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Post-Lambing behaviour of Muzzafarnagri Ewes and Lamb

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Abstract

The post-parturient behaviour of 10 Muzzafarnagri ewes were observed at Livestock Farm Complex, A.N.D.U.A.T., Kumarganj, Ayodhya. All the ewes, in most of the cases, the lamb appeared at vulva whilst the ewes were in recumbent position. In most of the lambing the presentation of foetus was anterior (about 75%). Post lambing behaviour of ewes seen important in establishing of mother-neonate bond to accept or reject of the lambs by ewes. Most of the ewes initiated licking immediately after parturition. The duration of licking and grooming behaviour up to 6 hr post lambing was 24.6 ± 1.28 min., complete expulsion of placenta after birth of lamb was 113.3 ± 4.30 min. There was no case of any dystocia found in Muzzafarnagri ewes. During after birth process the maternal orientation of ewes toward lambs were anterior (70%) and posterior (30%). Maternal rejection was observed 10% in relation to ewes after lambing and 90% ewes accepted their lambs. Placentophagia was absent in Muzzafarnagri ewes. The average time taken in delivery of foetus from anterior to posterior or posterior to anterior was 2.25 ± 0.26 min. The total duration of resting up to 6 hr post lambing was 114.6 ± 4.31 min. The lamb started attempt to stand 4.08 ± 0.34 min after birth. The lambs made 9.42 ± 0.45 numbers of attempts to stand after birth. The average time taken by lambs to first stand was 25.75 ± 0.51 min after birth. Most of the lamb (75%) showed preferences of left teat for their first suckle and about 25% lamb preferred right teat for their first suckle.

Keywords: Post-parturient behaviour, lambing presentation, dystocia, placentophagia

Introduction

Indian climate is very suitable for setting up sheep farming as business or a livelihood in India. Sheep farming requires little investment of land and money, able to get the returns of investment within a very short period. Sheep farming in India can be a great source of good income for the marginal and landless farmers. Sheep is an important species of farm livestock. There is a vast genetic diversity in sheep and out of about 200 breeds listed in the world, 43 breeds of sheep are found in India. The Indian subcontinent is a rich source of diverse ovine germplasm, and only very few countries have such a large number of breeds with wide genetic diversity. Knowledge of animal's natural behaviour is essential in ensuring to create an environment, manage and care for individual animals and flocks in a manner that enables them to express themselves naturally and to remain healthy with a high quality of life. The behaviour of sheep is likely to be a complex interaction between their genetics and the fundamentally important early life experiences with their dam, further complicated by their association with their peers, particularly around weaning, and the quality and availability of grazing (Lawrence and Dwyer, 2000) ^[11].

Maternal Behaviour

Maternal behaviour is key to ensuring the survival of lambs, particularly when a ewe has two or more offspring. Newborn lambs need milk and immunological protection shortly after birth, and early interactions between the mother and the young are critical in this respect. Bonding, and consequently survival, of twins, can be considerably improved if the ewe remains at the birth site for a minimum of 6 hours, and this can be encouraged in part through feeding management. Two major factors contribute to the formation of this early bonding: postnatal vocal communication and sucking (Nowak, 1996) ^[14]. The ewe makes a low-level bleating noise, standing so as to encourage the lamb to find the udder and start suckling (Dwyer, 2014) ^[4]. The ewe and lamb maintain a close spatial relationship over the first week of life. After this period lambs gather into peer play groups and up to 4 weeks of age they go increasingly longer

distance from their dam (Morgan & Arnold, 1974) [13]. Nurturing and recognition are the key components of early maternal care, and the ewe expresses these through immediate licking and grooming behaviour, which enables her to learn the smell of her offspring (Poindron *et al.*, 2007) [15].

Materials and Methods

The present study was carried out at Sheep and Goat unit of Livestock Farm Complex of College of Veterinary and Animal Husbandry, A.N.D.U.A.T., Kumarganj, Ayodhya, U.P. (India). Experimental observations were made on 10 Muzzafarnagri ewes and their lambing behaviour was made during three season's autumn, winter and spring season of the country.

