RESEARCH ARTICLE

Incidence and Histopathology of Sebaceous Gland Tumors in Dogs

MP Patel[1], DJ Ghodasara[2], PB Jani[3], BP Joshi[4], CJ Dave[5]

Abstract

The study was aimed to know the prevalence of sebaceous gland tumor in canine and its classification based on histopathology. A total of 569 biopsy samples of canines suspected for neoplastic growth received by Department of Veterinary Pathology from TVCC departments of College of Veterinary Science and A.H. Anand over last 16 years (2001 to 2017) were analyzed. The biopsy samples were subjected to histopathological examinations by using H & E staining. Out of 569 biopsy samples, sebaceous gland growth was observed in 23 (4.04%) cases. The highest incidence (39.13%) was recorded for 9 to 12 years of age. The incidence of sebaceous gland tumor was observed in all the breeds; however, the Labrador retriever was the most affected breed followed by Pomeranian, non-descript and others. The frequent site for sebaceous gland tumor was eyelid. Out of 23 sebaceous gland tumors, one hyperplasia, 19 adenomas, two , and one adenocarcinoma were observed, suggesting that sebaceous gland adenoma was the most common type of sebaceous gland tumors in canine.

Keywords: Dog, Histopathology, Incidence, Sebaceous gland tumor.

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Introduction

Cutaneous neoplasms are frequently recorded in dogs worldwide (Ashraf and Mohamed, 2016). Sebaceous glands are microscopic glands found below the skin. It secretes an oily substance called sebum, which lubricates the skin and hair of animals (Amaravathi *et al*., 2017). In dogs, sebaceous gland tumors represent the third most common type of skin tumors, accounting for 21.35% of all cutaneous epithelial tumors (Scott and Anderson, 1990; Vail and Withrow, 2007) and may be observed anywhere in the skin of dogs. The head, abdomen, and thorax are the primary sites for sebaceous gland tumor. Moreover, the eyelid is also a common site for these tumors (Pullet and Stannard, 1990; Vail and Withrow, 2007). This study was aimed to know the prevalence of sebaceous gland tumor and its classification based on histopathology in pet canines of Gujarat.

Materials and methods

The incidence of sebaceous gland tumors in dogs was studied on the basis of a total of 569 biopsy samples of dogs received at the Department of Veterinary Pathology from TVCC of College of Veterinary Science and Animal Husbandry, AAU, Anand for last 16 years (2001 to 2017) for diagnosis. The sebaceous gland tumors in dogs were recorded and analyzed on variables like age, breed, and type of tumor. The biopsy samples were fixed in 10% formalin, processed routinely for section cutting (3–4 micron) following paraffin embedding and were stained with hematoxylin and eosin. The stained slides were examined under high power and oil emulsion microscopy. The observations were recorded and photographed.

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Results and discussion

Out of 569 biopsy samples examined, the sebaceous gland tumors were observed in 23 (4.04%) dogs. The highest incidence was recorded for 9 to 12 years of age group (39.13%), followed by 5–8 years and 1–4 years of age (30.43% each). The breed-wise incidence of sebaceous gland tumors was found to be highest in Labrador retriever (34.78%) followed by Pomeranian and non-descript dogs (13.04% each), Bull mastiff (8.69%) and others (4.34%). The frequent site for the tumor was found to be eyelid. Sabattini *et al.* (2015) reported the median age as 12 years (range 7-12 years) at the time of diagnosis of sebaceous gland tumor. In their study, the most common pure breeds of dog were Cocker spaniel (n = 4), Labrador retriever (n = 3) and Siberian husky (n = 3), and the tumor location was the head (36.7%), eyelids (26.7%), lips (16.7%), trunk (13.3%) and extremities (6.6%).

Sebaceous gland tumors were classified based on histopathological lesions into four types. Out of 23

sebaceous gland biopsy samples, sebaceous gland adenoma was the most common type of tumor observed in 19 (82.60%) cases, followed by two (8.69%) cases of sebaceous gland epithelioma and one (4.34%) case each of sebaceous gland adenocarcinoma and sebaceous gland hyperplasia. In earlier studies also, the incidence rate of the sebaceous gland tumor was reported as 6.88% of all the cutaneous tumor (Pakhrin *et al.,* 2007) and sebaceous gland adenoma was one of the most common cutaneous neoplasms (Mukaratirwa *et al.,* 2005).

