Journal of Animal Research: v.5 n.1, p. 81-83. April. 2015

DOI Number: 10.5958/2277-940X.2015.00013.3

Biometrical Changes in Reproductive Organs of Bakharwal Goats with Age

Mazar Ali Shah[1], Irfan Ali Shah[3], Shruti Chhibber[2], Nishi Pande[1], Utsav Sharma[1] and M.A. Malik[3*]

[1]Division of Veterinary Gynaecology and Obstetrics, F.V.Sc. & A.H., SKUAST-Jammu, Jammu & Kashmir, INDIA
[2]Division of Veterinary Medicine, F.V.Sc. & A.H., SKUAST-Jammu, Jammu & Kashmir, INDIA
[3]Division of Veterinary Public Health and Epidemiology, F.V.Sc. & A.H., SKUAST-Jammu, Jammu & Kashmir, INDIA

**Corresponding author: M.A. Malik; Email: malikskuast@yahoo.com*

Received: 04 March, 2015 **Accepted:** 29 March, 2015

ABSTRACT

To study the biometry of genital organs of Bakharwal goats, twenty reproductive tracts were collected from slaughterhouses of Jammu during October 2014 to December 2014. Based on the age of slaughtered animals, the reproductive tracts were divided into two groups (group A, age between 12-18 months and group B, age between 24-30 months). For cervix length and width and thickness, the average measurements of group A were 4.31 ± 0.02 cm, 1.24 ± 0.03 cm, 0.54±0.02 and in group B were 4.44 ± 0.03 cm, 1.37 ± 0.01 cm, 0.61± 0.02, respectively. Similarly in group A, the average size of body of uterus was 3.31± 0.03 cm, 1.53 ± 0.01cm, 0.56 ± 0.02 cm and in group B, 3.47 ±0.11 cm, 1.60 ± 0.03 cm, 0.64 ± 0.01 cm. The average size of the right horn of uterus in group A was 13.98 ± 0.39 cm, 1.83 ± 0.02 cm, 0.57 ± 0.03 cm and the size of the left horn of uterus was 14.62 ± 0.30 cm, 1.02 ± 0.04 cm, 0.45 ±0.03 cm while the average size of the right horn of uterus in group B was 15.51 ± 0.19cm, 1.90 ± 0.02cm, 0.62 ± 0.26 cm and the size of the left horn of uterus was 15.6 ± 0.35 cm, 1.01 ± 0.04 cm, 0.57 ± 0.02 cm for length, width and thickness, respectively. Mean length of right and left fallopian tube in group A was 18.18 ± 0.25 cm, 17.70 ± 0.28 cm while in group B was 19.11 ± 0.10 cm, 17.90 ± 0.20 cm. In group A the average size of the right ovary was 1.98 ± 0.05cm, 1.00 ± 0.04 cm, 0.66 ± 0.03 cm while in left ovary 1.88 ± 0.26 cm, 1.15 ± 0.15, 0.64 ± 0.04 cm for length, width and thickness, respectively. Similarly, in group B the average size of the right ovary was 2.11± 0.05 cm, 1.10 ± 0.05 cm, 0.60 ± 0.02 cm while in left ovary 2.00 ± 0.02 cm, 1.30 ±0.11 cm. 0.66 ± 0.03 cm, for length, width, and thickness, respectively. It was concluded that the size of genital organs of Bakharwal goat increases with age during 12-18 months to 24-30 months of age.

Keywords: Bakharwal goat, biometry, body of uterus, ovary, age

Livestock accounts for 25.6 percent of agricultural value added and contributes 4.4 percent to GDP. Among livestock, goat contributes around 26.40% with 135.17 million numbers (19th Livestock census 2011). Goat is a source for fulfilling the daily domestic requirements in the form of milk and meat for human consumption. Though consumption of goat milk is low, the potential market is large, since such milk is good substitute for consumers allergic to cow milk (Zadow *et al*., 1983). To cope with increased demand of meat and milk, it is necessary to increase the goat population. For this purpose the breeds which are adapted to particular region should be studied for their traits like reproductive efficiency, maturity status etc. Bakharwal breed of goat is only reared in hilly tracts of Jammu and Kashmir by nomadic tribes (Gujar and Bakharwal) for milk, meat, fibers. For these nomadic tribes (Gujar and Bakharwal), this breed act as economic source and to maintain a good reproductive performance, a clear idea about the reproductive organs of this breed is necessary. The biometry of genital tracts of the female reveals the overall well being of the animals. The knowledge of the biometrical status of female genital tract is essential to perform artificial insemination, pregnancy diagnosis and dealing with the infertility problems (Kunbhar *et al*., 2003), and its treatment (Kumar *et al*., 2004). Modern technologies for increasing population such as In-vitro Fertilization (IVF), Artificial Insemination (AI) requires a good knowledge of female reproductive biometry. Control

of diseases is also very important to ensure good health which also demands normal measurements of different reproductive tracts.

