Histomorphology of Parotid Salivary Gland in Sheep (Ovis aries)

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ABSTRACT

Histomorphology of parotid salivary gland was conducted in different prenatal age groups. In all the age groups, the gland was surrounded by a connective tissue capsule that radiated to form septae which divided the glandular parenchyma into many lobes and lobules. The connective tissue had dense collagen, reticular and few elastic fibres alongwith large blood vessels and nerves. The parotid salivary gland was characterised by purely serous acini having 4 to 6 pyramidal cells with distinct lumen.

Key words: Histomorphology, Parotid salivary gland, Sheep

The triangular shaped parotid salivary gland is largest in sheep and goat and its duct opens at the papilla salivalis opposite to the upper third cheek tooth. The structure of dorsal buccal gland has been studied in sheep (Singh et al., 2012). Considering the multifarious role of saliva in ruminants and scanty literature on the histomorphology, the present research was undertaken on parotid salivary gland in postnatal age groups of sheep.

MATERIALS AND METHODS

Tissue pieces from six animals each in age groups viz., day old, neonatal (2 days-2 months), young (3-9 months) and adult (10 months-2 years) were collected from Corporation Slaughter House, Perambur, Chennai. The tissues were fixed in 10 per cent neutral buffered formalin, Bouin’s fluid, Zenker’s fluid, Carnoy’s formal alcohol and formal calcium for routine processing. The sections were stained with hematoxylin and eosin stain, Masson’s trichrome for collagen, Verhoeff’s stain for elastic fibres, Gomori’s method for reticulum, Bielchowsky’s method for axis cylinder and dendrites and PTAH method for muscle and collagen (Luna, 1968).

RESULTS AND DISCUSSION

Parotid salivary gland in sheep was consisted of compound tubules being surrounded by collagenous connective tissue capsule and radiating septae that separated the lobes and lobules of the parenchyma (Fig. 1). The connective tissue stroma was comprised of dense collagen, reticular and few elastic fibres as reported in goat (Kishore et al., 1998). Large amount of fat globules were noticed in the interlobular connective tissue septae in young and adult age groups. The parenchyma of sheep parotid salivary gland was consisted of tubuloacinar cells and duct system comprising of intercalated, striated, large intralobular, lobar and excretory ducts. The terminal tubuloacinar units were more numerous when compared to the ducts.

The parotid salivary gland of sheep was characterized by purely serous acini. Each acinus was comprised of 4-6 pyramidal cells enclosing a distinct lumen (Figs. 1, 2). The pyramidal cells contained basal spherical nuclei. The acidophilic cytoplasm presented zymogen granules towards the apical portion of the cell. The acini were surrounded by stellate shaped myoepithelial cells (Fig. 2), connective tissue and ducts of various orders as noticed earlier in sheep and goat (Elewa et al., 2010). The tubuloacinar cells with narrow lumen opened into the intercalated duct lined by cuboidal epithelium. The cytoplasm of the duct cells contained less granules as reported by Kishore et al. (1998) in goat and Elewa et al. (2010) in sheep and goat. The intercalated duct was lined by spindle shaped myoepithelial cells with few processes. Presence of myoepithelial cells surrounding the intercalated duct was considered as a distinguished feature to identify these ducts as opined by Elewa et al. (2010).
The intercalated ducts were connected to the striated ducts which were lined by columnar cells and the termination was gradual but not abrupt (Fig. 2). However, Chaudhry et al. (1987) contradicted by stating that an intermediary proximal segment of intercalated duct was connected to the striated duct in human parotid salivary gland. The striated duct was lined by low columnar epithelium with basal striations due to the presence of juxtaposed mitochondria in the basal part of the cell. The striated ducts in sheep were large intralobular (Fig. 3) and distinguished from the interlobular larger excretory ducts as reported earlier in sheep (Kishore et al., 1998). However Pal et al. (1973) reported that the striated duct was absent in buffalo.

The larger ducts were situated in the stromal tissue between the lobes which were lined by pseudostratified columnar epithelium. The goblet cells intermingled between the dark and light cells of the lining epithelium and basal cells were found underlying between them. The main excretory duct was lined by stratified squamous epithelium. The mast cells were observed in the connective tissue stroma in between the lobes and lobules and close to the blood vessels and large ducts in the parotid salivary gland of all the age groups. The mast cells showed distinct metachromatic granules by toluidine blue stain as reported in goat (Kishore et al., 1998). The myoepithelial cells were observed around the acini and the intercalated duct.

The myoepithelial cells surrounding the acini were stellate shaped with numerous processes (Fig. 2) but those around the intercalated ducts were spindle shaped with fewer processes.

REFERENCES