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Review Article

The Influence of the Diet in the Development of the Gingivitis and Periodontitis in Dogs

Veterinary Medicine

Keywords: dog, homemade diet, commercial diet, gingivitis, periodontitis.

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Abstract

These days the feeding of the dogs is based on two main diets: the homemade diet and the commercial diet. Each of these diets has a different impact on the accumulation of the plaques and calculus on the surface of the teeth and the gingival margins. The purpose of this study was to compare the impact of the homemade diet, the commercial diet and the mix diet (homemade and commercial) in accumulation of the plaques and calculus and as a consequence in development of the gingivitis and peridontitis. For this experiment were used 24 dogs, from four to ten years old divided in three groups of eight dogs each, for a period of 24 months. The first group was fed only with homemade food; the second group was fed with commercial dry food (Pedigree and Top Line); the third group was fed with homemade food and commercial dry food. Every three months, dogs were checked for the accumulation of the plaques and calculus eventually the gingivitis and periodontitis. Based on these observations was noticed that the plaques and calculus were mostly developed among the dogs of the first group, which were on the homemade diet (100%). The plaques and calculus were less development among the dogs which were on a dry commercial diet (62.5%). Whereas it was noticed that in the third group, dogs fed on a mixed diet the plaques and calculus were developed in a greater number of dogs compared to the dogs fed on a dry commercial diet and less than the dogs fed on a homemade diet (87.5%).

1. Introduction

The owners of the dogs when they select the food for their dogs, generally have two main choices. They can prepare the food at home or they can buy that at the supermarket (dry commercial food). There are dogs owners who prefer to feed their dogs on a mixed diet that is fresh homemade food mixed with commercial food. Nowadays the tendency to feed the dogs is towards the commercial diets which in addition to the guaranteed nutrition values they are ready made which means easy to be used. Recently lots of studies related to the impact of the diets in the periodontal diseases have been carried out which specifically refers to gingivitis and periodontitis. Historically, the kind of food used has been considered a potential component of risk on the development of the dental diseases among dogs. Early studies found out that the dogs fed on can's (wet) food developed clinical and histological of periodontal diseases at an earlier age than those fed on dry food (Burwasser, 1939; Engelberg, 1965). On another early study the dogs fed on food which required chewing the dogs did not developed gingivitis during the first month of a trial period (Krasse, 1960). While the dogs fed on the same diet but chopped and soft they developed gingivitis and other signs which were followed by a development of a periodontal disease. Periodontal disease is one of the most common diseases that is encountered by the practice veterinarians of the small animals and one of the main factors of the mouth disorders. The latest studies in dogs which live in various zones of the world show that the level of the infection of the periodontal disease goes from 60% to 80% (Hoffman 1996; Kyllar, 1996; Logan, 2006; Verhaert, 2004). In a long epidemiologic study Harvey et al., (1994) found out that dogs fed on dry food did not reflect a regular progress (recover) of their dental health compared to the dogs fed on soft food. Another author also cites that it's not known yet, whether this reduction of the gingivitis level is sufficient to prevent the development of the periodontitis in dogs (Gorrel, 2008). Another significant factor that influences in the development of the gingivitis and the periodontal disease is the occurrence and not removing the plaques on the surface of the teeth and gingival margins. The dental plaque is a biofilm which is made of a gathering of bacteria and components of spit, remnants the mouth and epithelial cells and inflamed cells (Gorrell, 2008). Dental calculi are mineralized layers. A layer of plaque always covers the calculus. Since the periodontal disease is a common and serious disorder in dogs the researches have been focused on the feeding and the diets as a factor of threat for its development and as a potential way to reduce the formation of the plaques and calculus preventing its aggravation to the periodontal disease and the long-term care of the dental health. The managing and the feeding ways which minimize the formation of the plaques and calculus and help in their removal play an important part in the prevention of periodontal disease. When plaques or calculus are deposited on the surface of the teeth it's necessary to be removed away which is provided by the diet (special food), tooth-brushing, chewing soft toys or professional periodontal therapy. The effect of the dry commercial food on the development of the plaques and calculus is related to the hardness of the food which needs a longer time to be chewed. The longer it takes to be chewed the better the teeth are cleaned from the layered plaques and calculus on their surface. The purpose of this study was to point out the influence of feeding of the dogs on homemade fresh food, dry commercial food and mixed (homemade + commercial) food on the development of the plaques and calculus and as a result of the gingivitis and periodontitis. This study was carried out on the basis of a close cooperation between the vet team and some veterinarian clinics for small animals in Tirana and the dogs owners involved in this study.

