

HISTOLOGICAL STUDIES OF THE GLANDS AROUND THE MOUTH AND THE ANUS OF DOG AND CAT

by

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Summary

The distribution and morphology of the glands around the mouth and anus in dog and cat have been described.

1) The sebaceous and sweat glands were numerous and well developed for both dog and cat in the examined areas.

2) Gll. sinus paranasalis in the dog were found only to consist of glands with nearly the same morphology as ordinary sweat glands.

3) Gl. anales and Gll. circumanales were only seen in the dog.

บทคัดย่อ

จากการศึกษาชนิด, รูปร่างของ gland รอบปากและทวารหนักในสุนัขและแมว พบว่า

sebaceous และ sweat gland พบเป็นจำนวนมาก และเจริญได้ดีในสุนัขและแมว

paraanal sinus ในสุนัขมีลักษณะเช่นเดียวกับ sweat gland ทั่วๆ ไป

ส่วน anal และ circumanal gland พบในสุนัขเท่านั้น

Introduction

This paper is concerned with the normal histology of the sweat and sebaceous glands of dog and cat and their modifications in the perianal skin. Ellenberger (1991) and Sisson & Grossman (1953) mentioned that the sebaceous glands are well developed in the upper and lower lip and in the anal region of the dog. Strickland & Calhoun (1963) found the large sebaceous glands on the lips and on the chin of the cat. Creed (1958) has observed the same in the

lower jaw, lips and in the anal region of the cat. Speed (1941) and Trautmann & Fiebiger (1957) stated that the sweat glands of the dog are large, numerous and well developed on the upper and lower lips. Webb and Calhoun (1954) classified the sweat glands of the dog as coiled and non-coiled, and noticed that the lips have only the coiled type.

Concerning the modified skin glands in the perianal region, Nielsen (1953) described the circumanal glands as solid lobules of cells arranged in cords resembling closely packed liver cells, and Park (cited by Nielsen, 1953) concluded that the deep solid lobules of the circumanal glands are abortive attempts to form sebaceous glands.

In view of the scanty information on the skin glands on the lips and in the anal region, an attempt to examine these two areas has been undertaken.

Materials and Methods

The observations reported in this paper were made from nine dogs and seven cats of various ages and breeds and of both sexes. They were collected immediately after death from the ambulatory clinic of the Royal Veterinary and Agricultural university.

Histological sections were made from the dorsal, lateral, and ventral parts of the skin around the mouth and the anus. The tissues were fixed in Bouin, Zenker, Helly, Susa and buffered 10% formalin, embedded in paraffin, and sectioned at 6-10 μ m. The tissues were stained with haemalum-eosin, Van Gieson stain and PAS-haemalum-orange G.

The Nomina Anatomica Veterinaria terminology (1968) has been used.

Observations

Mouth :

Sweat and sebaceous glands were very well developed in the first 2-3 mm. from the hairless part of the lip. This was very prominent in the cat (Fig. 1). The sweat glands of the dog were coiled tubular glands with cuboidal epithelial cells (Fig. 2), having elongated nuclei placed in the middle of the cells. The smooth muscle fibers (myoepithelial cells) were found between the basement membrane and the secretory cells.

The sweat glands of the cat were of the same type, but the secretory cells were columnar with the nuclei placed in the base of the cells (Fig. 3)

The ducts of the sweat glands had a low cuboidal epithelium in both dog and cat.

The sebaceous glands were simple alveolar holocrine glands and of the same morphological structure as found in the skin of other domestic animals.

Anus :

Gll. sinus paranalisis were found in the wall of sinus paranalisis (anal sac). The glands of the dog were placed in the loose connective tissues and looked like the sweat glands in the skin area, but the epithelial cells were high columnar. Many of the tubules were dilated, having cuboidal epithelium and were filled with secretions. Abundance of myoepithelial cells were found (Fig. 4). Among these glands, a few glands with the same structure as the circumanal glands were seen.

Near the opening of the duct of the anal sac, there were some mixed glands with lobules of both circumanal and sebaceous glands. A few circumanal glands were seen along the duct of the anal sac.

