.*, 2006). Our study documents incidence of reproductive disorders in dairy cows.

### Material and Methods

The study was conducted in three groups of animals.

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In the first group, 65 post partum dairy cows of college dairy (group CD) were examined at 25<sup>th</sup> and 40<sup>th</sup> days of parturition to record the incidence of various reproductive disorders. Vaginoscopy was performed to diagnose presence of endometritis in post partum dairy cows.

The second part of study recorded the incidence of various reproductive disorders in clinical cases of cows (group CC) presented to clinical outdoor of the Department of Veterinary Gynaecology and Obstetrics between 20<sup>th</sup> September' 2011-15<sup>th</sup> January' 2012. Repeat breeding cows presented during the period were screened for endometritis. Post partum cows presented with purulent/mucopurulent discharge were considered to be suffering from metritis. Cows with history of short estrus cycles and presence of ovarian cysts were included as those suffering from ovarian cysts.

The animals presented for therapy of infertility at two infertility camps (Rampura, (camp 1) and Jassusar gate (camp 2) formed the third group (group IC) of cows for recording the incidence of reproductive disorders.

The incidence of various reproductive disorders including endometritis was calculated for all three groups (CD, CC and IC) of cows depending upon the number of cases presented/ number of dairy cows examined and compared. Data obtained were analyzed by Chi square test as described previously (Snedecor and Cochran, 1987).

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### Results

In the CD group, a total of 65 cows were examined at 25<sup>th</sup> and 40<sup>th</sup> post partum days. The incidence of endometritis for the total number of cows examined (65) was 29.23 percent at 25<sup>th</sup> day and 23.07 percent at 40<sup>th</sup> day respectively. Only 2 cows evidenced metabolic disorders (ketosis) and one animal evidenced cervico vaginal prolapse on 25<sup>th</sup> day of examination which disappeared at 40<sup>th</sup> day due to treatment (Table 1).

**Table 1: Incidence of endometritis at 25<sup>th</sup> and 40<sup>th</sup> post partum days (CD group)**

Reproductive disorders	Day of examination	
	25 <sup>th</sup> day (number of cases)	40 <sup>th</sup> day (number of cases)
Ovarian Cysts	3	-
Post partum metritis	2	3
Endometritis	19	15
Metabolic disorders	2	—
Others	1	—
<b>Total</b>	<b>27</b>	<b>20</b>

A total of 147 cases were presented (group CC) during the study period. The proportions of cows presented with various reproductive problems are shown in Table 2. Significantly higher ( $\geq 0.01$ ) proportions of cows were presented for therapy of repeat breeding compared to any other gynaecologic disorders. The repeat breeding cows were screened for presence of endometritis and was found that 23.07 percent of these cows were suffering from endometritis (Table 3).

In IC group the proportion of reproductive disorders recorded showed that in both the camps significantly higher ( $\geq 0.01$ ) proportion of cows were presented for therapy of repeat breeding compared to any other reproductive problem (Table 4). Out of a total 62 repeat breeder cows presented at infertility camps 22 cows (35.48%) were diagnosed to be suffering from endometritis (Table 3). A comparison of the reproductive disorders between group CC and group IC revealed that nearly similar type of cases were presented for therapy in both groups as the differences in type and incidence of reproductive disorders were non-significant ( $p \geq 0.05$ ) (Table 5).

**Table 2: Incidence of reproductive disorders in cows (CC group)**

Reproductive disorders	Number of cases	Incidence (percent)
Anestrus	33	22.44
Ovarian Cysts	8	5.44
Metritis	28	19.04
Repeat Breeding	78	53.06
Total	147	100
X <sup>2</sup> value	53.6	

$p \leq 0.01$

**Table 3: Incidence of endometritis in repeat breeding cows (CC and IC group)**

	Total Repeat Breeder Cows	Cows with endometritis
College Clinics	78	18 (23.07%)
Infertility Camps	62	22 (35.48%)

**Table 4: Incidence of reproductive disorders in cows (IC group)**

Reproductive disorders	Camp 1		Camp 2	
	Number of cases	Incidence (%)	Number of cases	Incidence (%)
Anestrus	23	35.38	18	26.08
Ovarian cysts	6	9.23	8	11.59
Metritis	10	15.38	7	10.14
Repeat breeding	26	40.00	36	52.17
Total	65	100	69	100
X <sup>2</sup> value	14.3**	23.4**		

