



## Prevalence of Endometritis in Crossbred cows at District Lahore, Pakistan

Ammara Shakeel\*, Farah Akram, Muhammad Amjad Khan, Asmara Imtiaz

Department of Biology, Lahore Garrison University, Lahore

\*Corresponding Author's E-mail: [ammarashakeel678@gmail.com](mailto:ammarashakeel678@gmail.com)

**ABSTRACT:** *Endometritis is causing great economic losses every year not only because of medication but also because of prolonged and increased calving period. The studies on prevalence / incidence are scarce which otherwise are essentially required to develop different control and treatment strategies. The objectives of this study was to determine incidence / prevalence of endometritis with regards to milking status and Month / Season wise in crossbred cows. The study was conducted on the crossbred cows belonging to four dairy farms located at Lahore and surrounding areas. Young stock cows fit for breeding (2-4 years old), adult milking cows and adult non milking (dry) cows were three understudy groups. Four hundred animals of each group were examined every month for a period of one year. Endometritis cases were identified through clinical signs (Less pregnancy rate / infertility, loss of appetite, depression, dehydration, vaginal discharge and dullness), Vaginal/uterine swab, colour and odour of vaginal discharge and measurement of cervical diameter. Overall Endometritis incidence was found highest (1.72 %) in Milking cows followed by Dry Cows (1.00 %) and lowest in Young Stock Cows (0.94 %). The highest incidence was observed during summer season in all three classes of cows whereas the lowest was during winter with the exception of in Milk group where the lowest incidence was observed during spring season. The study may provide useful information to evolve effective control measures and treatment of endometritis in crossbred cows.*

**Key Words:** *Endometritis, Crossbred Cows, Infertility in cows*

### INTRODUCTION

Cows belong to the family bovidae (Dobson and Kamonptana, 1986) and crossbred cows are with pure bred parents of two different breeds,

varieties or populations. Crosses occur within a single species (Gillah et al., 2013). Cows are important sources of food and income. Cross bred cows get mature at the age of 16 months and produce more milk while local cows

mature after 30 months and produce less milk (Afzal and Naqvi, 2004; Thrift et al., 2005; Dinka, 2012; Gillah et al., 2013; Kunbhar et al., 2015). These cows have short calving interval with more milk production. The gestation period of cows is about 285 days (Dobson and Kamonpatana, 1986).

Endometritis is one of the most common reproductive diseases in dairy cows (Akhtar et al., 2009; Dolezel et al., 2010; Mosaferi et al., 2013). It is the inflammation of uterus and the main health problem in dairy cows (Oral et al., 2009; Dolezel et al., 2010; Udhayavel et al., 2013; Galvao 2013; Mosaferi et al., 2013; Szenci, 2016). It not only effects milk yield but also decreases reproductive efficiency thereby causing economic loss. After parturition, bacterial contamination of the uterus lumen occurs (Ahmadi et al., 2007; Takamtha et al., 2013). During and after parturition, many organisms invade the birth canal and colonize the uterus. Postpartum uterine infection is one of the most important diseases in cows and due to this the calving period may get increased (Ekramil et al., 2008; Oral et al., 2009; Takamtha et al., 2013).

Clinical endometritis can be diagnosed by the presence of purulent and mucopurulent discharge in the vagina (Kaufmann, 2009). In purulent discharge 50% pus is present and mucopurulent discharge contains 50% pus and 50% mucus. (Galvao, 2011). 5-25% cows are affected by clinical endometritis at 4-6 weeks after

