

Case report on Therapeutic Management of Canine Oral Papillomatosis

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ABSTRACT Canine papillomatosis is a frequently encountered viral infection in dogs, particularly of the younger age group. The condition is characterised by presence of multiple benign epithelial tumours evident on mucous membrane and skin. The causative agent is papillomavirus; a non-enveloped double-stranded DNA virus; till date more than 50 genera, at least 318 types of papillomaviruses, affecting over 54 different animal species have been identified. A 1-year-old non-descript intact bitch was presented to Veterinary Clinical Complex, College of Veterinary and Animal Sciences, Pantnagar with progressive development of multiple cauliflower like outgrowths on the oral mucous membranes and tongue. Based on clinical examination and histopathology, the condition was diagnosed as canine papillomatosis. Treatment was carried out with injectable lithium antimony thiomalate, auto-haemotherapy, Thuja (homeopathic drug), and topically with zinc oxide ointment which proved to be effective after few consecutive treatments. This article describes the haematological and histopathologic findings of canine oral papillomatosis and its therapeutic management.

Key words: canine, warts, auto haemotherapy, zinc oxide, histopathology

I. INTRODUCTION

Papilloma or warts in canines are epithelial tumorous outgrowths on the skin and mucosa developed as a result of infection with Canine Papillomaviruses (Bianchi et al., 2012). The causative agent is a double-stranded, non-enveloped DNA virus that is usually species-specific and has a strong tropism for cutaneous squamous or mucosal epithelium (Gross et al.,

2005). In dogs, canine papillomaviruses (CPVs) are separated into three different genera—Lambda (types 1 and 6); Tau (types 2, 7, 13, 17, and 19); and Chi (types 3, 4, 5, 8, 9, 10, 11, 12, 14, 15, 16, and 20) genera. CPV1 along with CPV-13 is frequently responsible for oral papillomas in young immunosuppressed dogs (Williams et al., 2021 and Chang et al., 2020). In natural and experimental infections, papilloma viruses may cause a wide range of skin lesions including epidermal hyperplasia, epidermal cysts, squamous papilloma, fibro papilloma, inverted papilloma, basal cell epithelioma, and squamous cell carcinomas. (Bregman et al., 1987 and Kaldrymidou et al., 2001). Currently, there are six recognized syndromes related to canine papilloma: oral papillomatosis, cutaneous, inverted cutaneous, multiple pigmented cutaneous, multiple pigmented plaques, and cushions multiple papillomas (Scott et al., 2001). Prevalence studies suggests that the virus commonly affects dogs of younger age groups approximately around 1 year of age, with no gender and breed predisposition. Warts are generally evident on oral mucous membrane in dogs less than 2 years of age and in skin in older dogs (Sundberg et al., 1994). Overall, lesions are evident in buccal mucosa, tongue, pharynx around eyes and less commonly on other surfaces of the body (Khan et al., 2020; Head et al., 2002 and Sundberg et al., 1994). Papillomaviruses in different species produces benign proliferating skin lesions, such as warts, pigmented/viral plaques, and papillomas (Araldi et al., 2017). Viral warts are seen with fissured irregular appearance which often resembles with surface of a cauliflower, which may be seen as sessile or pedunculated and when traumatized often bleed. They are generally seen

multiple in number, rather than a solitary outgrowth (Vail and Withrow, 2007). Immunosuppression has been suggested as a risk factor for developing papillomatosis in dogs (Shah and Howley, 1996). Infection can be transmitted by direct contact with the papilloma(s) of an infected dog or contact with the virus in the environment having an incubation period of 30 days (Vail and Withrow, 2007). Infection is established as a result of viral exposure to micro abrasions accessing the basal layer of the epithelium (Gross et al., 2005). Transformation and multiplication of basal cells as a result of papilloma viral replication causes a hyperplastic reaction of the epithelium leading to warty growths. Most warts are benign and rarely proliferate indefinitely (Sundberg et al., 1994 and Gross et al., 2005). Canine papillomatosis is characterized by high morbidity and low mortality with good prognosis, and the animal stays immune for the rest of life (Raj et al., 2020).

II. CASE PRESENTATION

A one-year-old non-descript intact bitch was presented for veterinary attention to the Veterinary Clinical Complex of G.B. Pant University of Agriculture and Technology, Pantnagar on developing multiple, well-circumscribed, firm, raised, cauliflower shaped masses around its buccal mucosa and on tongue. It was reported that the lesions appeared three months back and progressively increased in both number and size over time. Also, it was reported that the animal previously came in contact with another dog having similar type of lesions. The animal was having troubled feeding because of the lesions. On physical examination, papillomatous warts of

