



Incidence of Postpartum Anoestrus and Oestrus Behavior and Gynecological Symptoms in Hormonal Treated Postpartum Anoestrus Buffaloes

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ABSTRACT

The present investigation was aimed to evaluate the incidence of anoestrus in postpartum buffaloes and compare the intensity of oestrus in anoestrus and oestrus induced buffaloes. A total of 500 postpartum buffaloes were selected from different villages situated around Rewa (M.P.). Calving and breeding history of animals was recorded and Gynaeco-clinical examination. The incidence of anoestrus in postpartum buffaloes was recorded as 33.40 per cent. Out of 167 postpartum buffaloes found to be positive for anoestrus, 24 buffaloes were again randomly divided into three treatment (n=18) and control group (n=06). These treatment group animals were again divided into 03 groups on the basis of hormonal treatment protocols given to animals of groups. Ovsynch group, Heatsynch group, CIDR plus Heatsynch group while control group animals were left untreated. Oestrus intensity score of buffaloes ranged from 80-90, 68-72 and 46-52 in intense, moderate and weak oestrus intensities at induced oestrus respectively, with a mean weighed score of 84.88 ± 1.30 , 70.00 ± 0.81 and 49.00 ± 3.00 , respectively. Thus it was concluded that the incidence of anoestrus recorded to be 33.40 per cent. Oestrus intensity score card pattern is a good tool to designate intensity of oestrus which has positive relationship with fertility.

Keywords: Postpartum anoestrus, oestrus behaviour, oestrus intensity score

Buffalo plays an important role in maintaining a sustainable livelihood and food production system in India. The buffaloes are much known as “Peculiar Shy Breeder” due to its inherent susceptibility to environmental stress manifested mainly as late maturity, long postpartum anoestrus interval, poor expression of oestrus, poor conception rate and long calving interval this results in great economic loss to dairy industry (Kumar *et al.*, 2014).

Postpartum anoestrus is one of most common reproductive disorder in buffaloes and its incidence is higher during summer season. The oestrus cycles which cease during pregnancy, usually resume within two to three months of calving in buffaloes (Perera, 2011). Under Indian field conditions, postpartum acyclicity is the most common single cause of infertility in rural buffaloes.

Postpartum resumption of ovarian activity and subsequent

conception may be affected by several factors such as breed, nutrition, milk yield, suckling, body weight, body condition score (BCS), parity, season and uterine involution (Ghallab and Noseir, 2016).

Keeping this in view, the present investigation was aimed to evaluate the incidence of anoestrus in postpartum buffaloes and compare the intensity of oestrus in anoestrus and oestrus induced buffaloes

MATERIALS AND METHODS

Experimental design

In the present study a total of 500 postpartum buffaloes (5-12 year age) were selected from field conditions in different villages situated in and around Rewa (M.P.). Calving and breeding history of animals were recorded.

The buffaloes with the history of not exhibiting signs of oestrus for more than 90 days postpartum were considered as open animals for the study of incidence of anoestrus. All the selected buffaloes were per rectally examined twice 10 days apart to confirm ovarian activity and genital status. Twenty four postpartum buffaloes found to be suffering from postpartum anoestrus were randomly selected and divided into treatment (n=18) and control groups (n=06). Treatment group animals were again divided into three groups consisting of 06 animals each. All The treatment group animals were subjected to different hormonal treatment protocols. Ovsynch group (n=06): Animals were subjected to Ovsynch protocol consisting of gonadotropin releasing hormone (GnRH) analogue (Buserelin acetate 20µg; I/M) on day 0, followed by prostaglandin (PGF_{2α}) analogue (Cloprostenol sodium 500µg; I/M) on day 7, and an intramuscular injection of GnRH analogue on day 9 treatment, Heatsynch group (n=06): Animals were subjected to Heatsynch protocol consisting of combination of gonadotropin releasing hormone (GnRH) analogue (Buserelin acetate 20µg; I/M) on day 0, followed by prostaglandin (PGF_{2α}) analogue (Cloprostenol sodium 500µg; I/M) on day 7, and an intramuscular injection of estradiol benzoate (1mg) on day 8 and treatment group C (n=06): animals were subjected to CIDR plus Heatsynch protocol, postpartum anoestrus buffaloes which was treated with CIDR (controlled internal drug release device) implant (for 7 days) along with estradiol benzoate (1mg) intramuscular injection on day 0 and the implant was removed on day 7 and an intramuscular injection of prostaglandin (PGF_{2α}) analogue (Cloprostenol sodium 500µg; I/M) will be given followed by an intramuscular injection of estradiol benzoate (1mg) on day 8 while control group D (n=06) animals were not given any treatment.

Detection of oestrus was carried out twice daily (morning and evening) by visual observations. Buffaloes at induced oestrus were bred by natural service (NS) / artificial insemination (AI) on the day of oestrus.

