

PATHOMORPHOLOGY OF CANINE ORAL CAVITY AFFECTIONS: A REPORT OF FOUR CASESRAKESH KUMAR*, POONAM, MRIDUL SONI, RAJESH KUMAR ASRANI, R.D PATIL,
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SUMMARY

Oral affections of varied etiologies in dogs are quite common and contribute significantly for the exaggerated worsening of oral health. The oral health disorders commonly include inflammatory lesions and proliferative neoplastic conditions. In present study a total of four cases of dogs with oral affections are addressed. The nature and origin of biopsy samples submitted to the Department of Veterinary Pathology were evaluated on the basis of histopathological interventions. One of the condition reported in the present investigation was categorized as malignant tumor of melanocytes (melanosarcoma), whereas the tumour with horny appearance opined to be oral papillomatosis. One of the dog has reflected the presence of chronic inflammatory condition (giant cell granuloma), whereas osteodystrophy fibrosa was also reported in another dog.

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A variety of disorder including localized or generalized inflammatory lesions, ulcers, and proliferative neoplastic conditions of varied etiologies are routinely encountered in the oral cavity of dog (Lommer, 2013). A total of 7% of the tumors in canines are the oral tumors (Hoyt, 1984). The neoplastic conditions are more frequently encountered in male dogs as compared to the female dogs (Lommer, 2013). Oral melanomas contribute an around 14.4 to 45.5 % tumors of the oral cavity (Guerra *et al.*, 1989). The gingival tissue and labial mucosa in oral cavity and skin of middle-aged dogs are most common sites of occurrence of malignant melanoma in dogs (Lyu *et al.*, 2015). Oral papillomatosis is a proliferative disorder particularly common in young immuno compromised dogs (Lange and Favrot, 2011). Papillomas are usually species-specific benign neoplasms of keratinized cells and mucus membranes but can progress into malignant neoplasms as well (Tobler *et al.*, 2006) Giant cell granuloma is a non-malignant condition of old ages with predominant predilection for craniofacial bones or mandibular bones (Sood *et al.*, 2012). Increased concentration of parathyroid hormone (PTH) in circulation associated with resorption-deposition imbalance or chronic renal disease leads to elevated osteolytic activity and contributes for the development of rubber jaw like condition called osteodystrophyfibrosa (Nickolas *et al.*, 2008; Shipov *et al.*, 2018). In present communication 4 cases of canines with oral affections including malignant melanoma, papillomatosis, giant cell granuloma and osteodystrophyfibrosa are discussed.

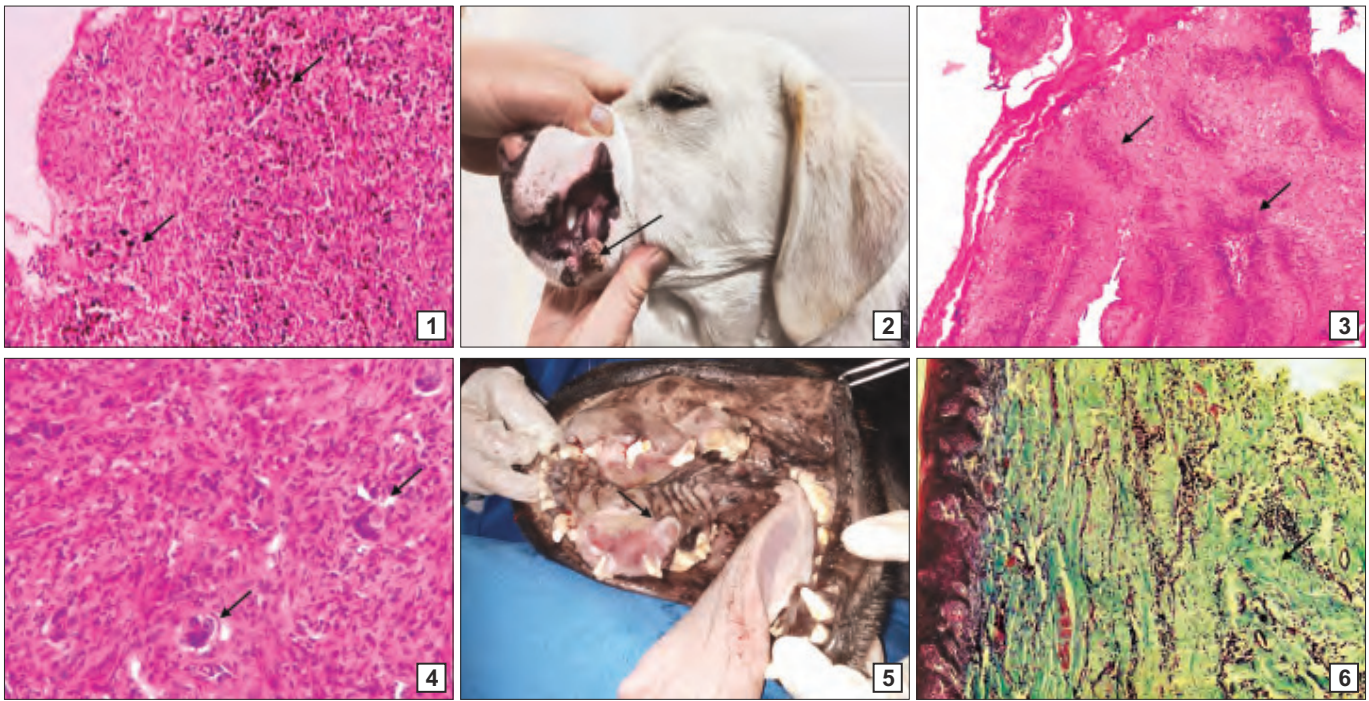
In present investigation, a total of 4 cases of canines with oral affections were studied. The excised tissue