\*\* =  $p \leq 0.01$

**Table 5: Comparison of incidence of reproductive disorders in cows in IC and CC group**

Reproductive disorders	Number of cases			X <sup>2</sup> value
	Camp 1	Camp 2	Clinical cases	
Anestrus	23	18	33	2.18 NS
Ovarian Cysts	6	8	8	2.28 NS
Metritis	10	7	28	2.07 NS
Repeat Breeding	26	36	78	1.15 NS
<b>Total</b>	<b>65</b>	<b>69</b>	<b>147</b>	

NS =  $p \geq 0.05$

## Discussion

The incidence of endometritis recorded in our study was similar to the previous reports (Le Blanc *et al.*, 2002; Lutert *et al.*, 2012; Plontzke *et al.*, 2010). The incidence of other reproductive disorders recorded in clinical cases and infertility camps evidenced repeat breeding as the principal reproductive problem in dairy cows. Similar findings have been documented in previous studies on cows (Nuru and Dennis, 1976; Kaikini *et al.*, 1983; Ahmed *et al.*, 1992; Chaturvedi, 1997; Menna, 2009; Sarder *et al.*, 2012). A high proportion of repeat breeder cows evidenced endometritis as one of the principal cause of repeating to services. The incidence of ovarian cysts recorded was similar to previous findings (Nanda *et al.*, 1989; Farooq *et al.*, 2000; Purohit *et al.*, 2001). Next to repeat breeding, anestrus and post partum metritis were the most common reproductive disorders in dairy cows. Menna (2009) had observed that next to repeat breeding, anestrus is the most frequent reproductive disorder in cows and similar observations were made by Muneer *et al.* (2010). However, incidence of anestrus is based primarily on nutrition and management and may vary from place to place because of diverse nutrition and managerial practices (Butler, 2000). The role of micronutrients is no less important (Smith and Akinbamijo, 2000). The incidence of metritis recorded during the present study was low and similar to that recorded previously (Farooq *et al.*, 2000; Benzaquen *et al.*, 2006). The incidence of post partum infections of uterus depends on various factors including abnormal calving, retained placenta and parturition hygiene (Sheldon and Noakes, 1998; Benzaquen *et al.*, 2006; Sheldon *et al.*, 2006).

The difference between reproductive disorders at the clinics and camps were non-significant indicating that incidence of reproductive disorders is similar at different locations. Amongst the repeat breeding cows endometritis was diagnosed in 23.07 percent and 35.48 percent of cows at the clinics and camps respectively. Probably these cows were suffering from sub-clinical endometritis.

The uterine milieu is often compromised in cattle by bacterial contamination of uterine lumen after parturition; pathogenic bacteria frequently persist, causing uterine disease, a key cause of infertility (Sheldon and Dobson, 2004; Sheldon *et al.*, 2006). Poor hygiene at parturition and persistence of infection for prolonged periods post partum often manifest as poor conception rates and breeding. Studies focusing on clinical endometritis reports

prevalence of disease ranging from 18 to 37 percent (Bartlett *et al.*, 1986; Drillich *et al.*, 2002; Plontzke *et al.*, 2010; Plontzke *et al.*, 2011). Sub-clinical endometritis which is often difficult to diagnose and noticed in repeat breeding dairy cows have been shown to have prevalence between 12 and 94 percent (Barlund *et al.*, 2008; Gilbert *et al.*, 2005; Hammon *et al.*, 2006; Kasimanickam *et al.*, 2004). Thus, cows must be evaluated at 25<sup>th</sup> and 40<sup>th</sup> days post-partum for presence of uterine disease and treated early to reduce the incidence of infertility.

The overall incidence of endometritis in group CD cows was 29.23 and 23.07 percent at 25<sup>th</sup> and 40<sup>th</sup> day respectively. The incidence decreased at 40<sup>th</sup> day probably due to spontaneous recovery as no therapy was given to these cows. The incidence of anestrus, ovarian cysts, metritis and repeat breeding was 22.44, 5.44, 19.04 and 53.06 percent respectively in group CC cows. Significantly higher ( $p < 0.01$ ) proportion of cows were presented for therapy of repeat breeding.

The incidence of anestrus, ovarian cysts, metritis and repeat breeding in group IC cows was 35.38, 9.23, 15.38 and 40.0 percent respectively for camp 1 and 26.08, 11.59, 10.14 and 52.17 percent respectively for camp 2 respectively. Significantly higher ( $p < 0.01$ ) proportion of repeat breeding cows were presented in infertility camps compared to cows with other reproductive disorders. There were non-significant differences in proportion of cows affected with various reproductive disorders between the infertility camps (IC) and college clinics (CC).

The incidence of endometritis in repeat breeding cows both at the college clinics and infertility camps was 23.07 percent and 35.48 percent respectively. It was concluded that endometritis is the most frequent reproductive disorder affecting post partum dairy cows and repeat breeding dairy cows.

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