The following behavioural parameters were recorder during the study

Behaviour of ewes at time of birth	Post lambing behavior of ewes	Post lambing behaviour of lambs:
1. Position of ewes at birth	1. Licking and grooming behaviour	1. First attempt to stand
2. Presentation of lambs	2. Time of expulsion of placenta	2. Number of attempts to stand
	3. Placentophagia	3. First standing
	4. Maternal orientation	4. Teat order to first suckle or preference of teat
	5. Maternal rejection	
	6. Resting behaviour	
	7. Dystocia	

Statistical analysis

The data so obtained was analyzed statistically by using suitable standard method.

Results and Discussion

Ten Muzzafarnagri sheep maintained at sheep and goat unit of L.F.C., A.N.D.U.A.&T., Kumarganj, Ayodhya were utilised to study their lambing behaviour. The studies were made on post-partum behaviour of Muzzafarnagri sheep. The results obtained are being summarized under the following subheadings:

1. Position of ewes

During the birth process 80% ewes were in lying/recumbent position, of which some ewes were in standing position in early parturition that is half of the foetus expelled in recumbent position and rest in standing position. Out of ten ewes, 8 were in lying or recumbent position and 2 were in standing position (Table-1). In single birth ewes more were in lying position (75%) than of standing position (25%). And in twin birth ewes more were in lying position.

Table 1: Percentage of Position of ewes at time of lambing

Observation	Total	Standing	Lying
Overall	10	20% (2)	80% (8)
Single Birth	8	25% (2)	75% (6)
Twin Birth	2	00 % (0)	100 % (2)

Figures in parenthesis indicate number of ewes.

In the present study, 80% ewes were in recumbent position and 20 % were in standing position. These findings were similar with the results of Ghosh and Das (2000) [6], Gonzalez-Stagnaro and Madrid (2004) [7], Kaushish and Mathur (2005) [9], Yilmaz *et al.* (2012) [19] and Ceyhan *et al.* (2012) [2] who also reported that majority of the ewes/does

were in recumbent/sitting while lambing/kidding.

2. Presentation of lamb:

In all the parturitions the presentation of foetus in anterior presentation was 75% and in posterior presentation was 25%. However the female lambs were more in anterior presentation (80%) than the male lambs (71.42%). The male lambs were more in anterior presentation (28.58%) than the female lambs (20%). (Table 2)

Table 2: Percentage of Presentation of lamb at the time of lamb at the time of birth in relation to sex

Observation	Total	Anterior	Posterior
Overall	12	75% (9)	25% (3)
Male	7	71.42% (5)	28.58% (2)
Female	5	80% (4)	20% (1)

*Figures in parenthesis indicate number of lambs.

In all the lambing under this study, the presentation of foetus in anterior presentation was 75% and in posterior presentation was 25%, which is similar to the study of Ghosh and Das (2000) [6].

3. Post lambing behaviour of ewes

Post lambing behaviour of ewes seen important in establishing of mother-neonate bond to accept or reject of the lambs by ewes.

3.1 Licking and grooming behaviour

Most of the ewes initiated licking immediately after lambing. They turned around, smelled at their lamb and begun licking. The licking was continuously for some period initially, which were slowed down after ward up to 6hr post lambing. The most preferred area of the lamb, licked by ewes were back, head and below the area of tail. The duration of licking and grooming behaviour up to 6 hr post lambing was 24.6±1.28 min. (Table 3). However, the duration of licking and grooming behaviour up to 6 hr after post lambing, single birth ewes took more time (26 ± 1.09 min) than the twin birth ewes (19 ± 1 min).