masses collected from oral cavity during the surgical interventions were submitted to the Department of Veterinary Pathology for the evaluation of nature and origin of the alterations associated. The 0.5 cm thick representative biopsy samples were preserved in 10% neutral buffered formalin (NBF). The fixed tissues were dehydrated in ascending grades of alcohol, cleared in benzene, impregnated in paraffin wax (60-61°C) for block making and sectioned into 4-6-micron thickness with the help of microtome. The staining by routine Haematoxylin and Eosin (H&E) stain as per the standard protocol (Luna, 1968). The histopathological alterations observed during microscopic examination were recoded and micro-photographed.

A 9-years-old male dog was presented with the history of tennis ball sized focal to coalescing, raised nodular masses in the oral cavity near to the commissure. The biopsy sample submitted revealed the evidence of abnormal melanocytes with hyperchromatic and pleomorphic nuclei coupled with marked cellular atypia and heavily granular cytoplasm (Fig. 1). The macrophages or melanophages were found to be laden with blackish to brownish coloured pigment (melanin). The nucleoli of the melanocytes were prominent throughout the stained section and the presence of mitotic activity was also evident. The oral tumor was confirmed as malignant melanoma and shared similar characteristics with a previous study conducted by Oyamada *et al.* (2007).

A 6-months-old male Labrador dog showed the presence of horny, oval to irregular, mulberry like raised lesion on the outer margin of the lower lip (Fig. 2). The biopsy evaluation of the submitted sample reflected the

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Figs. 1 to 6. (1) Hyperchromatic and pleomorphic cells along with cellular atypia and melanophages laden (Which cell) with blackish to brownish coloured pigment (melanin) (arrows). H& E*200; (2) Fleishy, dome shaped papilloma on the lower lip (arrow); (3) Granular layer showed increased thickness with large and irregular keratohyalin granules inside the keratinocytes and epithelium of epidermis exhibited the exaggerated rete pegs formation (arrows). H& E*100; (4) Presence of multinucleated giant cells (arrows) along with basophilic bacterial colonies and slight variation in the pattern of collagenous tissue. H& E*200; (5) Swollen and hard gum tissue along with areas of ulcerations (osteodystrophyfibrosa) (arrow); (6) Increased resorption of osseous trabeculae replaced by fibrous connective tissue (arrow) along with increased osteoclastic activity at places. MSTx 100 (Image not seeing as MST)

presence of epidermal hyperplasia with papillae supported by fibro-vascular stromal components coupled dilated and prominent capillaries and marked pleomorphism in keratinocytes. The granular layer showed the increased thickness with large and irregular keratohyalin granules inside the keratinocytes. The surface epithelium of epidermis exhibited the exaggerated rete pegs formation extending into dermal tissue and the cells in the epithelium layer revealed marked hydropic changes/clear wart cells like appearance (Fig. 3). The present case was diagnosed as Oral warts or pailomatosis and revealed a direct correlation with the histological findings and clinical manifestations of a study carried by previous researcher (Gross *et al.*, 2005).

An 11-years-old male Pomeranian dog was presented with the history of peanut sized, pink to red coloured nodule on the gingival region of the oral cavity. Histopathological evaluation of the section reflected the presence of cellular stroma of connective tissue containing abundant of fibroblasts accompanied with abundant extracellular substance surrounded by a small amount of mature looking fibroblasts (Hiscox and Dumais, 2015). The presence of multinucleated giant cells and neutrophils along with basophilic bacterial colonies in the stained section indicated the chronic lesion complicated with

secondary bacterial infection (Fig. 4). This case was diagnosed as giant cell granuloma accomplished with suppurative inflammatory condition.

A 6-years- old male Boxer dog was presented with the history of swollen facial region along with ulcerated areas on the gums (Fig. 5). The tissue sample collected from the mandibular area exhibited marked resorption of osseous trabeculae replaced by fibrous connective tissue along with an increased osteoclastic activity at places (osteodystrophyfibrosa) and showed a parallel correlation with the studies conducted previously (Hassan *et al.*, 2019). The accumulation of collagenous fibrous tissue was further confirmed with the help of Masson's Trichome (MST) (Fig. 6).

The pathological conditions of oral cavity are routinely encountered, but the surgical interventions aided with timely diagnosis, use of preventive care protocols and targeted treatment therapies can serve as a significant tool for the better prognosis. The present study also signifies the importance of histopathological investigation for the early diagnosis of different oral affections in canines. The present report has summarized the importance of early oral examination in dogs for the tumours and has a correlation with a study conducted by War *et al.* (2018).

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