Gll. anales (anal glands) were found between the circular and longitudinal layers of muscularis mucosae of the rectum. Some of them were also found in between the muscle fibers of muscles sphinctor ani internus. They looked like the sweat glands, but the ducts were often more dilated and the secretion was PAS-positive (Fig. 5)

Gll. circumanales (circumanal glands) could be seen along the whole anal canal, a few in the beginning near the rectum and abundance of them in zona cutanea (Fig. 6). The sweat glands and sebaceous glands of the dog and cat were seen in the cutaneous zone and were especially well developed together with the hairs in the beginning of the zone.

The morphological structure of these glands were the same as those of the mouth. Gll. anales and Gll. circumanales have not been observed in the cat.

Discussion

The distribution and size of the sweat glands in the upper and lower lips of dog and cat are in agreement with Backmund (1904), Speed (1941), Chodakowski (1871), Webb & Calhoun (1954).

According to Chodakowski (1871), the epithelial cells of the sweat glands of cat are low cuboidal, and there are no myoepithelial cells, which is in agreement with the present findings. The findings of large and numerous sebaceous glands in dog and cat in the present study are in agreement with Ellenberger (1911), Sisson & Grossman (1953), Webb & Calhoun (1954), and Creed (1958)

The "sweat glands" of Gll. sinus paranalisis in the dog are difficult to distinguish from the ordinary cutaneous sweat glands, but many of the tubules in the Gll. sinus paranalisis seem to have higher epithelial cells and there is an abundance of myoepithelial cells. This has not been described in the available literature. The difference in the morphology of the epithelial cells might be due to their functional stages.

Ellenberger (1911) and Nielsen (1953) found sebaceous glands below the sweat glands and especially around the neck of sinus analis. These glands have not been observed at these places but only around the opening of the duct of sinus analis. Gll. anales and Gll. circumanales have only been found in the dog, which is in agreement with many authors. e.g. Trautmann & Fiebiger (1957) and Sisson & Grossman (1953).

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Fig. 1. Sweat glands (Sw) and sebaceous glands (Sb) from the lip of the cat. Van Gieson's stain. 125 X.



Fig. 2. Sweat glands from the lip of the dog; notice cuboidal epithelial cells. Van Gieson's stain. 125 X.

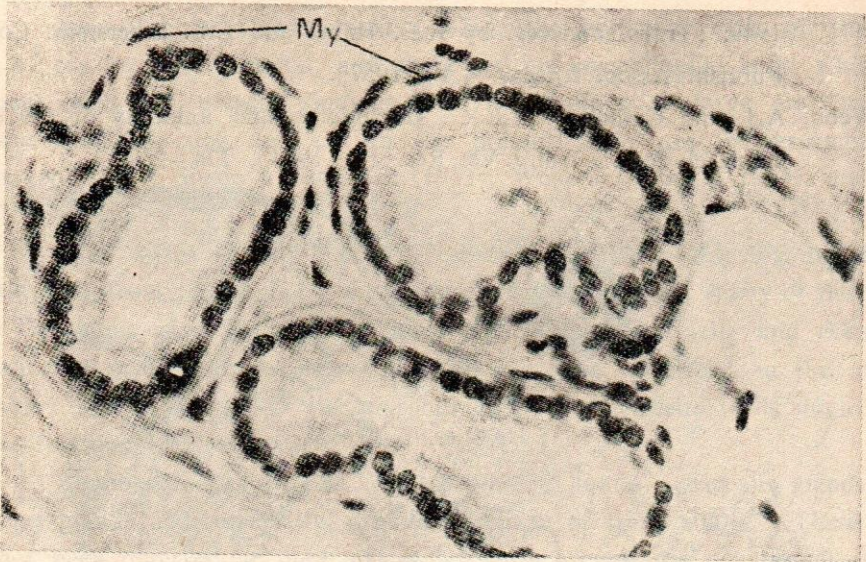


Fig. 3. Photomicrograph from the lip of the cat showing sweat glands with columnar epithelial cells and myoepithelial cells (My). H & E stain. 500 X.

