

The Effect of Postpartum Reproduction Disease on Reproductive Traits in Friesian Holstein Cows in Tropical Region: Case Study

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Abstract— Problems on dairy farm in tropical countries are the low reproductive appearance of female cows, such as the late of estrus post partus, the high value of S/C and the long Days Open. One contributing factor is postpartum diseases such as Retention of Foetal Membranes and Endometritis. This research was conducted at PT Greenfields Indonesia dairy farm located in Malang Indonesia. The material used in this study is the data recording of 1312 lactation cows consisting of 1156 normal postpartum cows, 78 RFM cows and 78 cows that occur Endometritis. Data analysis in this study used one-way ANOVA test. The results showed that post partus reproductive disease (RFM and Endometritis) had a significant effect ($P < 0.05$) on Estrus post partus with the average appearance of estrus post-partus in normal cows 49.76 ± 6.64 , cows that occurred RFM 59.23 ± 7.21 and cows with Endometritis, 51.27 ± 8.9 . Postpartum reproductive diseases (RFM and Endometritis) have a significant effect ($P < 0.01$) on the number of S/C and Days Open in FH cows. The average of days open in normal cattle, RFM and endometritis are as follows 163.29 ± 24.3 , 136.39 ± 62.46 , 184.77 ± 34.61 . The conclusion in this study the reproductive appearance of normal postpartum cows is better than that of cows that have RFM and endometritis.

Keywords— FH Cows, Postpartum Disease, Reproductive Display, Endometritis, Estrus Postpartum, Days Open.

I. INTRODUCTION

The conditions on many livestock companies are the low reproductive appearance, such as the delay in the appearance of the first estrus after giving birth (estrus post partus), which is 98.46 days, the withdrawal of DO (Days Open), which is 180.94 days after giving birth and the high S/C (Service per Conception) an average of 2.56, thus causing a decrease in livestock productivity and causing calving intervals to be longer than 15.6 months (Relic and Vukovic, 2013). One of the factors that cause the low reproductive appearance is the occurrence of reproductive diseases that arise after childbirth such as retensio foetal membrane (RFM) and postpartum endometritis.

Endometritis is inflammation of the reproductive tract of the uterus after childbirth. Metritis or endometritis is caused by a bacterial infection that follows cases of abnormal parturition such as abortion, retention of the sekundearum,

dystocia or continuation of infections that occur in the genitals. RFM and Endometritis are associated with decreased uterine involution rates. (Le Blanc, 2012)

The incidence of endometritis in dairy cows is very detrimental because it will reduce the reproductive appearance of the cow. According to Kim and Kang (2003). The number of services per conception in cows with endometritis is higher than 1.9 compared to cows without endometritis, which is only 1.6. The conception rate for cows with endometritis is 20% lower than cows without endometritis (Sheldon, et al. 2010). This is the background of research conducted on the effect of endometritis and retention of the fetal membrane on the reproductive appearance of FH cattle.

II. MATERIAL AND METHOD

A. Location Research

This research at PT Greenfields Indonesian FH dairy farm located in Ngajum District, Malang Regency, East Java, Indonesia. The research was conducted for four months between September-December 2016.

B. Material

The material used in this study is the recording data of 1312 lactation dairy cows with details of 1156 normal post partus, lactation dairy cows 78 endometritis diseases and 78 cows of Retentiono Foetal Membrane disease. The method of taking data from this study was purposive sampling because that month was the many of birth at PT Greenfields Indonesia.

C. Data Analysis

Data recording after tabulation is then performed statistical analysis using one way ANOVA. The next step is to conduct a descriptive analytic discussion.

III. RESULT

Reproductive traits such as estrus post partus, service perconception and days open in normal animals with reproductive diseases can be seen in Table I.

TABLE I. Average Occurrence of Estrus Post Partus, S / C and Days Open in FH Cow

	Normal	RFM	Endometritis	P Value
Estrus Post Partus (days)	$49,76 \pm 6,64$	$59,23 \pm 7,21$	$51,27 \pm 8,9$	$P < 0,05$
S/C	$3,59 \pm 0,78$	$2,8 \pm 1,77$	$3,84 \pm 0,99$	$P < 0,01$
Days Open (day)	$163,29 \pm 24,3$	$136,39 \pm 62,46$	$184,77 \pm 34,61$	$P < 0,01$

The incidence of postpartum diseases such as Retention Foetal Membranes and endometritis in the PT Greenfields Indonesia farm is 11.89% lower compared to the results of KIM and Kang's research in 2003, namely 36.6% and Heuwieser et al, 2000. In Table 1, the emergence of estrus post partus normal cows were 49.76 ± 6.64 days faster than those with RFM and endometritis where post partus estrus in RFM cows was 59.23 ± 7.21 days and Endometritis 51.27 ± 8.9 days. Service Perconception Rate in normal cattle is 3.59 ± 0.78 higher compared to cattle with RFM which is 2.8 ± 1.77 and S / C is lower when compared to cattle that have endometritis which is 3.84 ± 0.99 . Days open in normal cows is 163.29 ± 24.3 days longer than cows that have RFM which is 136.39 ± 62.46 days and shorter than cows that have endometritis that is 184.77 ± 34.61 days. According to Kaya et al, 2015 RFM disease and endometritis had no effect on Perconception and Days open services, where 2.4 were more on S / C and 12.8 for days open. In animals with endometritis the S / C rate is higher than the normal one, 1.9 and 1.9 (Kim and Kang, 2003)

One-way ANOVA test results for post partus disease (RFM and Endometritis) have a significant effect on estrus post partus with P value <0.05 . This is because RFM and endometritis cases at PT Greenfields Indonesia are treated using antibiotics. According to Gohar et al. (2018) Intrauterine treatment using antibiotics can prolong the emergence of estrus post partus by up to 15 days compared to untreated cattle, according to Riberio et al., (2011) who said that estrus post partum in cattle with more post partum reproductive disease duration, which appears on the 85th day after giving birth. In contrast to Lee et al, (2018) post partus estrus in cattle that have endometritis and no endometritis is appeared at 100.7 ± 3 days and 91.2 ± 2.1 days with a value of $p > 0.01$.

