International Journal of Science, Environment and Technology, Vol. 8, No 3, 2019, 726 – 730

ISSN 2278-3687 (O)
2277-663X (P)

A FIELD STUDY ON ENDOMETRIAL CYTOLOGY FOR DETECTION OF SUB-CLINICAL ENDOMETRITIS IN BUFFALOES IN TIRUPUR DISTRICT, TAMIL NADU

P. Nithya[1]* and R. Selvaraj[2]

[1]Assistant Professor, Poultry Disease Diagnosis and Surveillance Laboratory, Namakkal – 637 001

[2]Professor and Head, Veterinary University Training and Research Centre, Erode – 638 004
Tamil Nadu Veterinary and Animal Sciences University, Chennai – 600 051

E-mail: nithyaperiaswamy@gmail.com (**Corresponding Author*)

Abstract: The objective of this study was to determine the prevalence of sub-clinical endometritis in clinically normal postpartum buffaloes and to develop endometrial cytology as a tool to diagnose sub-clinical endometritis in field conditions. Apparently 60 cyclic buffaloes were selected based on the absence of abnormal vaginal and uterine discharges through taking history from owners and external inspection. The reproductive tract of selected buffaloes was examined by rectal palpation and sub-clinical endometritis was diagnosed by endometrial cytology using uterine lavage technique.Out of 60 animals, the aspiration was successful in 53 buffaloes (88.33%). Cells could be recovered in 24 samples (45.28%) collected by uterine lavage technique. Endometrial cells were found in 24 samples (45.28%) and polymorphonuclear cells were present only in 4 samples (7.55%). The present study conducted in 60 buffaloes in Tirupur district revealed that the overall prevalence of sub-clinical endometritis with five and more than five neutrophil on endometrial cytology was 7.55 per cent and endometrial cytology by uterine lavage technique may conveniently be used in field conditions for detection of sub-clinical endometritis in buffaloes.

Keywords: Endometrial Cytology, Sub- Clinical Endometritis, Buffaloes, Uterine Lavage Technique.

INTRODUCTION

Buffalo is the principal dairy animal in the developing countries of Asia and the mainstay of the Indian dairy industry, contributing over 60% of the total milk production. India produces about two thirds of the world's buffalo meat (FAOSTAT, 2005). The buffalo plays an important role in maintaining a sustainable food production system in the developing countries (Nanda and Nakao, 2003). The success of the dairy farm lies in ensuring proper and optimal reproductive rhythm of each individual female in the herd within the normal physiological limits. Any deviation in breeding rhythm results in progressive economic losses due to widening of the dry period, the calving interval as well as lactation during the life time of the animals.Repeat breeding is one of the most important reproductive problem in buffalo which anguish fertility and results to massive economic losses to buffalo farmers. Typical

*Received May 27, 2019 * Published June 2, 2019 * www.ijset.net*

repeat breeding is defined as the animal that did not conceive after three or more consecutive inseminations, despite it comes normally in heat and shows clear estrus signs with no clinical detectable reproductive disorders (Yusuf *et al.,* 2010).

Subclinical endometritis is defined as an inflammation of the endometrium without systemic illness or signs, and it is associated with delayed uterine involution (Kasimanickam *et. al.,* 2004). Cytology is considered the best technique to diagnose sub - clinical endometritis due to its feasibility and fair reliability (Kasimanickam *et.al.,*2004, Gilbert *et.al.,*2005). There could be several causes for an increase in the susceptibility of the uterus to trauma and infections resulting in syndromes ranging from mild endometrits to toxic metritis (Kasimanickam *et. al.,* 2005). Numerous risk factors are implicated in the occurrence of uterine disease in dairy cows, including retained placenta, dystocia, twins, parity, management, environment, and genetic influence (Coleman *et. al.,* 1985). Such pathologies have a negative effect on reproductive performance because they increases services per conception, the calving to first- service interval and the calving to conception interval, thereby reducing the conception rate (Fourichon *et al*., 2000; Heuwieser *et al*., 2000; Leblanc *et.al.,*2002).