But very little is known about the morphology of the reproductive tract of local Bakharwal goats of Jammu and Kashmir. Therefore, this study was aimed at to provide basic information regarding the anatomical structure of normal reproductive organs and to establish baseline data on the normal dimensions of different segments of the reproductive tract of the Bakharwal goat on the basis of different age group kept in Jammu and Kashmir.

MATERIALS AND METHODS

A total of 20 reproductive tracts of Bakharwal goat were collected from slaughter houses of Jammu during the period of September 2014 to December 2014. These reproductive tracts were divided into two groups (n = 10) A and B on the basis of age of slaughtered animals. Group A comprised reproductive tracts of those animals that were slaughtered between 12-18 months of age while group B consisted of reproductive tracts of those animals that were slaughtered at the age of 24-30 months. Age was confirmed by dentition method before slaughtering. Biometry of these reproductive tracts was done at Division of Veterinary Gynaecology and Obstetrics SKUAST-J R.S. Pura, Jammu by the help of vernier caliper and graduated tape as described by various authors (Lyngest, 1968; Das *et al*., 1982; Khan, 1987). Following parameters were adopted for biometrical examination of different organs; Cervix: length (internal os to external), width (in the middle); Body of uterus: length (cervix to horn), width (in the middle), wall thickness (in the middle); Horn of Uterus: length (uterus to the apex of horn), wall thickness (in the middle); Fallopian tube: length (from infundibulum to uterus junction). Ovary: length (from cranial to caudal surface), width (lateral and medial border) and thickness (from dorsal to ventral surface) (Fig.1, 2). The data was statistically analyzed by using paired t-test (Steel *et al*., 2006). The values were considered significant at ($P < 0.01$).

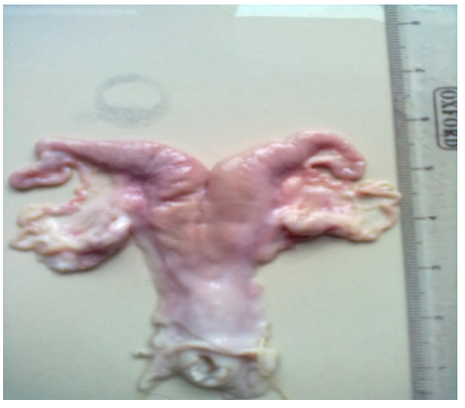

Figure 1. Female genitalia of Bakharwal goat from group A

Figure 2: Female genitalia of Bakharwal goat from group B

RESULTS AND DISCUSSION

The mean (±SD) values of length, width for cervix and length, width, thickness for body of uterus in group A and B are presented in Table 1. The mean length and width of cervix in group B animals was significantly ($P < 0.01$) higher as compared to group A. The average measures (length and width) for cervix in group A and B are in agreement with Singh *et al*. (1974), Das *et al*. (1982) and Mushtaq *et al*. (2012). However, these findings are not in agreement with Lyngset, (1968) which might be due to breed difference. The mean length, width and thickness of body of uterus were significantly ($P < 0.01$) higher in group B when compared with group A. The average size (length, width, thickness) of body of uterus in group A and in group B is in agreement with Das *et al*., (1982). The mean (± SD) values of length, width and thickness for right and left horns of uterus and ovaries in group A and B are presented in Table 2. The average measures (length, width, thickness) for right and left horn of uterus were significantly ($P < 0.01$) higher in group B in comparison with group A. The mean lengths of the right and left horn

of uterus in group A and B are lower than those reported by Singh *et al*. (1974) and Das *et al*. (1982). In both the groups, the mean values for width of right and left horn of uterus are higher than those given by Singh *et al*. (1974). However the values for thickness are in agreement with Das *et al*. (1982) but smaller than Singh *et al*. (1974). The variations in results of present study with other workers may be due to difference in breed of goat studied. In group B, the length of right and left fallopian tube was significantly ($P < 0.01$) higher when compared with group A. In both the groups, the mean lengths of right and left fallopian tube are in agreement with Singh *et al.* (1974) and Das *et al.* (1982). Compared with group A, the mean length, width of right and left ovary in group B was significantly higher ($P < 0.01$). In group A and B, the average lengths of right and left ovaries are smaller than those reported by Lyngest, (1968) and Das *et al.* (1982). Lyngset, (1968) observed higher values for width of ovaries than the present study, while Singh et al. (1974) and Das et al. (1982) reported lower values. The average values for thickness of right and left ovaries of group A and B were lower than reported by other workers (Singh et al., 1974; Das et al., 1982). These variations may be due to breed difference and variation in body size of animals. Based on the information obtained from this study, it was concluded that the size of genital organs of Bakharwal goat increases with age during 12-18 months to 24-30 months of age.