parturition (Scheldon, 2007; Leblance, 2008). The causative agents of endometritis can be viruses, mycoplasma, Chlamydia, rickettsiae, bacteria and fungi but the most important cause of utrine infection is bacteria (Sadig, 2010; Joy and Faruk2012). Zobel (2013) studied the incidence, causes and treatment of endometritis. He took 1300 cows from which 23.07% were suffering from endometritis. The ratio of clinical endometritis was 15.31% and subclinical endometritis was 7.77%. Alam (2013) studied the incidence of endometritis and its reasons that leads to endometritis. He studied 488 animals of 197 dairy farms. The total incidence of uterine diseases was 39.4%, positive calving anestrus was 8.6%, delay puberty was recorded 6.8%, repeat breeds were 5.7%, retained placenta rate was 4.7%, metritis 3.9%, dystocia 3.3%, vaginal prolapse 2.7%, abortion 2.1% and uterine prolapse was 1.6%. A study on cows with metritis was conducted at northeast China from March 2012 to August 2012. They observed 1370 animals in northeast china. Sample of vagina discharge were collected and examined. Prevalence of endometritis was 17.4% (Liu et al., 2013). Lablance et al. (2002) described the signs and symptoms of endometritis. Calving period is increased, vaginal discharge increases, color and odour of vaginal discharge is changed. Signs and symptoms of endometritis include fever, pelvic pain and discomfort when having a bowl movement (French and Smail, 2004). Vlcek et al. (1985) investigated the bacterial species from cervico vaginal

mucus of cows and concluded that before postpartum the incidence of bacteria was very low. High yielding cows have more chances of puerperal problems than in low yielding cows, Endometritis, retained placenta and acute metritis are high risk factors they cause "acetonemia" and cystic ovarian disease (Opsomer and Kruif, 2009). Incidence of reproductive disorders in crossbred cows is frequent like abortion, metritis, repeat breeders, anestrus, and retained placenta. Khair et al. (2013) evaluated that incidence of repeat breeders were 1.29%, anestrus 0.81%, metritis 0.34%, retained placenta 0.24% and abortion 0.20%. Kakar et al. (1997) studied incidence of reproductive diseases in crossbred cows in Baluchistan. They observed 21,493 cows. The percentage of uterine infection was the highest (47.5%) followed by anestrus (34.3%), and obstetrical problem (18.2%). First degree endometritis was the most common and hydrometra were lowest than other uterine infection. Lodhi et al. (1999) described the effects of parity and seasons on reproductive diseases. The occurrence of endometritis was highest followed by cystic ovaries, retained placenta, dystocia, genital prolapse and abortion. Calving season has a great impact on uterus. Incidence of endometritis during first week is 85 to 93% which is decreased 5-9% after 8 or 9 weeks. The incidence of endometritis in milking cows is 27% (Sarkar et al., 2016). In Pakistan studies on prevalence of endometritis in crossbred cows are rare. Therefore, study was conducted on crossbred cows held at dairy Farms Lahore for

evaluating endometritis prevalence (rate of sickness) in milking, dry and young stock cows.

## **MATERIALS AND METHODS**

For evaluation of endometritis incidence (rate of sickness) all cows were divided into three groups. Group A, Young stock cows fit for breeding (2-4 years old). Group B, Adult milking cows and Group C, Adult non milking (dry) cows. A total of 1200 cows (400 for each group) were examined at random on monthly basis to identify the cows suffering from endometritis.

Incidence of endometritis was determined with regards to class of animal and month / season wise. Following diagnostic techniques were used for isolation of cows suffering from endometritis disease as described by the method of (Takamtha et al., 2013; Opsomer, 2015 Szenci, 2016).

- Clinical signs: (Less pregnancy rate / infertility, loss of appetite, depression, dehydration, vaginal discharge and dullness).
- Vaginal/uterine swab: After taking the sample, it was transferred to lab for isolation and identification of microbes. Different biochemical test and staining techniques were performed.
- Colour and odour of vaginal discharge: Clear vaginal discharge (mucous in nature) was found in normal cows while muddy and odorous discharge was present in cows suffering from endometritis.

- Cervical diameter: Increased diameter of cervix was found cardinal finding.
- Endometrial biopsy: Tissues from endometrial were taken and examined histopathologically. Endometrial biopsy showed the inflammatory changes at cellular level as described by Bonnett et al. (1991).

