Histomorphological Studies on Uterus of Goat (*Capra hircus*) During Follicular and Luteal Phase

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ABSTRACT

The present study aimed to highlight the histomorphological characteristics of uterus of goat during estrous. A total number of ten uterus at follicular and luteal phase were used for present study. Histological study revealed that the uterus was lined with pseudostratified columnar to simple columnar type epithelium. The height of epithelium was significantly more during luteal phase. The propria submucosa was fibro-teric. The cellular components of submucosa comprised of fibroblasts, mesenchymal cells, neutrophils and lymphocytes. During follicular phase, the stroma was highly congested and oedematous. Uterine glands were simple coiled tubular type and distributed throughout the uterine mucosa except at the caruncles. The tunica muscularis was comprised of inner thick circular and outer thin longitudinal layers of smooth muscle fibres separated by a vascular layer.

Key words: Cervix, Follicular phase, Luteal phase, Uterus

The uterus of goat was bicornuate type and occupies the prime position because it is responsible for the sperm transport, luteolysis and control of cyclicity, provide an environment and nourish the zygote preceding implantation. It modifies itself to accept the conceptus and to provide protection throughout the pregnancy and also helps in expulsion of foetus and foetal placenta at the time of parturition. The lamina epithelialis of pre-pubertal goat was simple, high cuboidal and non-ciliated epithelium which transformed to pseudostratified columnar epithelium in adult goat (Singh and Prakash, 1990). Because of lack of reported literature in goat, the present study was undertaken.

MATERIALS AND METHODS

Reproductive tract of 10 adult and apparently healthy female goats were collected immediately after slaughter. By precise inspections of ovaries for the presence of corpus luteum or growing follicles, the luteal and follicular phases were specified and the samples were collected from utero-tubal junction, horn of uterus, body of uterus and cervix of each reproductive tract. Tissue samples were preserved in 10% neutral buffered formalin solution. After complete fixation of tissues, specimens were processed through routine paraffin embedding. Transverse sections were cut at 5-6 μ thickness and stained with Harris' haematoxylin and eosin for routine histomorphology, Crossman's trichome method for collagen fibres, periodic acid Schiff (PAS) for carbohydrates (pH 2.5), Alcian blue for mucosubstances (pH 2.5), Weigert's method for elastic fibres (Lona, 1968).

RESULTS AND DISCUSSION

The bicornuate uterus of the goat was consisted of parallel and curved uterine horns connected via the uterine body. It was divisible into two cornua, a corpus and a cervix uteri as per the description of Singh and Prakash (1990) in goat. The uterus was lined with pseudoestratified non-ciliated to simple columnar type (Fig. 1) as reported by Poyam et al. (2011) in goat. Because of lack of reported literature in goat, the present study was undertaken.

Key words: Cervix, Follicular phase, Luteal phase, Uterus

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Propria submucosa had large number of uterine glands which were lined with simple columnar epithelium. Glands near the epithelium were larger in diameter and less in number while the glands near the tunica muscularis had smaller diameter and were more in number (Fig. 2). The uterine glands were simple, coiled, tubular mucous type (Fig. 1). During luteal phase the average epithelial height, luminal diameter and gland diameter was found to be more than during the follicular phase. The myometrium comprised of inner circular and outer longitudinal muscle layers. Lamina vasculare was present in between these two layers. Stroma was congested and edematous during follicular phase. No significant differences were observed in uterine horn and body and also in two reproductive phases. Perimetrium was made up of loose connective tissue with a lining of mesothelial cells. It was comprised of collagen fibres with few reticular fibres. Smooth muscle fibres and blood vessels were also present. The lining epithelium of cervix uteri was pseudostratified columnar type with goblet cells. Contrary to this, Shalini et al. (2003) in goat reported tall columnar epithelium with goblet cells. The cervix uteri were thrown into numerous longitudinal folds which were tall in internal-os while thicker in the external-os. The primary folds had secondary branches which formed crypts. The epithelial height reduced in luteal phase as observed by Shalini et al. (2003) in goat. The lamina propria of the cervix uteri comprised of dense irregular fibrous connective tissue. Simple coiled tubular glands arose due to invaginations of the epithelium as also observed by Salih and Abass (2014) in goat. Tunica serosa was comprised of loose connective tissue lined by mesothelial lining having blood vessels and lymphatics as reported by Singh and Prakash (1983), Shalini et al. (2003) in goat. Histochemical study revealed that tunica mucosa was weakly positive for PAS, Alcian blue (pH 2.5). Endometrial glands and endothelium of blood vessels were moderately positive for acidic and neutral mucopolysaccharides. Lamina propria was weakly positive while cervical glands were strongly positive and PAS positive material was located in the supranuclear zone (Fig. 3).

REFERENCES