Oestrus intensity was numerically scored, based on a proper weightage given for each of the parameter comprising oestral changes in the external and internal genitalia and behavioural expression. For this purpose, the score card device modified by and weighed score sought by individual buffalo the oestrus intensity was classified into intense, moderate and weak (Sirmour, 1999).

Statistical analysis

The results of incidence of anoestrus, oestrus behaviour and intensity of induced oestrus were expressed in percentage.

RESULTS AND DISCUSSION

Incidence of anoestrus in postpartum buffaloes

The incidence of anoestrus in postpartum buffaloes was recorded as 33.40 (167/500) per cent.

The incidence of anoestrus in the present study was found to be higher as compared to reports of the Gupta (2009) and Purkayastha (2012) reported the incidence of anoestrus in the buffaloes with range of 5.42 to 28.57 per cent in organized dairy farms of Jabalpur (M.P.)

The higher incidence of anoestrus might be due to the fact that with present study postpartum interval was considered as 90 days instead of 4 months (Gupta, 2009). Another reason for higher incidence of anoestrus in present study may be that the anoestrus recorded was based on the history and gynaeco-clinical examination of the postpartum animals in the present study whereas the only history of anoestrus in the survey studies of other workers.

The incidence of anoestrus in buffaloes was reported to be 9.74 per cent in Faisalabad district of Pakistan (Rabbani *et al.*, 2010), 20.84 per cent in Mehsana region of Gujarat (Modi *et al.*, 2011), 35.71-61.29 per cent in Maharashtra (Hedaoo *et al.*, 2008) and 5.31 per cent in eastern Uttar Pradesh (Verma *et al.*, 2018).

The incidence of anoestrus in the buffaloes in the present study is quite similar to the reports of Hedaoo *et al.* (2008) who reported 35.71 per cent anoestrus from Maharashtra and 34.40 per cent from different villages of R.S. Pura region of Jammu district (Kalsotra *et al.*, 2016).

The difference in incidence of anoestrus in buffaloes in various studies may be due to wide variation in the breed of buffaloes, managemental practices, environmental conditions and/or geographical area. Also the seasonality has been reported to affect the reproductive performance of buffalo cows (Kumar *et al.*, 2013).

Oestrus behaviour and gynaeco-clinical symptoms in buffaloes

Overall reproductive organ status of buffaloes was

visualized and confirmed on rectal examination at oestrus, such as tumification of vulvar lips, cervico-vaginal discharge, vulvar mucus membrane colour, extent of cervical relaxation, uterine tonicity, gonadal status, teaser mounting, bending of tail, micturition and bellowing in the induced oestrus buffaloes of Ovsynch, Heatsynch and CIDR plus Heatsynch group are summarized in the Table 1 and described as follows:

Tumification of vulvar lips

Irrespective of different treatment groups, during oestrus, intense, moderate and mild tumification of vulvar lips was observed in 66.66, 26.66 and 06.66 per cent buffaloes, respectively.

The present findings for tumification of vulvar lips are comparable with the finding of Mohan *et al.* (2010) who found intense tumification of vulvar lips in induced oestrus buffaloes.

This may be due to increased estrogen level which plays an important role in tumification of vulvar lips at oestrus. Shaik (2014) also reported increased genital organs including vulvar lips in oestrus stage.

Cervico-vaginal mucus discharge

At induced oestrus, copious quantity of cervico-vaginal mucus discharge was observed in 66.66 per cent buffaloes and moderate in 33.33 per cent buffaloes.

Ali *et al.* (2012) reported that cervico-vaginal mucus discharge was copious in 64.28 per cent, moderate in 21.42 per cent and absent in 14.28 per cent buffaloes. Mohan (2011) reported that cervico-vaginal mucus discharge was copious in 83.33 per cent and scanty in 16.67 per cent treated buffaloes.

Vulvar mucus membrane

The colour of vulvar membrane in the present study at induced oestrus was observed as intense pink in 33.33 per cent, pink 60.00 per cent and pale in 6.66 per cent buffaloes.

Mohan (2011) reported colour of mucus membrane to be intense pink and pink in 50 per cent each in CIDR treated buffaloes.

Cervical relaxation

The cervical relaxation and opening of the external Os uteri was judged at induced oestrus and it was found that irrespective of the intensity of the oestrus, the external Os was open and fully relaxed in 73.33 per cent buffaloes and external Os was open and partially relaxed in 26.66 per cent buffaloes.

Bhattacharya *et al.* (2017) in their study reported relaxation of Os cervix in 89.17 per cent cross-bred cows.