The study commenced from 1 May 2017 and terminated on 30 April 2018 for a complete one year. The year was divided into four seasons i.e.

winter (Nov to Feb), spring (Mar to Apr), summer (May to Aug) and autumn (Sep to Oct). During study period all cows were provided uniform managemental conditions including feeding and watering.

## RESULTS

Milking Cows: Endometritis was found to be most abundant during the months of July and lowest in November. The highest incidence of endometritis was noted during summer season and lowest in spring as shown in Fig. 1. Overall percentage was 1.75 %.

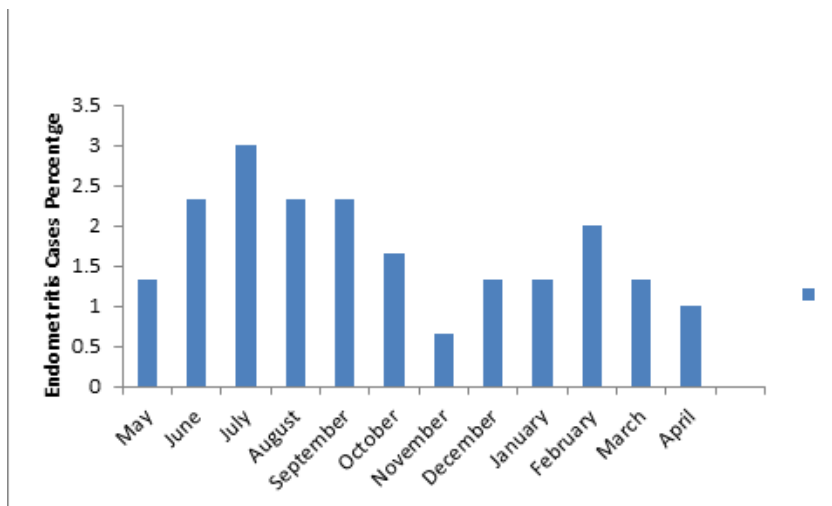


Fig. 1: Incidence percentage of endometritis in milking cows

**Dry Cows:** Endometritis was found to be most abundant during the months of July and lowest in December. The highest incidence of endometritis was

noted during summer season and lowest in spring (Fig. 2). Overall percentage was 1.00 %

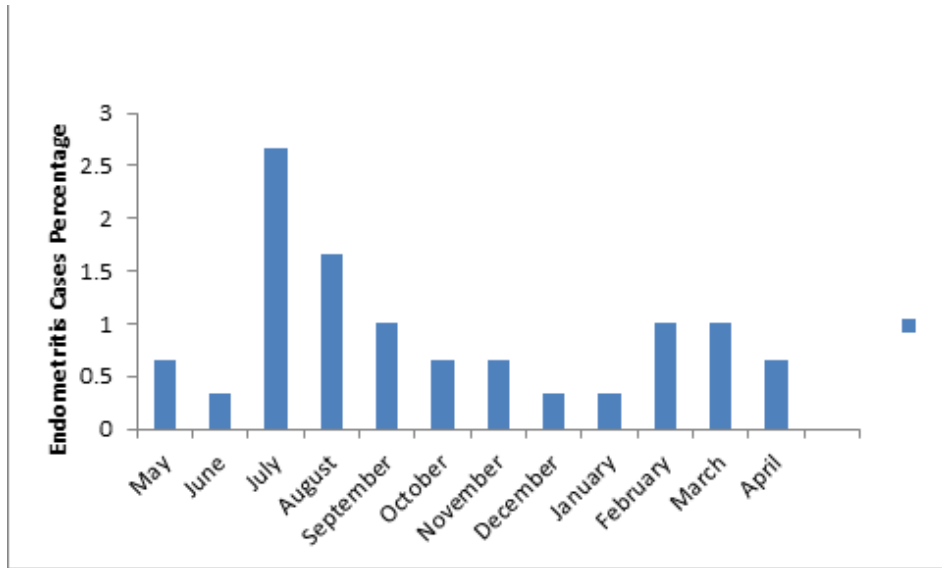


Fig 2: Incidence percentage of endometritis in Dry cows

**Young Stock Cows:** Endometritis was found to be most abundant during the month of July and lowest in December. The highest incidence of

endometritis was noted during summer season and lowest in winter (Fig 3). Overall percentage was 0.94 %

