Age Related Histological and Histochemical Studies on the Tubuli Recti, Rete Testes and Mediastinum Testis in Assam Goat (Capra hircus)

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SUMMARY

A total of eighteen male Assam goats were used in this study to record the histology and histochemistry of the tubuli recti, rete testis and mediastinum testis. The sections were cut and stained with was located at the centre of the testis in the goats of all the age groups. The rete channels had a distinct tubular lumen from birth. The reticular fibres formed network in the mediastinum testis and proceeded towards the rete testis. The basement membrane of tubuli recti and rete testis showed moderate to strong reaction for basic proteins in all the age groups, but showed moderate PAS reaction.

Key words: Histology, Histochemistry, Post natal development, Rete testes, Tubuli recti

A study was conducted on the post natal development of male gonads in Assam goat kids (Baishya, 1984), but it was limited to only 3 months of age. So keeping in view the paucity of literature, the present study was designed to elucidate the detailed age related histological and histochemical features on the tubuli recti, rete testes and mediastinum testis in Assam goat from birth to ten months of age.

A total of 18 male Assam goats were divided into six age groups viz. group-I (0-day), group-II (2 months), group-III (4 months), group-IV (6 months), group-V (8 months) and group-VI (10 months) consisting of three animals in each group.

Tissues were collected from upper, middle and lower parts of the testis and fixed in Bouin’s solution. All the tissues were processed by alcohol-xylene method using cedar wood oil (Luna, 1968). Sections were cut at 5µm thickness and stained with haematoxylin and eosin, Masson’s trichrome stain for collagen, Weigert’s method for elastic fibres, Gomori’s method for reticular fibres, Berg’s method for spermatozoa (Luna, 1968), Lilley’s allochrome method for basement membrane (Humason, 1967) and Bielschowsky’s method for nerve fibres. For histochemical studies, the sections were stained by mercuric bromphenol blue method for protein (Humason, 1967), McManus’ method for glycogen, Alcian blue method at pH 1.0 for acid mucopolysaccharides and Fuelgen reaction for nucleic acid.

The tubuli recti (Fig. 1) were the less straight portions of the seminiferous tubules which had distinct lumina at the time of birth. The lining epithelium of the tubules was low cuboidal to high cuboidal especially at the junction of the rete testis. The septula testis converged with the mediastinum testis. The position of the mediastinum testis in the testis varied widely in different species of vertebrates being axial in domestic animals except in equines. In the present work, the mediastinum testis was found to be located at the centre of the testis in the goats of all the age groups as also reported in rams (Schahidi and Smidt, 1980) and goat (Baishya, 1984). The mediastinum testis contained the tubules of the rete testis in the form of wide spaces or channels. These were seen from day-old kids (group-I) which contained mesenchymal tissue. The rete channels had a distinct tubular lumen from birth as also reported earlier in goats (Baishya, 1984). The rete testis was lined by simple cuboidal or columnar epithelium (Fig. 2) in the kids from 2 months of age (group-II). The prominent basal lamina was and composed of reticular fibres at birth (group-I), that transformed to collagenous fibres as the age of the kids advanced as reported by Orsi et al. (1984) in goats. The reticular fibres formed network in the mediastinum testis and proceeded towards the rete testis. The tubuli recti and the rete testis were lined by simple cuboidal cells, which in the former resembled Sertoli cells as also described in buffalo (Chandra Pal and Bharadwaj, 1983), in goat...

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(Dhingra, 1980 and Kakade and Singh, 1990). Elastic fibres could not be seen in the mediastinum testis in the animals of the first age group. However, these could be well demonstrated in the kids of 2 month of age (group-II) onwards. Collagen fibres increased with age, being the maximum in 10 months old goats (group-VI).

The basement membrane of tubuli recti and rete testis showed moderate to strong reaction to basic proteins in all the age groups. The cytoplasm and nuclei of the lining epithelium revealed weak reaction to basic proteins at various ages in the study which might be due to their less activity as compared to the spermatogenic cells of the seminiferous epithelium.

The basement membranes of the tubuli recti and rete testis showed moderate PAS reaction in day-old kids (group-I), thereafter the reaction became mild in older goats (Chandra Pal and Bharadwaj, 1983). The lining epithelium showed weakly reactive glycogen granules in the cytoplasm in day-old, 2 and 4 months old kids and moderately reactive in 6-10 months old goats. The ovoid or spherical nuclei of the lining cells of the tubuli recti and rete testis revealed mild to moderate Fuelgen reaction in all the age groups. However, the intensity of reaction was more in the nuclei of the lining cells of the rete testis than those of tubuli recti in 4 to 6 months old goats.

REFERENCES


