PATHOLOGY OF CERUMINOUS GLAND ADENOMA IN A DOBERMAN DOG

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Ceruminous gland adenoma of a 10-year-old male neutered Doberman dog is described in this study. Small nodular growth was noticed on clinical examination which was partially obstructing the lumen of the external ear canal. The tumorous mass was surgically excised and processed for histopathological examination. Microscopically, the tumorous mass revealed cystic alterations and glandular epithelial growth with a polypoid pattern. The glandular cuboidal cells lining the cyst were either pile up or attenuated and supported by a stroma. The glandular tubule lumen was filled with pale eosinophilic material along with a, degenerated neutrophils, necrotic debris, few sloughed-off epithelial cells and brown pigment laden macrophages.
Keywords: Adenoma, Ceruminous gland, Dog.

Canine ear tumors are rare, accounting for only 2-6% of all canine tumors. In comparison to the middle and internal ear, the auricular concha and external ear canal are frequently affected (Kang *et al*., 2019). Ear canal tumors may arise from the ceruminous or sebaceous glands, squamous epithelium of covering epidermis and mesenchymal tissues of the ear canal (Sula, 2012). The ceruminous glands, modified apocrine tubular sweat glands that are encased in myoepithelial cells, are found in the external auditory meatus. It secretes watery fluid devoid of lipids which drains into ducts along with the sebaceous gland ducts, into the hair sacs of the fine hairs in the ear canal. Ceruminous gland tumors can be classified histopathologically as benign and malignant and share similarities with apocrine sweat gland tumors found elsewhere in the skin (Jubb *et al*., 2005). All dog breeds are susceptible to these tumors, but Cocker spaniels and Shihtzu have a higher risk (Jubb *et al*., 2005). The majority of tumours are malignant in cats while the majority are benign in dogs (Meuten, 2002).

Case history and Observations

A 10-year old neutered male Doberman dog was presented to the Institute Hospital, Akola with the history of a nodular growth of approximately 1 cm diameter in the left ear canal, partially obstructing the lumen of the external ear canal. The nodule was surgically excised and the whole tissue was collected for histopathological examination. After gross examination, nodular tissue sample was fixed in 10% neutral buffered formalin. The formalin fixed tissue was processed for routine histopathological technique, embedded in paraffin and sections of 4-6 micron thickness were cut and stained with routine Haematoxylin and Eosin stain

Results and Discussion

Clinical examination of the affected animal revealed solitary nodular mass in the left ear canal projecting from the pinna and partially occluding canal. The cut sections were smooth, firm and brownish in colour. The tumorous mass was non-ulcerated and lobulated with few cystic changes. Histopathologically, revealed intact skin with unencapsulated glandular growth with cystic changes and polypoid pattern. Moderate fibrovascular stroma supported the cuboidal cells lining of cystic glands (Fig. 1). Occasional neoplastic cells pile up to form papillary projections, supported by a moderate fibrovascular stroma (Fig. 2). The neoplastic cells had indistinct cell borders, moderately eosinophilic and vacuolated

cytoplasm and round to oval nuclei with distinct nucleolus (Fig. 3). Abundant eosinophilic cytoplasm, arranged in a columnar to cuboidal shape, was seen in the luminal cells. Few cells had golden-yellow-brown intracytoplasmic pigments. The overlying epidermis showed mild degree of hyperplasia with acanthosis. The dermis contains multifocal aggregates of inflammatory cells containing lymphocytes, fewer plasma cells, neutrophils, and macrophages laden with golden-yellow-brown material (cerumen) (Fig.4). Numerus ceruminous glands are ectatic, lined by attenuated cuboidal cells, and are variably filled with abundant amorphous amphophilic to eosinophilic secretary product (cerumen), necrotic debris, sloughed epithelial cells, macrophages and degenerated neutrophils (Fig. 5). Multifocally, sebaceous glands were mildly hyperplastic (Fig. 6). The gross and histopathological features were characteristic of papillary cyst adenoma of the ceruminous gland.