Microscopically, sebaceous gland hyperplasia was characterized by greatly enlarged sebaceous gland, composed of numerous lobules (Fig. 1). Most lobules revealed fully mature sebaceous cells and were characterized by large polyhedral shaped, abundant, clear, vacuolated cytoplasm and uniform round nuclei (Fig. 2). Histopathological examination of sebaceous gland adenoma revealed lobules of irregular size and shape with the presence of undifferentiated generative cells and mature sebaceous cells. Undifferentiated generative neoplastic cells were mostly present at the periphery of the lobules (Fig. 3). Mature sebaceous cells were characterized by large polyhedral shaped, abundant, clear, vacuolated cytoplasm and uniform round nuclei (Fig. 4). Foci of squamous metaplasia with keratinization (Fig. 5) and cyst formation were also present (Fig. 6). Zyigit *et al.* (2005) noted similar characteristics of sebaceous gland adenomas and the centers of some lobules were found cystic and filled with pinkish, necrotic amorphous material.

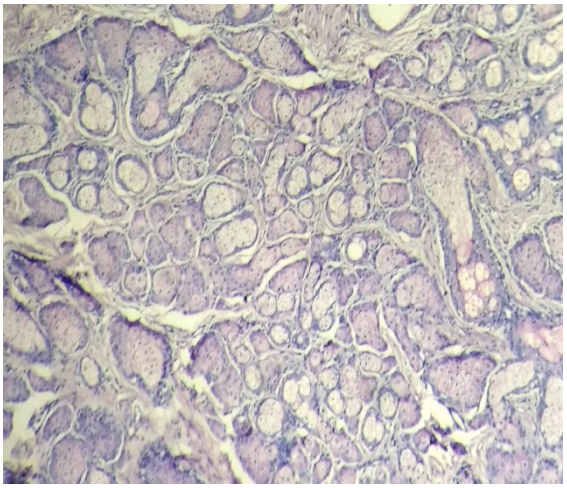

Fig. 1: Sebaceous gland hyperplasia, Enlarged sebaceous gland (H and E stain 120X)

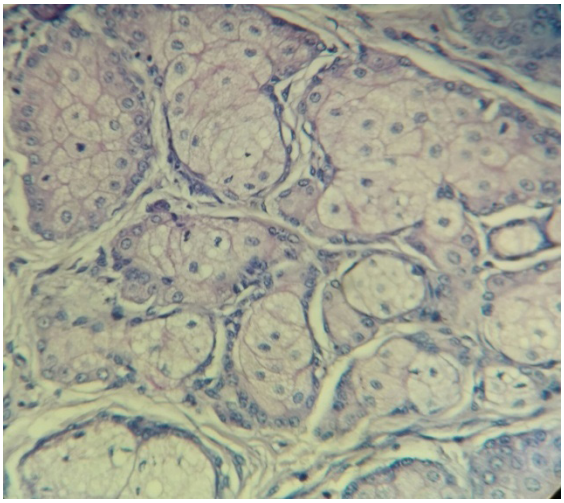

Fig. 2: Sebaceous gland hyperplasia, fully matured sebaceous cells with vacuolate cytoplasm (H and E stain 480X)

The sebaceous gland epithelioma on histopathological examination revealed irregular shaped cell masses. The tumoral mass was composed mainly of solid growth of irregular islands or trabeculae of basaloid reserve cells with scattered aggregates of mature sebocytes (Fig. 7). The basaloid reserve cells had little eosinophilic cytoplasm and ovoid, hyperchromatic nuclei with small nucleoli. The reserve cells did not show pleomorphism or invasiveness, but mitoses were common. There were varying numbers of transitional cells with the presence of fat vacuolization in their cytoplasm and cyst formation due to the disintegration of cells (Fig. 8). These findings were similar to earlier reports of Saberi *et al.* (2012) and Go *et al.* (2017).

Sebaceous gland adenocarcinoma was characterized by irregular lobular formation with a variable degree of sebaceous differentiation. The lobules were separated by connective tissue proliferation (Fig. 9). Some neoplastic cells revealed light pinkish foamy or vacuolated cytoplasm, and large vesicular nuclei with indistinct boundaries. Anisocytosis, anisokaryosis and mitotic figure were evident (Fig.10). The lumen of some of the lobules contained homogenous pink stained secretions, neutrophils, and mononuclear cell infiltration. The glandular lining cells were hyperchromatic and mitotic figures were evident. Suvaneeth *et al.* (2015) also reported comparable findings in canine biopsies.