Table 3: Least square means ± S.E. of post-lambing behaviour of ewes (Min. after birth of lamb)

Factors	Overall	Single Birth	Twin Birth
No of observation	10	8	2
Licking and Grooming behaviour	24.6 ± 1.28	26 ± 1.09	19 ± 1
Expulsion of placenta	113.3 ± 4.30	115.375 ± 4.99*	105 ± 7
Resting behaviour	114.6 ± 4.31	117 ± 4.902	105.5 ± 6.5

Licking of the neonatal lamb was one of the most striking behaviour shown by the ewes immediately after lambing. The licking process was preceded by the typical behaviour pattern of turning the head around accompanied by sniffing. Through the licking, the ewes dried the amniotic fluid covered wet skin coats of their newborn lamb and amniotic fluid is important for the maintenance of maternal responsiveness and the establishment of maternal selectivity in sheep that amniotic fluid (AF) is important inexperienced ewes for the establishment of maternal responsiveness, as already found in primiparous mothers and AF also carries some chemosensory information facilitating exclusive bonding Poindron *et al.* (2010) [16]. The duration of licking and grooming behaviour was higher in single birth ewes (26 ± 1.09 min after

birth) than the twin birth ewes (19 ± 1 min after birth). These results are similar with the findings of Ekiz *et al.* (2007) [5], Ceyhan *et al.* (2012) [2] and Yilmaz *et al.* (2012) [19].

3.2 Expulsion of Placenta

Complete expulsion of placenta after birth of lamb was 113.3 ± 4.30 min. however, the single birth ewes took more time (115.375 ± 4.99 min after birth) than the twin birth ewes (105 ± 7 min after birth). There was significance difference among the single birth and multiple birth ewes between complete expulsions of placenta after birth of lamb (Table-3).

The mean time taken for expulsion of placenta was 113.3 ± 4.30 min after birth; respective of birth it was higher in single birth ewes. These results were in concurrence with Gonzalez-Stagnaro and Madrid (2004) [7] and Yilmaz *et al.* (2012) [19] and lower than the finding of Mondal *et al.* (2010) [12].

3.3 Resting behaviour of ewes

In 6hr post-lambing, all the ewes spent some time in resting. The total duration of resting up to 6 hr post lambing was 114.6 ± 4.31 min. there was significant difference among single birth and twin birth ewes. The single birth ewes took longer time of resting (117 ± 4.90) than twin birth ewes (105.5 ± 6.5) (Table-3).

3.4 Dystocia:

There was no case of any dystocia found in Muzzafarnagri ewes (Table 4). All the single birth and twin birth ewes showed 00.00% occurrence of dystocia.

Table 4: Percentage of Dystocia in relation to single birth and twin birth ewes

Observation	Total	Yes	No
Overall	10	0	100% (10)
Single Birth	8	0	100% (8)
Twin Birth	2	0	100% (2)

**Figures in parenthesis indicate number of ewes.*

In the present study, there was no case of dystocia observed in this Muzzafarnagri breed at farm, which is not similar with the Kloss *et al.*, (2002) [10], Purohit (2006) [17], Hindson *et al.* (2007) [8], Brozos *et al.* (2012) [1] in sheep. This might be possible due to the breed characteristics and method of mating.

3.5 Maternal Orientation

During after birth process the maternal orientation of ewes toward lambs were anterior (70%) and posterior (30%). Most of the ewes approached anteriorly than posteriorly. In relation of type of birth out of 8 single birth ewes, 75% (6) approached anteriorly and 25% (2) approached posteriorly. And among 2 twins birth ewes, the ratio of anteriorly and posteriorly was 50-50% (Table-5). And relation to sex of lamb 58.33% ewes approached anteriorly and 41.67% approached posteriorly (Table-6). The 57.14% male lambs were oriented by their dams anteriorly where as 60 % female lambs were also oriented anteriorly.

Table 5: Percentage of maternal orientation of ewes after lambing in relation to type of birth

Observation	Total	Anterior	Posterior
Overall	10	70% (7)	30% (3)
Single Birth	8	75% (6)	25% (2)
Twin Birth	2	50% (1)	50% (1)

**Figures in parenthesis indicate number of ewes.*

The behavioural expression to measure this orientation used in this study was facing their lambs from either anteriorly or posteriorly. Most of the ewes expressed front orientation at the time of first licking and grooming. However, the single birth ewes were more interactive with anterior orientation than twin birth ewes in licking and grooming activity. These were same as the Yilmaz *et al.* (2012) [19], who found that majority of animals, started licking off-springs near the head and neck.

