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Burden of periodontal disease in dogs without oral hygiene

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ABSTRACT

Background: Periodontal disease is a common inflammatory disease affecting the periodontium of dogs with serious consequences.

Aim: A field study of a random sample of dogs of different breeds to determine the relationship between lack of routine dental care and the development of periodontal disease.

Methods: This study was conducted on 37 dogs of different breeds, sexes, and ages, presenting with other health complaints irrespective of dental disorders. These dogs were subjected to the assessment of their periodontium health in terms of their pocket depths (gingivitis, plaque, and calculus indices) and alveolar bone loss.

Results: The demonstrated teeth lesions ranged from (gingivitis 30 cases-81%, Plaque 27 cases-72.97%, alveolar bone loss to destructive periodontitis-furcation involvement 3 cases-8.1%). The maxillary molars and the mandibular premolars were markedly affected. Treatment was by supra/sub-gingival scaling combined with maintenance of daily oral hygiene.

Conclusion: Various degrees of periodontal disease were demonstrated in the dog sample, which underscores the importance of routine and continuous attention, or oral hygiene in dogs.

Keywords: Dental hygiene, Diagnosis, Periodontal disease, Treatment.

Introduction

Periodontal disease in dogs is a common problem in veterinary dentistry. Many studies reported that 80% of dogs have some form of periodontal disease by just 2 years of age (Wiggs and Lobprise, 1997). Etiology is mostly due to the accumulation of bacterial plaque, with subsequent tissue destruction results from auto-degradation induced by the continuing inflammatory response (Harvey and Emily, 1993). The dog with periodontal involved teeth may be uncomfortable, and other organs of the body may be at risk for the spread of infection from the affected teeth (DeBowes *et al.*, 1996). The development of periodontal disease is facilitated by soft diets (Rawlings *et al.*, 1997). Irrespective of dietary regimen, neglecting of regular dental hygiene does not maintain clinically healthy gingiva in dogs (Gorrel and Rawling, 1996). The inflammation of the periodontium is progressing from gingivitis to periodontitis and ultimately to loss of teeth (Grove, 1985). Oral malodor or halitosis is a characteristic sign of periodontal disease (Hennet *et al.*, 1998). Since the majority of pet owners are usually unaware of their pet's teeth and their attention is directed to other body health problems, with a lack of the owner's recognition of the early signs of periodontal disease that it concealed under the sick gingiva. Hence, the aim of the present study was to focus on the prevalence of periodontal disease in the teeth of a random sample of dogs being presented for health complaints unrelated to teeth, in order to measure the extent of the problem.

Materials and Methods

A total number of 37 dogs of different breeds (Griffon 22, Pekingese 6, German shepherd 6, Mongrel 2, and Irish setter one) of both sexes and ages (between 5 and 12 years of age) had been presented for different health disorders other than dental problems. The dogs were classified according to their size into small-sized breeds (less than 10 kg, 28 dogs) and large-sized breeds (more than 10 kg, 9 dogs). The dogs were subjected to a thorough periodontal examination under the effect of general anesthesia. The periodontal status was assessed using the plaque, gingival, pocket depth, furcation involvement indices, and the extent of alveolar bone loss by radiography according to Loe and Silness (1963) and Zontine (1974). Several methods of treatment were attempted, including teeth scaling and planning (19 cases), gingival curettage (15 cases), and extraction (3 cases).

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Results

Most of the presented cases showed the variable signs of periodontal disease and were assessed by a periodontal indexing parameter. Various degrees of periodontal disease were dominant in the entire dog sample. The injuries were severe in small-sized breeds of dogs (88%) whereas the pocket depth of most of the small-sized dogs exceeded 5 mm. The maxillary premolars and mandibular molars were the most frequently involved teeth (Figs. 1–4). Intraoral radiographs showed different degrees of alveolar bone loss ranged from slight to marked horizontal bone loss involving inter-radicular and interdental areas with furcation involvement (Figs. 5 and 6).

Discussion

From the present study, the frequency of periodontal disease was very high in dogs which have not

Fig. 1. A 12-year-old female Griffon with a calculus on the 3rd and 4th maxillary premolars (arrow).

Fig. 2. A 12- year-old male Griffon with severe periodontitis and calculus on maxillary premolars and molars (arrows). Note the missed incisors.

Fig. 3. A 10-year-old male Griffon with deep pocket (9 mm) at the mesial surface of the 1st maxillary premolar. Note the calculus on the 4th premolar.

