HISTOCHEMISTRY OF DORSAL LACRIMAL GLAND IN CAMEL (Camelus dromedarius)

A.A. Mohammadpour
Department of Basic Sciences, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, P.O. Box 91775-1793, Iran

ABSTRACT

Lacrimal glands of mammals synthesise and secrete an aqueous solution in which different chemical substances are present i.e. protein and mucosubstances. The objective of current study was to determine of mucopolysachharides of camel lacrimal glands. Ten pairs of dorsal lacrimal glands, from ten adult camels were examined for normal histological and histochemical findings at the Mashhad abattoir, northeast of Iran. In camel, dorsal lacrimal gland was elongated with irregular outline and located in dorsolateral part of the eyeball. Histological studies showed that, dorsal lacrimal gland consisted of tubuloalveolar serous units separated by dense sheets of connective tissue into numerous small and large lobules. Alcian blue and Periodic acid shiff staining were used for histochemical studies. Mucosubstance histochemistry revealed secretory units contain acidic and neutral glycoproteins with different staining pattern.

Key words: Camel, dorsal lacrimal gland, histochemistry

The lacrimal system or lacrimal apparatus consists of two components, a secretory component and excretory component. The secretory component produces the pre-ocular tear film, a trilaminar structure 7 micrometre thick (Carrington et al, 1987) which consist of lipid produced by the meibomian (tarsal) glands; aqueous, produced by the dorsal lacrimal and nictitans glands; and mucin, which is produced by the conjunctival goblet cells (Barnetr and Crispin, 1998). The anatomy of the dromedary lacrimal apparatus has not previously been clearly established, and the few references available in the literature are of rather general kind. Awkati and Al-Bagdadi (1971) concluded that the lacrimal gland in the camel is comparatively less developed than that of the horse or ox. Abdalla et al (1970) and Saber and Makady (1987) deny the existence of puncta lacrimalia in the camel. Even though morphology of the lacrimal glands is documented, histochemistry of camel dorsal lacrimal gland has not been studied. The aim of this study is to describe normal histological and histochemical findings of dorsal lacrimal gland in one humped camel.

Materials and Methods

Twenty dorsal lacrimal glands (ten right and ten left) from 10 camels were used in this study. The glands were removed immediately after slaughter from apparently healthy adult animals. The samples were collected from Mashhad slaughter house, Iran.

The glands were first exposed by careful dissection of the skin and the periorbita at the dorsolateral part of the eyeball and then removed. For histological studied, the glands were stained by haematoxylin and eosin staining and then examined to determine chemical content of the secretion by applying histochemical techniques (periodic acid shiff and alcian blue).

Results and Discussion

In camel, morphology and position of dorsal lacrimal gland was similar to other ruminant. It was flattened and elongated with indented borders. The lacrimal gland was situated within a special division of periorbita between caudodorsal part of the eyeball and the supraorbital process of the frontal bone and the frontal process of the zygomatic bone (Mohammadpour, 2008). In one humped camel, dorsal lacrimal gland is smaller than bovine. In cattle, there is an accessory lobe in dorsal lacrimal gland (Pinard et al, 2003).

Histologically, the camel dorsal lacrimal gland was compound tubuloalveolar with serous secretions. The gland was composed of distinctly small and large lobule that was separated by connective tissue. Three shapes of secretory units; acinus, tubule and alveoli separated from each other within a lobule. The most of secretory units of gland, consisted of tubular and alveolar units. Acini units were less than