This retrospective study, in general, showed that sebaceous gland adenoma was the most common type of sebaceous gland tumor in canine.

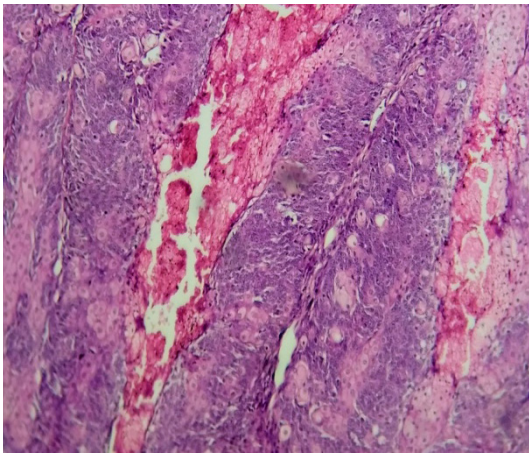

Fig. 3: Sebaceous gland adenoma, generative cells (thin arrow) and mature sebaceous cells (thick arrow) (H and E stain 120X).

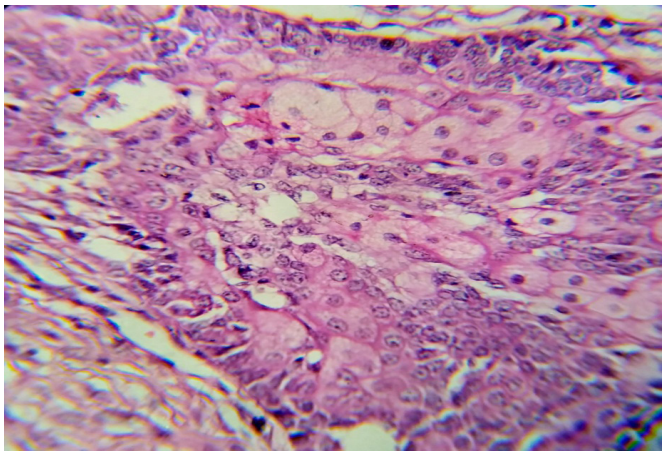

Fig. 4: Sebaceous gland adenoma, mature sebaceous cells with large polyhedral shape, vacuolated cytoplasm and uniform nuclei (H and E stain 480X)

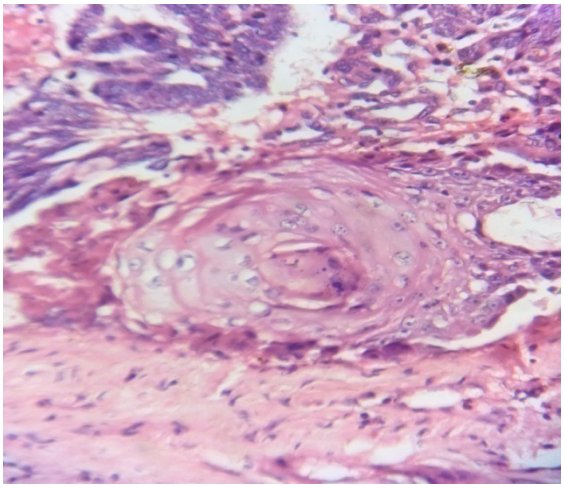

Fig. 5: Sebaceous gland adenoma, squamous metaplasia (H and E stain 480X)

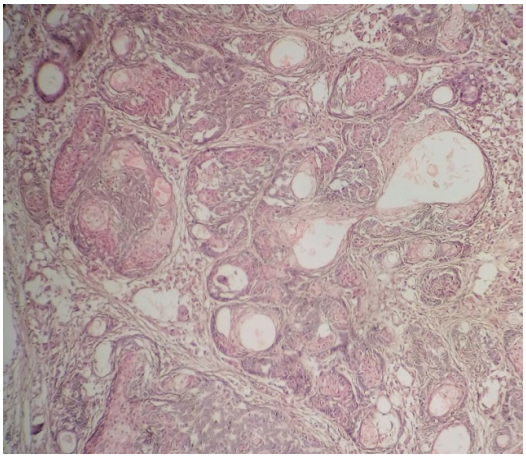

Fig. 6: Sebaceous gland adenoma, irregular lobules of several layer of germinal sebocytes and cyst formation (arrow) (H and E stain 120X)