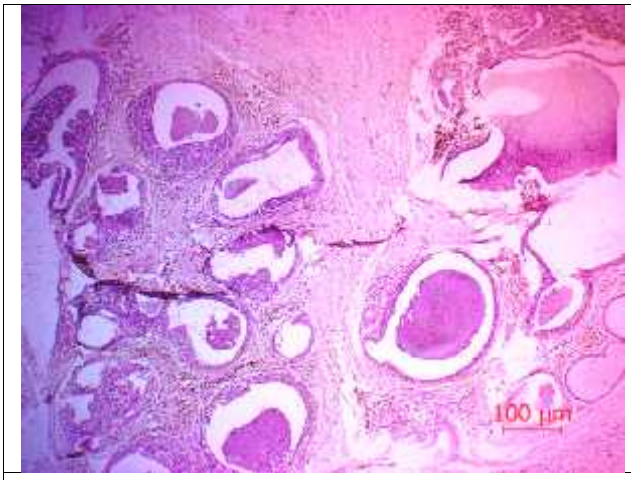

Figure 1: Microphotograph showing variably ectatic, often cystic tubules that are supported by a fine fibrovascular stroma and intraluminal presence of eosinophilic material. H&E.100X

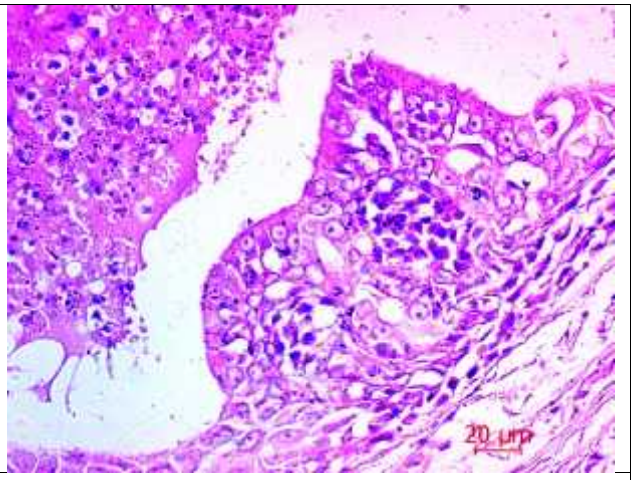

Figure 2: Microphotograph showing neoplastic cells pile up and form papillary projections, supported by a fine fibrovascular stroma. H&E.400X

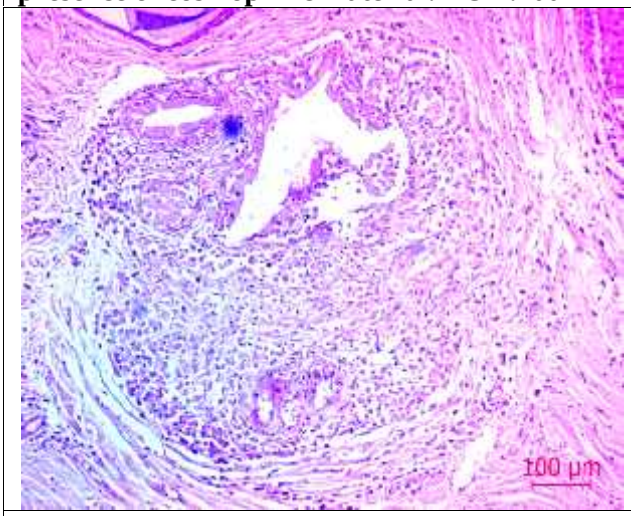

Figure 3: Microphotograph showing neoplastic cell with indistinct cell borders, moderately eosinophilic and vacuolated cytoplasm and round to oval nuclei with distinct nucleolus. H&E.100X