Cervical relaxation should be considered as better parameter for oestrus confirmation rather than the uterine tone which was not as marked as in cows on the basis of gynecological investigation. The present study correlates with the views expressed by Roberts (1996) that degree of relaxation of cervix depends on the level of estrogen from the ovary and there is gradual relaxation from pro-oestrus to oestrus and hence all the buffaloes eliciting oestrus had fully relaxed cervix and external Os open.

Uterine tonicity

In present study, uterine tonicity during induced oestrus irrespective of treatment groups was intense in 40.00 per cent and moderate in 60.00 per cent buffaloes.

Ali *et al.* (2012) in their study reported uterine tonicity was intense in 64.28 per cent, moderate in 21.42 per cent and weak in 14.28 per cent. The uterine tonicity is a sign of oestrus and is of definitive help along with other characters to affirm oestrus. It is a guideline to decide whether the animal is to be bred or not.

Ovarian status

The ovarian status observed on rectal palpation at the day of induced oestrus for a developing or developed functional structure revealed that 66.66 per cent buffaloes had mature follicle and 33.33 per cent buffaloes had developing follicle.

The present findings for the ovarian status are comparable with the report of Mohan *et al.* (2010).

Teaser mounting

Teaser mounting status was judged as whether the teaser was allowed to mount, teaser was allowed to mount but

later on animal escaped and teaser refused to mount. Overall teaser mounting was observed as teaser stand to mount in 20 per cent buffaloes, teaser allowed to mount but escaped mounting in 66.66 per cent buffaloes and teaser refuse to mount in 13.33 per cent buffaloes.

Bending of tail

Irrespective of treatment groups the bending of the tail was judged as presence or absence of bending of tail in different oestrus intensities in buffaloes. Overall bending of tail was seen in 33.33 per cent and 66.66 per cent buffaloes didn't presented bending of tail.

Mohan (2011) studied behavioural symptoms of estrus in buffalo heifers and reported bending of tail in all (100 %) treatment and control group buffaloes.

Micturition

Micturition was judged as whether the micturition was frequent or normal. The occurrence of frequent and normal micturition in the buffaloes in different oestrus intensities, the overall frequent micturition was present in 66.66 per cent buffaloes and 33.33 per cent buffaloes had normal micturition.

Bellowing

Bellowing was judged as the presence or absence of the bellowing in different oestrus intensities in buffaloes. Irrespective of treatment groups, overall bellowing was present in 53.33 per cent and absent in 46.66 per cent buffaloes.

The results of present study was comparable with Hiremath (2013) who reported that bellowing was present in 68.00 per cent true anoestrus buffaloes.

Oestrus intensity score

Oestrus intensity score revealed the weighted score for different characters of genital tract and behavioural expression together are helpful to designate oestrus intensity. The overall oestrus intensity ranged from 46-90 with a mean weighted score 76.13 ± 3.43 . The oestrus intensity score ranged from 46-90 with a mean weighted score of 72 ± 9.41 for Ovsynch group, 52-88 with a mean weighted score of 75.2 ± 6.5 for Heatsynch group and 68-

90 with a mean weighted score of 79.66 ± 3.63 for CIDR plus Heatsynch group are presented in table 2. Statistical analysis revealed significant variation ($p < 0.05$) between the treatment groups.

When the intensity of oestrus response was taken into an account following different treatment protocols, an intense oestrus response (50%, 60% and 66.6%) and moderate oestrus response (25%, 20% and 33.33%) and weak oestrus response (25%, 20% and 0.00%) was observed in Ovsynch, Heatsynch and CIDR plus Heatsynch groups, respectively are presented in table 3.

Difference in the oestrus intensity score between treatment groups clearly indicates the influence of Ovsynch, Heatsynch and CIDR plus Heatsynch protocol at induced oestrus with different oestrus intensities. The highest oestrus intensity was observed in CIDR plus Heatsynch compared to other groups might be due to the effect of exogenous progesterone, which sensitizes the hypothalamus receptors for the estrogen, and higher estradiol production by larger follicles in this group following estradiol injection mainly responsible for behavioral signs of oestrus (Ali *et al.*, 2012).

As far as the conception rate based on the intensity of oestrus response is concerned, the results of this study revealed that conception rate was higher in animals showing intense (88.88%) than moderate heat signs (75%) and weak heat sign (0.00%) in all the three groups are presented in table 4. Such a trend is in agreement with Ali *et al.* (2012) who studied oestrus intensity in 18 anoestrus buffaloes treated with Ovsynch, Heatsynch and CIDR protocol and reported that 09, 03 and 02 buffaloes show intense, moderate and weak oestrus (64.28, 21.43 and 14.28%), respectively.

CONCLUSION

In the present investigation of 500 anoestrus postpartum buffaloes, the incidence was found to be 33.4% ($n=167$). Oestrus intensity score card pattern is a good tool to designate intensity of oestrus which has positive relationship with fertility.

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