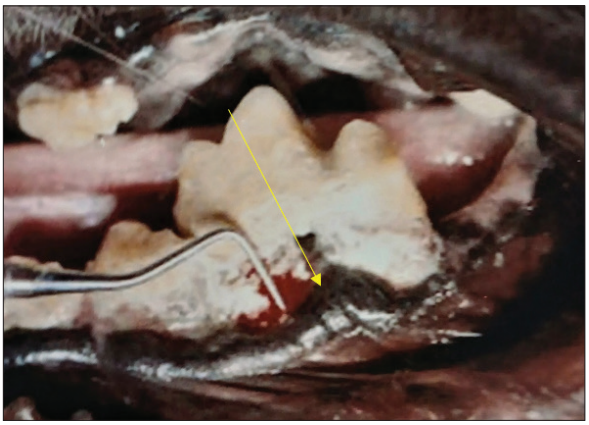

Fig. 4. An 11-years-old-female German shepherd with advanced periodontal disease and severe gingival attachment loss and furcation exposure of the 1st mandibular molar.

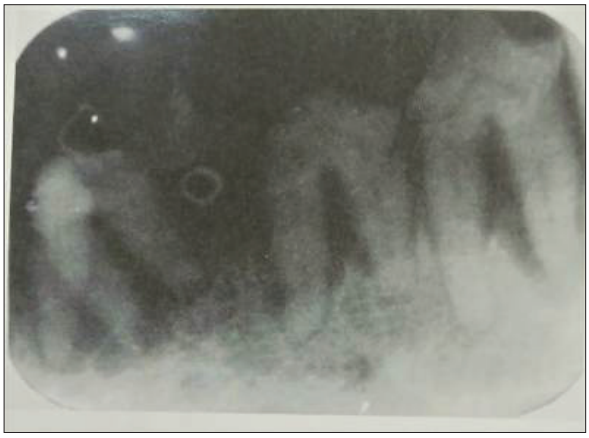

Fig. 5. Intra-oral peri-apical radiograph of the mandibular premolars showing marked horizontal bone loss and furcation exposure.

Fig. 6. Intra-oral peri-apical radiograph of the 2nd mandibular molar showing vertical bone loss (mesial) with involvement of inter-radicular bone.

provided with any oral hygiene care. The small-sized breeds show an expeditious tendency to develop the destructive form of periodontal disease. These findings support previous observations of other studies (Page and Schroeder, 1981; Hoffmann and Gaengler, 1996; Niemiec, 2021). In the present study, radiography assessment of alveolar bone loss, which ranged from slight loss to marked horizontal loss involving inter-radicular and interdental areas with furcation exposure. These findings are consistent with those reported in previous studies (Smith *et al.*, 1985; Jaffcoat, 1992; Hamp *et al.*, 1997; Reddy, 1997). The maxillary molars and mandibular premolars were the most frequently affected teeth. Similar observations were also noted of bacterial plaque (Hamp *et al.*,1997). This may be attributed to the accumulation of bacterial plaque and calculus in the gingival sulcus at these locations with subsequent destruction of the periodontal tissues (Page and Schroeder, 1981; Harvey *et al.*, 1996).

The development of periodontal disease is facilitated by soft diets (Gorrel, 2000). Tooth brushing, besides the addition of dental hygiene chews, is necessary for the maintenance of periodontal health in dogs (Gorrel and Rawling, 1996). In this study, removal of sub/supra-gingival calculus by teeth scaling and root planning combined with oral antiseptic Chlorhexidine proved very effective in terms of resolution of halitosis, gingivitis, and reduction of pocket depth. Moreover, gingival curettage to eliminate granulomatous and inflammatory tissues and deep sub-gingival calculus proved its feasibility in reducing pocket depth and delaying forthcoming complications. Tooth extraction was carried out to remove loose hypermobile tooth with a high degree of furcation involvement. These results were nearly consistent with those previously reported (Lindhe and Ericsson, 1978; Grove, 1985).

Conclusion

In conclusion, dog owners should pay great attention to regular oral hygiene and early diagnosis of any dental disorders to reduce the risk of complications.

Acknowledgment

None.

Conflict of interest

The authors declare no conflict of interest.

Funding

None.

Authors' contributions

Both authors contributed equally to this research.

Data availability

All data were provided in the manuscript.

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