Table 1. Mean (± SD) values for biometry of cervix and body of uterus of Bakharwal goat belonging to group A&B

Organ	Parameter	Group-A	Group-B
Cervix	Length	4.31±0.02 cm	4.44 ± 0.03 cm
	Width	1.24 ± 0.03 cm	1.37 ± 0.01 cm
	Thickness	0.54±0.02	0.61± 0.02
Body of Uterus	Length	3.31± 0.03 cm	3.47 ±0.11 cm
	Width	1.53 ± 0.01cm	1.60 ± 0.03 cm
	Thickness	0.56 ± 0.02 cm	0.64 ± 0.01 cm.

Table 2. Mean (±SD) values for biometry of horn of uterus, fallopian tube and ovaries of Bakharwal goat belonging to group A&B

Organ	Para-meter	Group-A		Group-B	
		Right	Left	Right	Left
Horn of Uterus	Length	13.98 ± 0.39 cm	14.62 ± 0.30 cm	15.51 ± 0.19cm	15.6 ± 0.35 cm
	Width	1.83 ± 0.02 cm	1.02 ± 0.04 cm	1.90 ± 0.02cm	1.01 ± 0.04 cm
	Thickness	0.57 ± 0.03 cm	0.45 ± 0.03 cm	0.62 ± 0.26 cm	0.57 ± 0.02 cm
Fallopian Tube	Length	18.18 ± 0.25 cm	17.70 ± 0.28 cm	19.11 ± 0.10 cm	17.90 ± 0.20 cm
Ovaries	Length	0.66 ± 0.03 cm	1.88 ± 0.26 cm	2.11± 0.05 cm	2.00 ± 0.02 cm
	Width	1.00 ± 0.04 cm	1.15 ± 0.15cm	1.10 ± 0.05 cm	1.30 ±0.11 cm
	Thickness	0.66 ± 0.03 cm	0.64 ± 0.04 cm	0.60 ± 0.02 cm	0.66 ± 0.03 cm

REFERENCES

Akhtar, M. S., Farooq, A. S. M., Ayaz, M., Hussaina, M., Lashari, M. H. and Muhammad, S. A. 2012. Age Related Changes in Biometry of Genital Organs of Teddy Goat. *Int. J. Eng. Sci. Metallurgy,* **2(1)**: 382-384.

Das, K. K., Rajknower, C.K. and Borgohaia, B.N. 1982. Biometry of genital organs of local female goats of Assam. *Indian Vet. J*., **59**: 49-54.

Khan, M. Z. 1987. Biometrical studies on sex organs in Nili-Ravi. *Buffalo, Buffalo J*. **2**:161-167.

Kumar, S., Ahmed, F. A. and Bhadwal, M. S. 2004. Biometry of female genitalia of Murrah buffalo (Bubalus bubalis). *Indian J. Anim. Reprod*., **25**(2):143-145.

Kunbhar H.K., Samo M.U., Memon, A. and Solangi A.A. 2003. Biometrical studies of Reproductive organs of Thari cow. *Pak. J. Biol. Sci*. **6**(4):322-324.

19-Livestock census. 2012 All India report Ministry of Agriculture Department of Animal Husbandry,Dairying and Fisheries Krishi Bhawan, New Delhi.

Lyngset, O. 1968. Studies on reproduction in the goat. The normal genital organs of the non pregnant goat*, Acta Vet. Scand*. **9**: 208-222.

Singh, S. K., Bhattacharya, A.R. and Luktuke, S.N. 1974. Studies on biometry of genital organs of female goat. *Indian Vet. J*. **51**:81-85

Steel, R. G. D., Torrie, J.H. and Dickey, D.A. 2006. Principles and Procedures of Statistics. A biometrical approach. 3rd Ed., McGraw Hill Co. New York USA.

Zadow, J. G., Hardham, J.F., Kocak, H.R. and Mayes, J.J. 1983. The stability of goat's milk to UHT processing. *Australian J. Dairy Tech*. **38**: 20-23.