The objective of the study was to develop endometrial cytology as a tool to diagnose sub-clinical endometritis in field condition.

MATERIALS AND METHODS

Animals and geographical location

The study was conducted in animals at Morattupalayam, Uthukuli block and Chikkinapuram, Dharapuram block of Tirupur district. A total of 60 cyclic buffaloes were selected and samples were collected.

Sample Collection technique

The vulva of the animal was cleaned by water and 50 ml of 0.9% sterile normal saline solution was infused into uterine lumen through a sterile A.I sheath connected to a 20 ml syringe and allowed to remain there for a few seconds before it was withdrawn by aspiration and was transferred to a 15 ml centrifuge tube without preservative. The uterine samples were kept in ice box and brought to the laboratory within 2 hours of collection for sub – clinical endometritis determination.

Sub-clinical Endometritis Determination

Subclinical endometritis was determined using endometrial cytology. The uterine samples collected were centrifuged at 800 rpm for 5 min. Then after centrifugation a drop of

sediments were streaked onto a clean microscopic slide and air- dried. Then the slides were fixed with methanol and stained with Leishman- Giemsa stain and the amount of neutrophil were observed under light microscope at 40x and finally samples with greater than or equal to 5 neutrophil were categorized as subclinical endometritis whereas amount of neutrophil less than 5 considered as normal (Kasimanickam *et. al.,*2005).

RESULTS AND DISCUSSION

In the present study the uterine lavage aspiration was carried out in 60 cyclic buffaloes during estrus at Morattupalayam, Uthukuli block and Chikkinapuram, Dharapuram block of Tirupur district. Out of 60 animals, the aspiration was successful in 53 buffaloes (88.33%) whereas Kasimanickam *et al.* (2005) failed to obtain samples in 17% attempts of lavage, when animals were sampled in early postpartum period. Whereas Gilbert *et al.* (2005) and Barlund *et al.* (2008) did not report failure of sampling with lavage technique in early postpartum cows.

During the study, Cells could be recovered in 24 samples (45.28%) collected by uterine lavage technique. Endometrial cells were found in 24 samples (45.28%) and polymorphonuclear cells were present only in 4 samples (7.55%).The present study revealed that the overall prevalence of subclinical endometritis with five neutrophil on endometrial cytology was 7.55 per cent.

Melendez *et. al., (*2004) and Foldi *et. al., (*2006) reported that uterine infection is one of the most important reproductive disorders in buffalo- cows. The incidence rate of uterine infection in buffalo cows (24.7%) was much higher than in cows, in India (Gupta *et al.,* 1978, Rao and Sreemannarayana, 1983). Raman and Bawa, (1977) found a high prevalence of postpartum infections (38.54%) in buffalo cows. While metritis was recorded as incidence rate of 25% (Sar*et al.,* 1996) and endometritis 20.68% (Rao and Sreemannarayana, 1983), while Rao (1982) recorded 30 % incidence of endometritis among Indian buffaloes.

The present study conducted in 60 buffaloes in Tirupur district revealed that the overall prevalence of sub-clinical endometritis with five and more than five neutrophil on endometrial cytology was 7.55 per cent and sub-clinical endometritis is uncommon in the screened samples which may be due to good hygienic practices, good care and attention since buffaloes are reared in small numbers and wallowing is not practiced in Tirupur district whereas Ptaazynska (2003) reported that the higher incidence of uterine infections in buffaloes than in cows might be due to poor hygiene, vaginal stimulation for milk let down and possibly, wallowing.

CONCLUSION

The present study revealed that the overall prevalence of sub-clinical endometritis with more than five neutrophils on endometrial cytology was 7.55 per cent. Sub-clinical endometritis is uncommon in the screened samples and it was may be due to good hygienic practices, good care and attention since buffaloes are reared in small numbers and wallowing is not practiced in Tirupur district. Based on the findings in the present study, endometrial cytology may conveniently be implemented in field situations to know the status of uterine health of buffaloes and further studies for sub – clinical endometritis detection using different techniques may be conducted at field level.

