Advancements in Dental Care

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Experts believe that periodontal disease is the most common disease of dogs and cats of any age. The American Veterinary Dental Society estimates that by age three, eighty percent of dogs and seventy percent of cats show signs of oral disease. Untreated periodontal disease is thought to lead to bacteremia (circulating bacteria in the bloodstream) which can lead to significant liver, heart or kidney disease. Greyhounds, as many owners know, commonly suffer from dental disease. Some Greyhounds have a hyperimmune (exaggerated) response to plaque and calculus which can result in severe inflammation inside the mouth itself (“chronic ulcerative paradental stomatitis”).

The process of dental disease can begin to take hold within just a few hours of a dental cleaning. A biofilm forms on the teeth which can then be colonized by bacteria. If left undisturbed, this combination of biofilm and bacteria can adhere more strongly to the tooth and is known as plaque. Untreated plaque allows for deposition of salivary minerals and allows for formation of hardened calculus. Although calculus itself does not cause periodontal disease, it provides a safe environment for the bacteria that do. Traditional treatment for dental disease has included dental chews, rinses, brushing, antibiotics, anti-inflammatories, and dental cleanings. A traditional saying has always been “It is good to chew, it is better to rinse, and it is best to brush.” Any treatment used is best used daily to prevent the formation of plaque. One of the main advantages to brushing is that it disrupts the biofilm on the teeth. Research has shown that it takes much higher concentrations of anti-bacterial agents to kill the bacteria in an undisrupted
biofilm. More recently there have been a few advances in veterinary dentistry that have improved the quality of medicine that your pet can receive.

A new spin on an old treatment has been made by Virbac with their veterinary dental rinse and gel. Both contain the active ingredient Chlorhexidene in a microencapsulated form which allows the chlorhexidene to bind to the gums and gingiva resulting in a prolonged duration of effect.

A new product released in 2004 for the treatment of dental disease is Merial’s OraVet Healthcare system. OraVet is a patented biologically inert waxy polymer that binds electrostatically to the tooth surface and creates an invisible, physical barrier that prevents bacterial attachment to the teeth. This is a two part system which requires both veterinary and home care. The OraVet Barrier Sealant is applied as the last step of a dental cleaning in the veterinarian’s office once the pet’s mouth is dried. Beginning two weeks after the dental cleaning, the OraVet Plaque Prevention Gel is applied by the owner once weekly. The gel contains the same active ingredient as the OraVet Barrier Sealant, but in a less concentrated form that is easier to apply. The gel is odorless, tasteless and can normally be applied in less than sixty seconds. Two studies were performed evaluating the efficacy of this treatment. They have shown OraVet to decrease mean plaque scores by 24-42% and mean calculus scores by 47%. While OraVet is a relative newcomer on the veterinary product line, it is showing a lot of promise in the prevention of periodontal disease. You can read more about OraVet in an article published in the Winter 2002 Celebrating Greyhounds magazine (the product used to be called ProVSeal prior to being purchased by Merial for veterinary use in 2004).
Dental radiography (x-rays), although not new, is something that is becoming more common in veterinary medicine. Dental radiography allows for evaluation of alveolar bone loss (around the tooth roots), abscesses, fractures, retained root tips, malformed teeth, resorptive root lesions and other abnormalities that cannot be seen with the naked eye. It is often stated that the crown of the tooth (the portion we can see) is “just the tip of the iceberg” (2/3 of the tooth lies beneath the gum line). The amount of pathology (disease) that can occur that is not apparent to the naked eye is amazing.

It is important to differentiate a dental radiograph (x-ray) machine from a standard radiograph machine. A standard radiograph machine is not ideal for dental x-rays for several reasons. First, the focal film distance, angulation, and collimation (these three things are adjusted to improve the quality of the radiographs) require very fine adjustments to take good dental radiographs and these things cannot be easily adjusted with a standard x-ray machine. In addition, a standard radiograph machine is rarely stored in the room where dental procedures are performed. Should dental x-rays become necessary, transporting the patient to the radiograph room can be cumbersome and time consuming. Finally, when a standard radiograph machine is used it is not possible to isolate dental structures which make interpretation of the radiographs difficult. Accurate dental radiographs can prevent unnecessary extractions and allow for more aggressive treatment of periodontal disease which may result in a better outcome for the patient.

A very new product that is currently being researched by Pfizer Animal Health is a periodontal disease vaccine. Pfizer’s research has shown that a group of bacteria classified as Black-Pigmented Anaerobic bacteria (BPAB) are found in more than ninety percent of dogs with periodontal disease. The six most common isolates found are
known to result in alveolar bone loss when left untreated in the mouse periodontitis model. Based on these isolates, a whole-cell vaccine was created in order to try to boost animals’ natural immunity against the bacteria. The vaccine was experimentally administered to mice subcutaneously (under the skin) and all mice showed a strong antibody response to the vaccine. Furthermore, vaccinated mice showed significant reductions in bone loss when challenged with most of the bacterial isolates. Further clinical trials are currently being conducted and this product will likely not be approved for use until late 2005 or 2006 (if it is approved for use).

Veterinary dentistry is one of the fastest growing areas of veterinary medicine today. Some of the newer innovations in the field will help to keep your pet in better dental health.

References


Hardham, J, et al.: Pigmented-anaerobic bacteria associated with canine periodontal disease. (manuscript submitted to Veterinary Pathology)

Data on file with Merial (TSB-4-0015-FTB) and (TSB-4-0006-FTB)