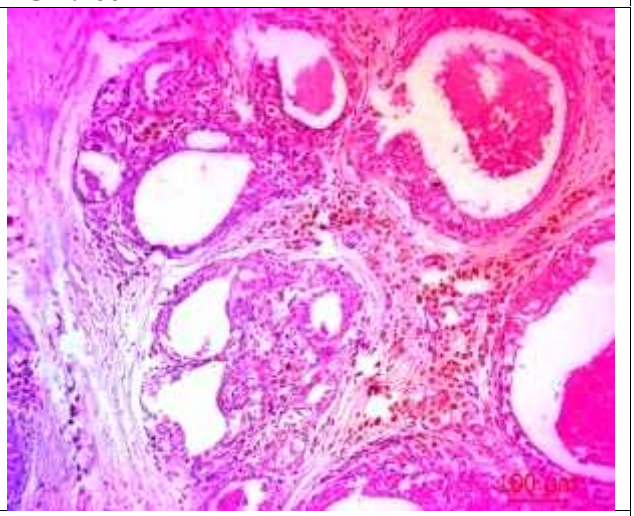

Figure 4: Microphotograph showing aggregates of inflammatory cells containing lymphocytes, fewer plasma cells, neutrophils, and macrophages laden with brown material (cerumen). H&E.100X

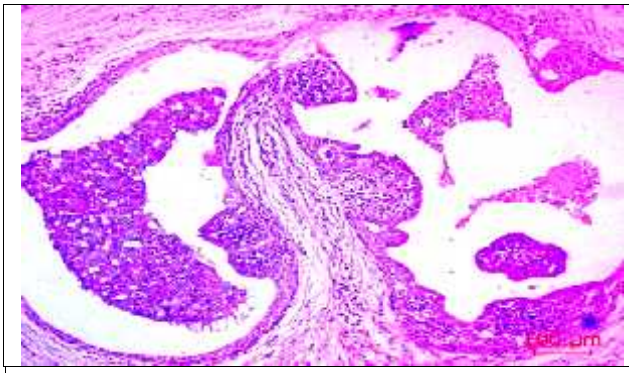

Figure 5: Microphotograph showing tubules line with cuboidal epithelial cells forming papillary projections into lumen and tubular lumina filled with eosinophilic material admixed with few sloughed epithelial cells, necrotic debris and degenerate neutrophils. H&E.100X.

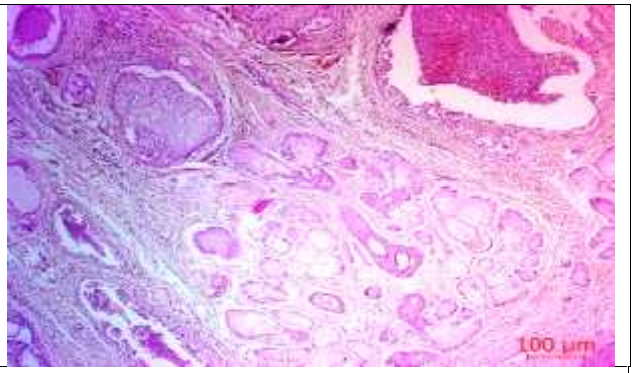

Figure 6: Microphotograph showing cystic tubules and focal sebaceous gland hyperplasia. H&E. 40X.

Chronic inflammation, concurrent bacterial and ear mite infections, and excess cerumen production related with ceruminous gland hyperplasia, are all considered predisposing factors for neoplastic transformation in dogs and cats. Additionally, it can develop as a result of senile degenerative change, or congenital condition. The presence of intraluminal deeply eosinophilic to brown/orange colloid-like material (cerumin) is the most typical symptom as also mentioned by Meuten, 2002. This is in accordance with the observations of the present study. Presence of intraluminal epithelial cells laden with golden-yellow-brown granules confirms the ceruminous nature of the neoplasm, irrespective of the location as also reported by Thompson *et al.*, 2004. Also, aggregation of pigment laden macrophages within the interstitium, neutrophils within the glandular lumina, and plasma cells in the periglandular stroma are the features of ceruminous gland adenomas as also mentioned by Sathiyaseelan *et al*., 2018 which is in concordance with the present study findings. No evidence of neoplastic invasion of the cartilage and distant metastasis were noted in the current study as previously described in 38 canines and 43 feline cases.. Successful post-operative management was carried out and the animal was reported to be healthy without any complications. Typical histological features observed in the present case confirm the ceruminous gland adenoma and as it is uncommon in dogs, hence reported.

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