REFERENCES

[1] Coleman DA, Thayne WV, Diley RA, 1985. Factors affecting reproductive performance of dairy cows. *Journal Dairy science,* 68, 1793 – 1803.

[2] FAOSTAT 2005. FAOSTAT Agriculture Data. Food and Agriculture Organization Statistics, Rome, Italy. Available from: http://fao-stat.fao.org/default.aspx.

[3] Foldi, J., M. Kulcsar, A. Pecsi, B. Huyghe, C. de Sa, J.A. Lohuis, P. Cox and G.Y. Huszenica, 2006. Bacterial complications of postpartum uterine Involution in Cattle. *Animal Reproduction Science*, 96: 265-281.

[4] Fourichon C, Seegers H, Malher X, 2000. Effect of disease on reproduction in dairy cows: a meta – analysis. *Theriogenology*, 53, 1729- 1759.

[5] Gilbert, R.O., Shin S.T., Guard C.L., Erb, H.N., Frajblat, N, 2005. Prevalence of endometritis and its effects on reproductive performance of dairy cows. *Theriogenology*, 64, p.1879-1888.

[6] Gupta, P.P., B. Singh, P.C. Mandal, B.S. Gill and G.S. Grewal, 1978. A postmortem study of mortality pattern in adult buffaloes in Punjab India. *Indian J. anim. Sci*., 48: 669-673.

[7] Heuwieser W, Tenhagen BA, Tischer M, Luhr J, Blum H, 2000. Effect of the three programs for the treatment of endometritis on the reproductive performance of a dairy herd. *Veterinary Record*, 146, 338-341.

[8] Kasimanickam, R., T.F. Duffield, R.A. Foster, C.J. Gartley, K.E. Leslie, J.S. Walton and W.H. Johnson, 2005. A Comparison of cytobrush and uterine lavage technique to evaluate endometrial cytology in clinically normal postpartum dairy cows. *Canadian Veterinary Journal*, 46: 255-259.

[9] Kasimanickam, R., T.F. Duffield, R.A. Foster, C.J. Gartley, K.E. Leslie, J.S. Walton and W.H. Johnson, 2004. Endometrial cytology and ultrasonography for the detection of subclinical endometritis in postpartum dairy cows. *Theriogenology*, 62, 9-23.

[10] Leblanc SJ. Dufield TF, Leslie KE, Bateman KG, Keefe GP, Walton JS, Johnson WH, 2002. Defining and diagnosing postpartum clinical endometritis and its impact on reproductive performance in dairy cows. *Journal Dairy science* 85, 2223 – 36.

[11] Melendz, P., J. McHale, J. Bartolome, L.F. Archbald and G.A. Donovan, 2004. Uterine involution and fertility of Holstein cows subsequent to early postpartum PGFα treatment for acute puerperal metritis. *J. Dairy Sci*., 87:3238 – 3246.

[12] Nanda A.S. and Nakao, 2003. Role of buffalo in the socio- economic development of rural Asia: current status and future prospects. *Anim. Sci. J.,* **74**; 443-455.

[13] Ptaszynska, M, 2003. *Compendium of Animal Reproduction*, 8th ed. Intervet International Bv., p.230- 234.

[14] Rao, A.V.N. and O. Sreemannarayana, 1983. Clinical analysis of reproductive failure among female buffaloes (*Bubalusbubalis*) under village management I, n Andhra Pradesh. *Theriogenology,* **18:** 403-411.

[15] Sar, G.C, B.N. Mohunty, S.K.H. Ray and D.N. Mohunty, 1996. Endometrial biopsy in infertile cows. *Indian J. Anim. Sci.,* 66: 1100-1105.

[16] Yusuf. M., T. Nakao, S.T. Long, C. Yoshida, K. Koikek and A. Hayashi (2010). Reproductive performance of repeat breeders in dairy herds. *Theriogenology,* 73: 1220- 1229.