greyish colour were seen on buccal mucosa and gingiva (Fig. 1). Otherwise, the animal was in apparent general health. Based on clinical examination, it was diagnosed as a suspected case of oral papillomatosis. Blood samples were collected in EDTA solution containing vacutainer (1.8mg/ml blood) for haematology. Tissue pieces of the lesion concerned were collected in 10% buffered formalin for determining histopathological alterations. For Histopathological sampling, tissue pieces of 3-5mm of the affected areas were surgically incised and collected in 10% buffered formalin. The section was subsequently processed by paraffin embedding technique as described by Luna, 1968. The histopathological technique involved fixation, washing, dehydration, clearing, embedding, section cutting, staining and microscopical examination. The tissue samples were washed in running tap water overnight to remove formalin, processed in ascending grades of alcohol for dehydration and cleared in xylene, infiltrated and embedded in paraffin. The paraffin embedded tissues were cut into 3–4-micron thick sections using an automated microtome and stained with Haematoxylin and Eosin as per procedure of Luna (1968). For the presented case, a Complete Blood Count was carried out which revealed 12.4g% haemoglobin, a TLC of 13700/cumm a DLC of 43 % neutrophils, 5% eosinophils, 0% basophils, 45% lymphocytes, and 2% monocytes respectively, indicative of neutropenia and lymphocytosis. Histopathological examinations revealed finger-like projections covered with keratinizing squamous epithelium around a fibrovascular central core. Numerous mitotic figures with multiple nuclei are seen in epidermal cells (Fig.2).

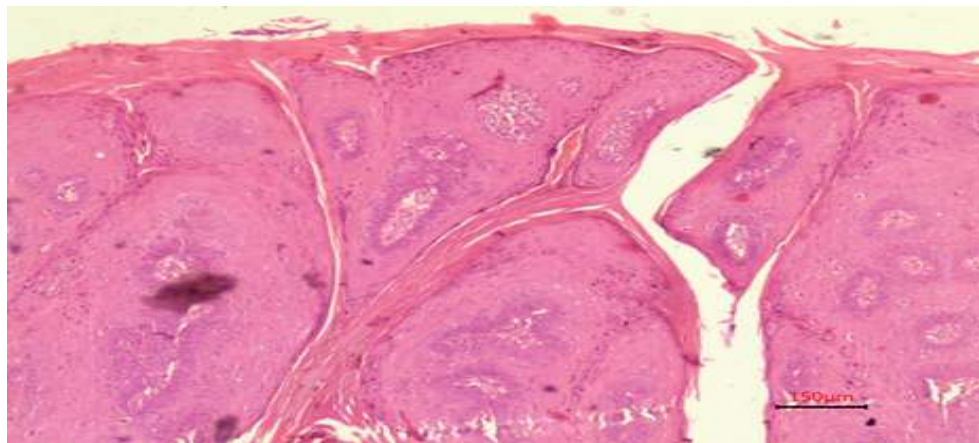


Fig (2). squamous papilloma- proliferation of keratinized squamous epithelium with fibrovascular connective tissue central core

III. TREATMENT

Treatment was initiated at VCC with injection of Pheniramine maleate (Avinil Vet®; each ml contains 22.75 mg of Pheniramine maleate) with 1ml as total dose at once to prevent any untoward reactions, followed by administration of a total dose of 1ml of injectable lithium antimony thiomalate (Anthiomalin®; each ml contains 60 mg of lithium antimony thiomalate) deep intramuscularly twice in a week with a total of

six doses. Auto-haemo therapy was performed where 3ml of blood drawn from the cephalic vein from the same animal was injected into the neck muscles once weekly for 3 occasions. Homeopathic drug *Thuja occidentalis* 30C (Dr Reckeweg *Thuja Occidentalis* Dilution 30C, 200C) was administered as 2-3 drops orally twice daily for 15 days. Topical application of 15% Zinc oxide ointment was advised two times a day for four weeks.