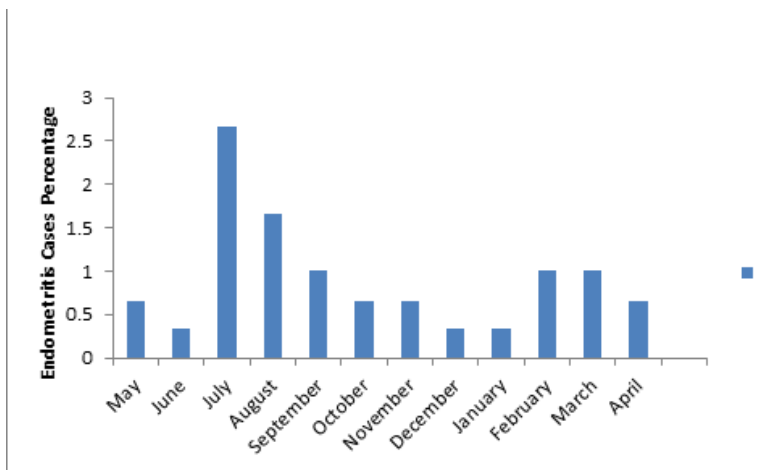


Fig. 3: Incidence percentage of endometritis in Young Stock cows

Season wise Incidence: Maximum incidence was observed in all three groups during Summer season and

lowest in winter except in milk group where incidence was lowest in Spring season (Fig. 4).

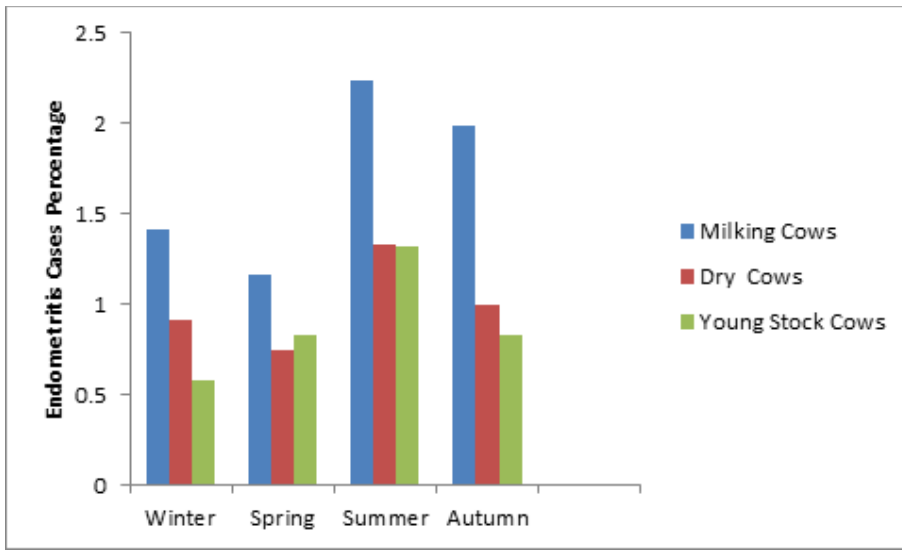


Fig. 4: Season wise Incidence percentage of endometritis in Milking, Dry and Young Stock cows

Overall Incidence: Overall endometritis incidence was found highest (1.72 %) in Milking cows followed by Dry Cows (1.00 %) and

lowest in Young Stock Cows (0.94 %). The overall incidence percentage is 1.22 % (Fig. 5).