One-way ANOVA test results for Service per Conception obtained the value of $P < 0.01$, this shows that RFM and endometritis significantly influence the value of service per conception at PT Greenfields Indonesia. Endometritis can cause a decrease in conception rate of 4% - 10%, the S / C rate is higher when compared to normal livestock or endometritis does not occur (Gohar et al., 2018).

The one-way ANOVA test for Days Open results obtained $P < 0.01$, this shows that RFM disease and endometritis have a significant effect on Days Open or empty periods at PT Greenfields Indonesia farms. RFM and endometritis in PT Greenfields Indonesia at the time of this study was treated with intra-uterine antibiotics or intramuscular injection with antibiotics. According to Gohar et al., (2018) said that in cows that have post parturition disease and treated with antibiotics will extend the days open for 37 days longer than normal cows or not treated with antibiotics.

In general, post partum reproductive disease has a significant effect on the reproductive appearance of FH cows, estrus postpartum with endometritis, perconception service and Days open performance will decrease. This is consistent with the opinion of Lee et al., (2018) said that the decline in

reproductive appearance such as Estrus Post Partus, perconception service and the high empty period or Days open that occurred for more than 200 days occurred in cows with endometritis. Endometritis is reported to inhibit the calving interval and estrous post partus period.

IV. CONCLUSION

RFM disease and Endometritis affect estrus post partus, which is shorter in normal cattle (49.76 ± 6.64 days) compared to RFM (59.23 ± 7.21 days) and metritis (51.27 ± 8.9 day). RFM and Endometritis have no effect on Days open, in normal animals (163.29 ± 24.3 days) the wall height is higher than RFM animals (136.39 ± 62.46 days) and lower than Endometritis animals ($184, 77 \pm 34.61$ days).

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REFERENCES

- [1] Gaafar, H.M.A., S.H.M. Shamiah, M.A Abu El-Hamd, A.A Shitta, and M.A Tag El-Din. 2011. Dystocia in Friesian Cows and its Effects on Postpartum Reproductive Performance and Milk Production. *Trop Anim Health Prod.* Jan; 43(1): 229–234.
- [2] Gohar, M.A., M.A. Elmetwally, A. Montaser, S.M. Zaabel. 2018. Effect of Oxytetracycline Treatment on Post Partum Reproductive Performance In Dairy Buffalo – Cows With Retained Placenta In Egypt. *Journal of Veterinary Healthcare* 1: 45-53.
- [3] Heuwieser, W., B.A Tenhagen, M. Tischer, J. Lurh, and H. Blum, 2000. Effect Of Three Programmes For The Treatment Of Endometritis On The Reproductive Performance Of A Dairy Herd. *Vet Rec* 146 : 338-341.
- [4] Kaya I., C. Uzmay, and T. Ayyilmaz. 2015. Effects of Dystocia On Milk Production and Reproduction in Subsequent Lactation In a Turkish Holstein Herd. *Turk J Vet Anim Sci* 39: 87-95.
- [5] Kim, I.H., and H.G. Kang.2003. Risk Factors for Postpartum Endometritis and the Effect of Endometritis on Reproductive Performance in Dairy Cows in Korea. *Journal of Reproduction and Development* 49:485–491.
- [6] Le Blanc, S.J. 2012. Interactions of Metabolism, Inflammation, and Reproductive Tract Health in the Postpartum Period in Dairy Cattle. *Reprod Dom Anim.* 47: 18-30.
- [7] Lee, S.C., J.K. Jeong, I.S. Choi, H.G. Kong, Y.H. Jung, S.B. Park, and I.H. Kim. 2018. Cytological Endometritis in Dairy Cows: Diagnostic Threshold, Risk, Factors and Impact on Reproductive Performance. *J. Vet Sci.* 19(2): 301-308.
- [8] Relic, Renata and V. Dejan. 2013. Reproductive Problem And Welfare Of Dairy Cows. *Bulletin UASVM. Veterinary Medicine* 70: 1843-5270.
- [9] Ribeiro E.S., F.S Lima, H. Ayres, L.F. Greco, R.S. Bisinotto, M. Favoreto, R.S. Marsola, A.P.A. Monteiro, W.W. Thatcher, and J.E.P. Santos. 2011. Effect Of Postpartum Disease on Reproduction of Grazing Dairy Cows. *J. Dairy Science* 94.
- [10] Sheldon, I.M, A.N. Rycroft, B. Dogan, M. Craven, J.J. Bromfield, A. Chandler, M.H. Roberts, S.B. Price, R.O. Gilbert, and K.W. Simpson. 2010. Specific Strains of *Escherichia coli* are Pathogenic for the Endometrium of Cattle and Cause Pelvic Inflammatory Disease in Cattle and Mice. *PLOS One*, 5:9192.
- [11] Zhang J., L.X. Deng, H.L. Zhang, G.H. Hua, L. Han, Y. Zhu, X.J. Meng, and L.G. Yang. 2010. Effects of Parity On Uterine Involution And Resumption Of Ovarian Activities In Postpartum Chinese Holstein Dairy Cows. *J. Dairy Sci.* 93 :1979–1986.