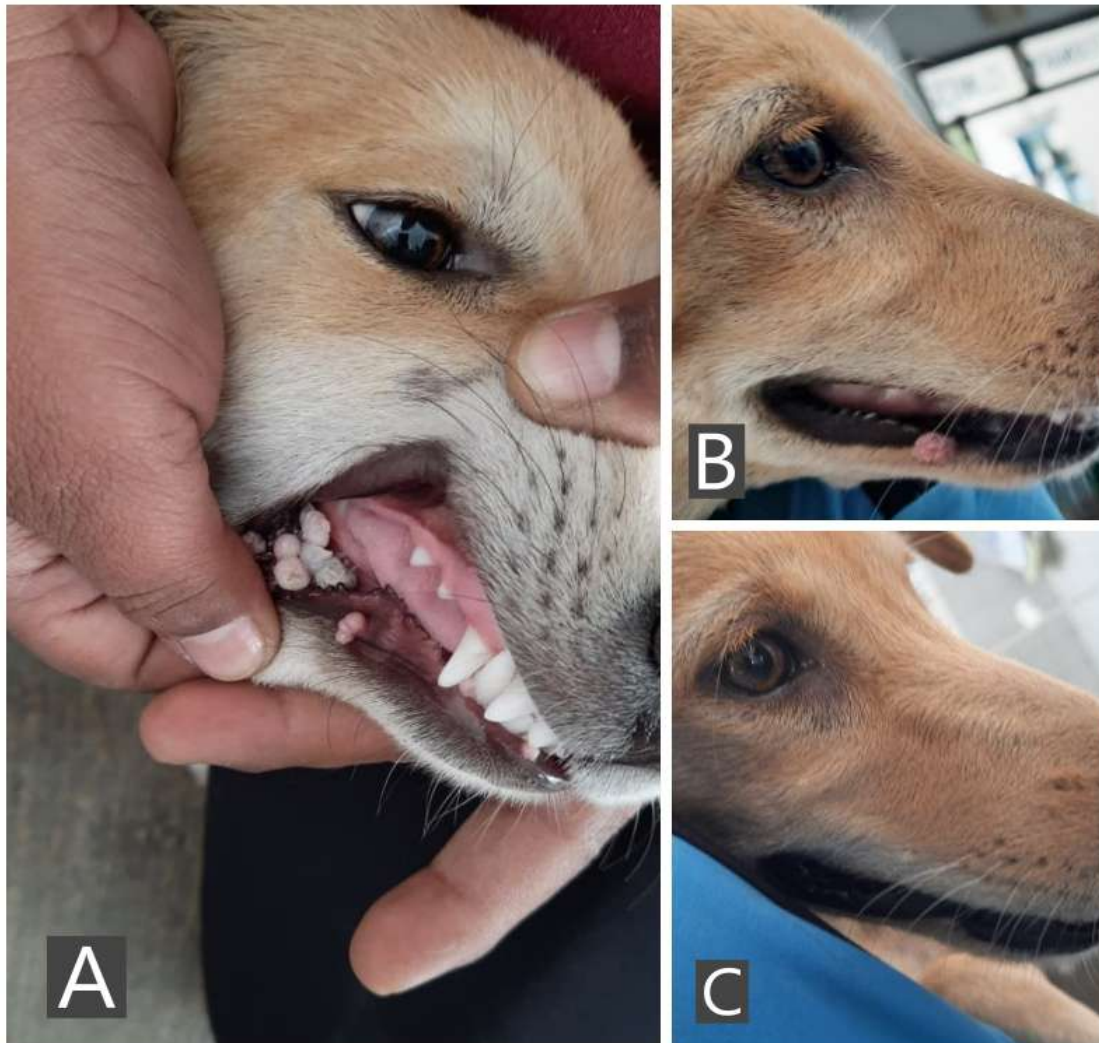


Fig (1). Warts on buccal mucosa on presentation (A), Warts after two weeks of therapy (B), complete recovery after treatment (C)

IV. CONCLUSION

Oral papillomatosis is a fairly common self-limiting disease presented in younger dogs without any predisposition to breed or sex. The

case was chronically presented with development of warty lesions on buccal mucosa, gingiva and tongue. Diagnosis was based on gross lesions, haematology and histopathological findings.

Grossly, tumour tissue was composed of hyperplastic epidermis with irregular inconspicuous dermal stalks. The case resulted in a complete resolution after initiation of a combined form of therapy with lithium antimony thiomalate, autohemotherapy, Thuja 30C orally and topical application of 15% zinc oxide ointment after around four weeks. Thuja occidentalis is a medicinal herb which is historically used for management of various conditions. In folk medicine, extract from the dried twig tips has been used to treat bronchial catarrh, enuresis, cystitis, psoriasis, uterine carcinomas, amenorrhea, and rheumatism. The pharmacological potential of T. occidentalis has been ascribed to its various chemical constituents namely dextro-pinene, dextro-thujone, thujine, laevo-fenchone and pinipierin which on administration showed a significant increase in interleukin 1, interleukin 6, and tumour necrosis factor alpha and caused local activation of cytokine producing cells for priming without a systemic rise. It also causes T Helper-cell induction with an increased production of Interleukin 2 (Bodinet et al., 2002, Gohla et al., 1989 and Joseph et al., 2013). A variety of other techniques have been reported like for removal of the lesions like cryotherapy, surgical excision, cauterisation, administration of local anaesthesia, autologous or heterologous vaccination or use of immunomodulators for non-specific stimulation of the immune system (Bajric et al., 1983; Amin et al., 1997; Silva et al., 1998 and Richman et al., 2017). Autologous hemotherapy is one of the techniques used which has proved to be effective against a variety of pathological conditions; it involves collecting about 3-5ml of whole blood from the affected animal and administering immediately through intra-muscular, sub-cutaneous, intravenous or intradermal routes (Borges et al., 2017 and Mettenleiter, 1936). Elemental zinc plays an essential role in modulation of immune system as it is found that zinc helps in functioning of macrophages and neutrophils, natural killer cells and various inflammatory cytokines. Zinc also directly regulates the interaction between host cells and viral components. Hence it has been taken into consideration as a form of immunotherapy in treatment of viral warts and as an adjunctive therapy to enhance the efficacy of other treatments. (Gupta et al., 2014; Lazarczyk and Favre, 2008 and Songsantiphap and Asawanonda, 2019).

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