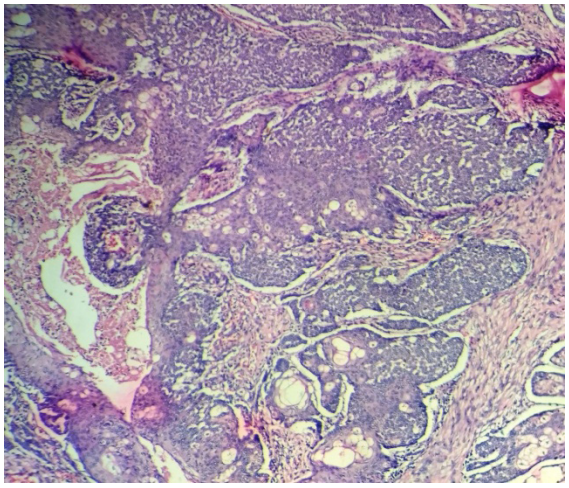

Fig.7: Sebaceous gland epithelioma, tumoral mass composed of a majority of solid growth of irregular islands or trabeculae of basaloid reserve cells with scattered aggregates of mature sebocytes (H and E stain 120X)

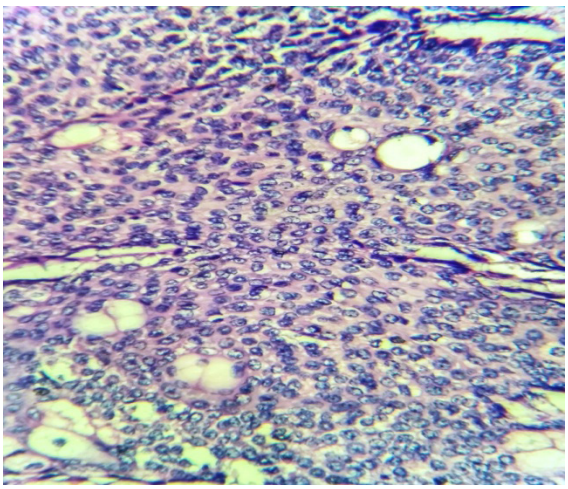

Fig. 8: Sebaceous gland epithelioma, basaloid reserve cells show little eosinophilic cytoplasm and ovoid, hyperchromatic nuclei with small nucleoli. Transitional cells with presence of fat vacuolization in their cytoplasm and cyst formation due to disintegration of cells (H and E stain 480X)

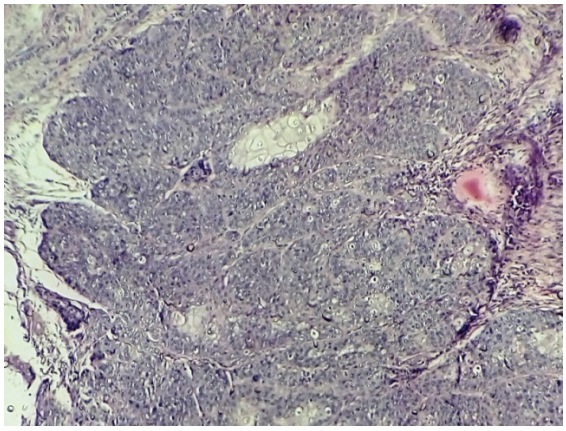

Fig. 9: Sebaceous gland adenocarcinoma, neoplasm showing irregular lobular formation with variable degree of sebaceous differentiation and lobules separated by connective tissue proliferation (H and E stain 120X)

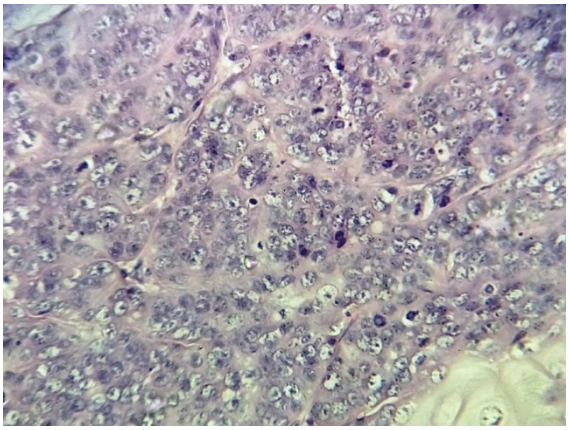

Fig. 10: Sebaceous gland adenocarcinoma, neoplastic cells show light pinkish foamy or vacuolated cytoplasm, and large vesicular nuclei with indistinct boundaries. Anisocytosis, anisokaryosis and mitotic figures are also present (H and E 480X)

Acknowledgment

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