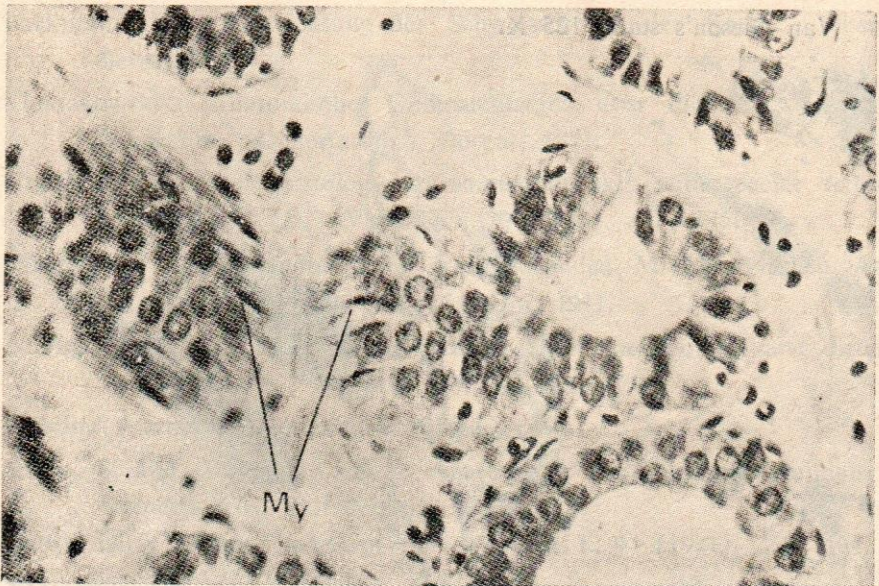


Fig. 4. Photomicrograph from the anal sac of the dog showing paranal glands with columnar epithelial cells and abundance of myoepithelial cells (My). H & E stain. 500 X.

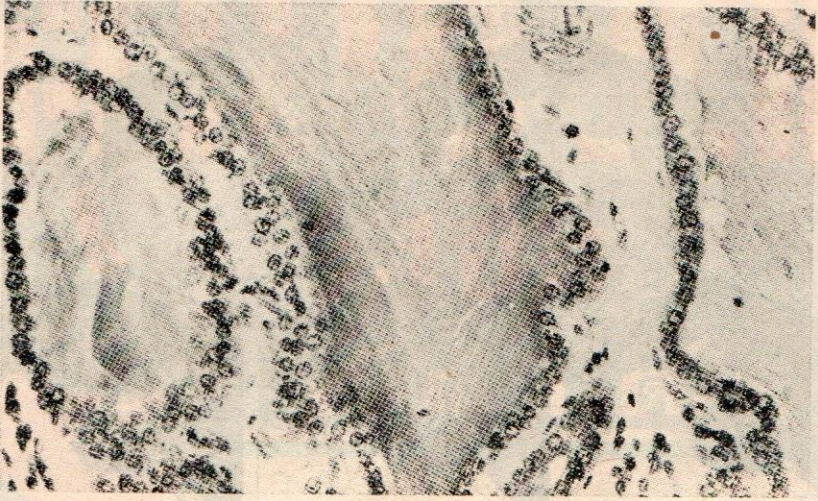


Fig. 5. Photomicrograph of the anal glands of dog showing the ducts filled with PAS positive secretions. PAS-haemalum-orange G. 300 X.

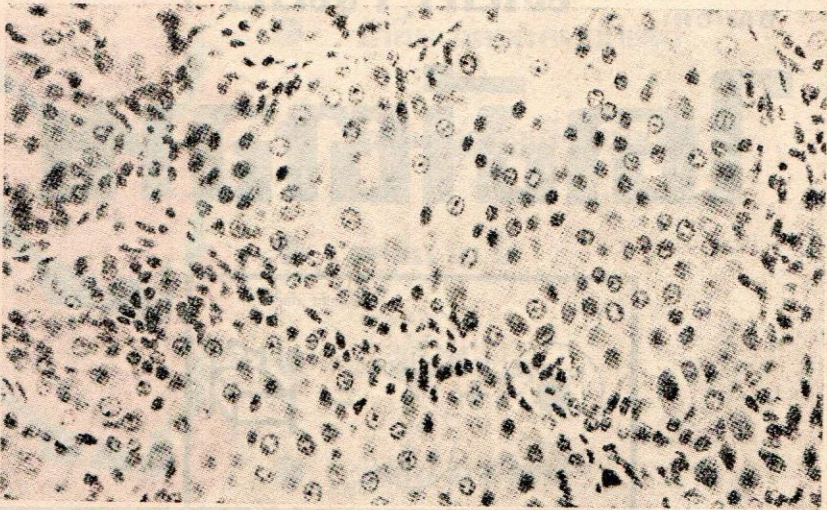


Fig. 6. Circumanal glands of dog. Van Gieson's stain. 300 X.