Table 6: Percentage of maternal orientation of ewes after lambing in relation to sex of lamb

Observation	Total	Anterior	Posterior
Overall	12	58.33% (7)	41.67% (5)
Male	7	57.14% (4)	42.86% (3)
Female	5	60% (3)	40% (2)

**Figures in parenthesis indicate number of lambs.*

3.6 Maternal Rejection

Maternal rejection were seen occasionally, consisted of absence of sniffing, moving away of ewe from lamb, butting of lamb, rejection of teat seeking advances and suckling attempts by her lamb. Maternal rejection was observed 10% in relation to ewes after lambing and 90% ewes accepted their lambs (Table- 7). No rejection was observed in single birth ewes and a 50% rejection was observed in twin birth ewes. In relation to sex of lamb 8.33% of lamb was rejected, and in male lamb 14.29% lambs was rejected while in female lambs 00.00% rejection was observed (Table- 8).

Table 7: Percentage of maternal rejection of lamb after lambing in relation to ewes

Observation	Total	Acceptance	Rejection
Overall	10	90% (9)	10% (1)
Single Birth	8	100% (8)	00.00
Twin Birth	2	50% (1)	50 % (1)

**Figures in parenthesis indicate number of ewes.*

Table 8: Percentage of maternal rejection of ewes after lambing in relation to sex of lamb

Observation	Total	Acceptance	Rejection
Overall	12	91.66% (11)	8.33% (1)
Male	7	85.71% (6)	14.29% (1)
Female	5	100% (5)	0% (0)

**Figures in parenthesis indicate number of lambs.*

Maternal rejection seen occasionally, considered of absence of licking and grooming during 6h post lambing. This finding is important in terms of bond developed between ewe and lamb. In present study, the majority of the ewes (90%) accepted and nursed their lamb and only few ewes (10 %) rejected their lamb (Table-4.9). This observation was similar to Yilmaz *et al.* (2012) [19] in Norduz does who reported that majority of the does accepts and nursed their kids after the parturition and some does rejected their kids after the parturition.

3.7 Placentophagia

Out of ten screened ewes placentophagia was observed 00.00% i.e. placentophagia was absent in ewes. In relation to ewes in single birth or in twin birth both placentophagia was completely absent. (Table-9)

Table 9: Percentage of showing placentophagia in relation to ewes

Observation	Total	Complete ingestion	No ingestion
Overall	10	0	100% (10)
Single Birth	8	0	100% (8)
Twin Birth	2	0	100% (2)

*Figures in parenthesis indicate number of ewes.

None of the ewe revealed ingestion of placenta in this present study. It was in opposite to the findings of Gonzalez-Stagnaro and Madrid (2004) [7] in does, in which partial placentophagy was reported. This may be due to its species variation of not ingestion of placenta.

4. Post-lambing behaviour of lambs

After delivery, the new born lamb proceed through a typical behavioural sequences which was initiated by raising its head and initial reaction was to begin shaking its head, sneezing and then the lamb moved into sternal recumbent position. The lamb then learnt to stand by the use of the hindquarter followed by the use of the forequarter.

4.1 First attempt to stand

The attempts to first stand by lambs started with the elevation of hind quarters and accomplished by pulling the forelegs under the body and extending them rise to the fore quarter. The lamb started attempt to stand 4.08 ± 0.34 min after birth. The result revealed that the female lamb made first attempt to stand earlier (3.4 ± 0.51 min after birth) than the male lambs (4.57 ± 0.36 min after birth) (Table-10).