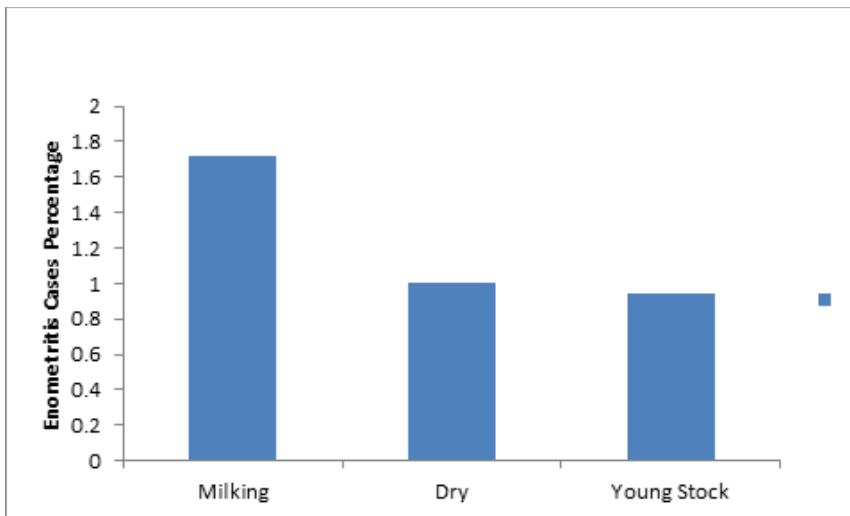


Fig. 5: Overall Incidence percentage of endometritis in Milking, Dry and Young Stock cows

## **DISCUSSION**

Endometritis in cows is a contributing factor of infertility causing failure of pregnancy, increased calving interval and decreased milk production. This situation leads to an ultimate economic loss to farmer. We found that prevalence of endometritis was highest in summer and lowest in spring and winter seasons. We also found that prevalence of endometritis was highest in milking cows followed by dry cows and lowest in young stock cows. Current study reported overall 1.22% incidence of endometritis in crossbred cows. In present study, highest occurrence of endometritis in milking cows was recorded in summer (2.22%) followed by autumn (1.96%), winter (1.42%) and spring (1.12%). Lodhi et al. (1999) conducted study in Faisalabad. They recorded season wise incidence of endometritis during the year 1987- 1992 and found that it was maximum in summer (20.68%), autumn (17.82%), spring (13.67%) and winter (9.81%). The difference in observations of their study and present study was because of the fact that their study was conducted on all infertile cows whereas in present study we selected animals at random and only targeted endometritis cases. In our study incidence of endometritis was found to be higher in milking cows followed by dry cows and young stock cows. In summer, maximum number of cows was affected because in this season mostly cows were calved and they need to be protected against reproductive system infections by taking strict hygienic measures for

standings and sheds. Infertility causes may include genetic and many acquired factors including environmental, nutritional, infectious and poor management. In the present study, highest percentage of endometritis was found in summer season, agrees with the findings of Khair et al. (2014) who reported highest incidence of endometritis as 5 % during summer in Bangladesh. In another study conducted at China Liu et al. (2013) reported 17 % endometritis cases in cows from Northeast China region. Kakar et al. (1997) studied incidence of reproductive diseases in crossbred cows in Baluchistan. They reported that incidence of endometritis was highest (52.8%) than other uterine diseases. This indicates how endometritis cases are playing maximum role towards infertility. In a study conducted at USA (Gilbert et al., 2005) found endometritis in Holstein cows diagnosed by endometrial cytology late in the voluntary waiting period was prevalent and exercised a greatly adverse effect on next reproductive performance, making it potentially extremely costly to the North American farmers. Prevalence of subclinical endometritis and its impact on reproductive performance outcomes in clinically healthy postpartum dairy cows in a pasture-based extensive dairy farming system was conducted in Argentina (Plöntzkea et al., 2010). Only cows without signs of clinical endometritis i.e. no vaginal discharge were enrolled in this study and examined for subclinical endometritis using the cytobrush technique. All cows were reexamined 14 days later

following the same examination protocol. They found that prevalence of subclinical endometritis was normal feature and decreased with increased number of days in milk and effective therapy.

## CONCLUSION

In conclusion we recommend that it is imperative for researchers to conduct further studies on infectious causes of infertility in cows.

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