2. Material and Methods

24 dogs of Pekingese, German Spitz and Pit Bulls were involved in this study. The dogs were divided in three groups, eight dogs each for a two year period, March 2011 – February 2013. The breeds mentioned above were the once that have the highest frequencies to the Clinic and the diets were the common ones which were used to feed them. The dogs were from four to ten years old. Before the research, the dogs were checked for plaques and calculus and in six of them or 25% were noticed minor signs of plaques. Before this research these dogs were submitted to a professional cleaning (plaques removal). In the first group were 1 Pekingese, 4 German Spitz and 3 Pit Bulls; in the second group were 3 Pekingese, 2 German Spitz and 3 Pit Bulls; in the third group were 4 Pekingese, 2 German Spitz and 2 Pit Bulls. So, the breed's selection was unintentionally based on the cases that showed up in the clinic. All dogs were submitted to a visual check associated with pictures, every three months to monitor the level of the development of the plaques and calculus on the surface of the teeth and gingival margins.

3. Results and Discussions

Until the end of the third quarter of this study, no visible accumulations of plaques or calculus were noticed on the teeth or gingivitis of the dogs that were submitted to this study (figures 1, 2).

Fig 1. Dog's teeth without plaques.

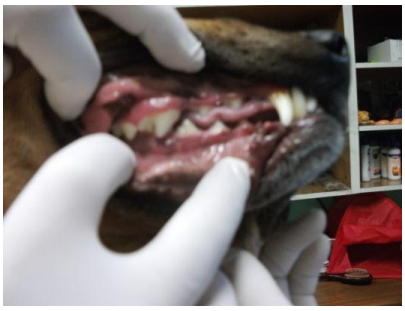

Fig 2. Dog's teeth without plaques

By the end of the fourth quarter were noticed the first signs of the plaques on the dogs of the first group fed on the homemade diet (figures 3, 4).

Fig 3. Accumulation of plaques

Fig 4. Moderate accumulation of plaques

By the end of the second year (or the end of the research) in 8 dogs (or 100%) fed on homemade diet was noticed the development of the plaques but no calculus and in 6 of them (or 75%) were developed minor gingivitis (light sore of gingivitis) (figure 5).

Fig 5. Obvious accumulation of the plaques

By the end of the sixth quarter, in the second group, (dogs fed on dry commercial diet) was noticed the accumulation of the plaques in 5 dogs (or 62.5%) of the group. There were no signs of gingivitis in this group. In the fourth quarter (or in the end of the first year of the study), in the third group, (dogs fed on mixed diet) was noticed the accumulation of the plaques in 7 dogs (or 87.5%) and in 5 of them (or 62.5%) minor gingivitis were developed. No signs of periodontitis were noticed in any of the dogs that were submitted to the study. The results of this study generally fit with two researches accomplished in the USA (Golden et al., 1982) and the Japanese Veterinarian Association of the Small Animals (1985) which noticed that the gingivitis and plaques were less common in dogs fed on dry commercial food as a main part of their diet compared to those fed on canned food. The results of this study also fit with a latest study accomplished in Poland in 30.000 dogs, of various ages, brought in veterinarian clinic of small animals, which were submitted to a mouth check (observe) and resulted that the dogs fed on wet diet had more plaques and periodontal diseases than the dogs fed on dry food diet or a mixed diet, dry food with wet food (Gawor et al., 2006). No signs of periodontitis were noticed in any of the dogs that were submitted to this study. As a conclusion, the results of this study showed that the food plays an important role in the development of plaques and calculus and as a consequence gingivitis and periodontitis in dogs. Even though there is discordance among some authors and the outcomes gained regarding the level of the development of the plaques, despite the various age of the dogs who were submitted to the research, the tendency should be the same. During the research there was not noticed problems with teeth, such as loose, falling out and periodontal diseases, despite of the type of diet used. As it seems the main reason was the relatively young age of the dogs who were submitted in this study.

4. Conclusion

Based on the observations every three months (according to the methods), plaques and no calculus developed earlier and in e greater number (100%) in dogs of the first group fed on homemade food diet which was made mostly with wet food. In dogs of the second group fed on dry commercial diet, plaques were developed later and in a smaller number of dogs (62.5%). In dogs of the third group fed on a mixed diet (dry commercial diet + homemade diet), plaques were developed in the same time with the dogs fed on homemade diet and in smaller number (87.5%) than the ones fed on homemade diet. As it can be seen, the type of diet plays an important role in the development of the plaques and calculus on dog's teeth and gingivitis and as a consequence on gingivitis and periodontitis. Nevertheless the fact that the plaques were developed also in dogs fed on dry commercial food shows that the type of food by itself does not fully protect the teeth against the dental diseases. So, to prevent the gingivitis and periodontitis in dogs along side with the right food it's recommended the following of other preventive and hygienic measures for the cavity of the mouth, such as tooth-brushing periodically, professional cleaning at certain intervals, the use of artificial bones and soft toys which increases chewing, mastication, etc.

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