Table 10: Least Square Means \pm S. E. of standing Behaviour of Lamb in relation to sex (After birth up to 6 hour)

Factors	Overall	Male	Female
No of observation	12	7	5
First attempt to stand (min)	4.08 ± 0.34	4.57 ± 0.36	3.4 ± 0.51
Number of attempt to stand (times)	9.42 ± 0.45	10.29 ± 0.52	8.2 ± 0.57
First standing (min)	25.75 ± 0.51	26.57 ± 0.37	24.6 ± 1.36

The first attempt to standing was made by lambs 4.08 ± 0.34 min after birth. The findings of first attempt to stand for goats were reported mean time was 14 min according to Rehman *et al.* (2010). And same findings were of Yilmaz *et al.* (2012) [19] in Norduz Goats the latency to first standing was 17.50 ± 2.42 min after birth. All these findings do not match with findings of this breed for the attempt to first stand after birth. This might be due to more vigour of lambs of this breed characteristic.

4.2 Number of attempts to stand

The lambs made 9.42 ± 0.45 numbers of attempts to stand after birth. The sex of lambs affected this character and the male lambs made more attempts to stand than the female lambs (Table-10).

The experimental lamb attempts for teat seeking soon after their standing and sex of the lamb had no significant difference. The lambs made about 9.42 ± 0.45 numbers of attempts to stand after birth. Which are less to as reported by Dhiman and Chabra (2005) [3], who reported that the kids made 20 unsuccessful attempts to first standing.

4.3 First standing

The average time taken by lambs to first stand was 25.75 ± 0.51 min after birth. This behaviour was significantly affected

by the sex of the lamb. The female lambs required less time (24.6 ± 1.36 min) than the female lambs (26.57 ± 0.37 min) to first stand after birth of lambs (Table-10).

The lambs stood first at 25.75 ± 0.51 min after birth. These findings were similar with Ceyhan *et al.* (2012) [2]. The present findings were higher than the findings of Yilmaz *et al.* (2012) [19], who reported that 17.50 min for first standing after post kidding in goat.

4.4 Teat order to first suckle or preference of teat

Out of 12 born lambs during the study, for teat sucking preference 9 lambs (75%) showed left teat of their ewes and 3 lambs (25%) showed right teat to first suckle. Majority of the male lambs adopted left teat for first suckle (85.71%) as well as female lambs adopted left teats for first suckle (75%). Majority of the single born lamb adopted left teat for first suckle (87.5%) as well as twin born lamb adopted left teat for first suckle (75%) (Table- 11).

Table 11: Percentage of lambs adopting teat preference during first suckling

Factors	Total	Left teat	Right teat
No of observation	12	75% (9)	25% (3)
Sex			
Male	7	85.71% (6)	14.29% (1)
Female	5	60% (3)	40% (2)
Type of birth			
Single	8	87.5% (7)	12.5% (1)
Twins	2	75% (3)	25% (1)

The majority of the lambs preferred to suckle left teat of ewes first. The possible reason might be that the left side was easily approachable of animal. These findings were similar to that of Dhiman and Chabra (2005) [3], this might be due to the reflection of teat accessibility to lambs.

Conclusion

Post parturient behaviour of ewes

Post lambing behaviour of ewes seen important in establishing of mother-neonate bond to accept or reject of the lambs by ewes. Most of the ewes initiated licking immediately after parturition. The duration of licking and grooming behaviour up to 6 hr post lambing was 24.6 ± 1.28 min., Complete expulsion of placenta after birth of lamb was 113.3 ± 4.30 min. There was no case of any dystocia found in Muzzafarnagri ewes. During after birth process the maternal orientation of ewes toward lambs were anterior (70%) and posterior (30%). Maternal rejection was observed 10% in relation to ewes after lambing and 90% ewes accepted their lambs. Placentophagia was absent in Muzzafarnagri ewes. The average time taken in delivery of foetus from anterior to posterior or posterior to anterior was 2.25 ± 0.26 min. The total duration of resting up to 6 hr post lambing was 114.6 ± 4.31 min.

Post-lambing behaviour of lamb

The lamb started attempt to stand 4.08 ± 0.34 min after birth. The lambs made 9.42 ± 0.45 numbers of attempts to stand after birth. The average time taken by lambs to first stand was 25.75 ± 0.51 min after birth. Most of the lamb (75%) showed preferences of left teat for their first suckle and about 25% lamb preferred right teat for their first suckle.

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