

ATTITUDES TO ORAL CARE IN DOGS AMONG UK'S VETS AND VET NURSES

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NORMAN JOHNSTON discusses the results of a Vetfile survey looking at the veterinary profession's approach to issues such as periodontal disease and health products

A SURVEY into the attitudes of veterinary surgeons and nurses to canine oral care was performed by Vetfile Market Research (VBD) in 2012.

This was a postal survey sent to a representative sample of 3,000 vets and veterinary nurses in small animal and mixed practice. The response rate was 37 per cent, resulting in 1,101 completed questionnaires being returned. A similar survey was performed in 2010 and 2011, and the responses from this year were compared to those to determine if a shift in attitude had taken place.

The survey asked questions of vets and nurses and recorded their responses based on their experiences in practice.

Periodontal disease

Vets and nurses were first asked about their perception of the incidence of periodontal disease (PD). Over the years, various high percentages have been quoted – often more than 70 per cent. Surveys and research papers rarely compare like with like in terms of groups of age, breed and diagnostic tests used.

The American Veterinary Dental College has released a position statement on its website

indicating the majority of cats and dogs aged more than three years are likely to have some evidence of PD – see www.avdc.org/periodontaldisease.html

In the VBD survey, 60 per cent of respondents believed at least three in five dogs aged more than three years had PD. This compared almost exactly with the percentages from the surveys of 2010 and 2011.

Secondly, the survey asked which, of a list of nine signs, were associated with PD. All the answers were correct, with the exception of caries. The vet and nurse responses were broadly similar, with the difference being vets were likely to mention a wider range of signs, while nurses were more likely to mention caries.

PD is defined as a progressive, inflammatory loss of attachment of the tooth. The process will cause the periodontal tissues to inflame and recede, causing root exposure. Loss of attachment, increasing tooth mobility and tooth loss are all ultimately likely.

Caries is a very different disease process, with a different pathogenesis and a substantially lower incidence in dogs and cats.

The survey moved on to ask which of the nine signs were likely to resolve with treatment. Only 17 per cent thought gingival recession was likely to be reversible, with the majority stating, correctly, that plaque, calculus and up to moderate gingivitis could be reversed with correct treatment.

The accepted view is that gingivitis is reversible by professional dental cleaning and daily home care. Any actual attachment loss of bone and periodontal ligament is not usually reversible. The message to clients and veterinary practices is, therefore, not to wait until signs are severe before initiating treatment.

Timing to discuss oral care

The survey also asked when practices talk to owners about oral care. The obvious routine event of a pet's year is the vaccination visit and routine annual health examination. Happily, 98 per cent of vets claimed to mention oral care routinely at the booster visit.

The time clients seemed most receptive to advice regarding oral care, compared with the annual health examination, appeared to be postoperative and routine dental check-ups.

The survey also asked respondents how effective puppy parties were in initiating the concept and practice of routine dental home care. For puppies, 48 per cent of nurses felt this was a good time against 31 per cent of vets.

Recommendations by practices

Apart from tooth brushing, the survey asked what vets and nurses actively recommended for clients as being good for dogs' oral health. The top option for both vets and nurses was a dry main meal (76 per cent) with Dentastix second at 50 per cent. Rawhide strips, Kong toys and veterinary oral bars followed close behind. Raw meaty bone (RMB) diets were advocated by 14 per cent and raw/bones and raw food (BARF) diets by five per cent.

Recommendations by nurses tended to follow products that were less likely to be controversial in an oral hygiene regime, such as a dry main meal, Kong toys or veterinary oral bars. Vets also tended to be more likely than nurses to discuss RMB and Dentastix.

The survey also asked which products respondents thought might be bad for dogs' teeth. RMB came top of this list by some distance, followed by hard nylon bones and raw/ BARF diets.

A secondary question expanded on what products were considered to be bad for dogs' overall health and welfare. In this regard, BARF diets and RMB were considered potentially dangerous by half those polled, with 80 per cent of nurses opposing the use of RMB. Rawhide chews were in third place, and Dentastix averaged 20 per cent of vets and nurses considering it bad for dogs' health.

Barriers to recommendations by practices

The final group of questions concerned the barriers to endorsing or recommending particular products. From more than 1,000 replies, the top two leading barriers were concerns over the safety of the product (43 per cent), followed by the calorie content (37 per cent). The third and fourth concerns, respectively, were lack of efficacy (23 per cent) and expense (19 per cent).

Safety concerns were primarily focused on the risk of gastrointestinal damage or obstruction, splintering or danger to dogs if used unattended. Secondly, there were safety concerns about objects being too hard and risking damage to teeth.

Calorie content concerns were overwhelmingly centred on worries over high calorie content and subsequent weight gain, with lesser concerns about dogs already overweight and on calorie-controlled diets.

Lack of efficacy was a concern for 23 per cent of respondents. Respondents with this concern were equally split between lack of scientific evidence of efficacy, products not being in the mouth long enough to have an effect and a perception that they did not work at all.

Discussion

PD is the predominant concern by vets and nurses in practice. In this survey, 60 per cent of respondents placed the incidence figure at 60 per cent or higher.

Standard texts and research studies have widely quoted incidence levels of PD in dogs at between 70 per cent and 92 per cent for more than 45 years, since one of the earliest references on the subject in 1965 (Bell, 1965). Two of the most informative studies (Hamp, 1984; Kortegaard, 2008) both place the level at more than 80 per cent. These studies used dental radiography to confirm the diagnosis. Different diagnostic criteria are common in many of the seminal papers, mainly due to the lack of a generally accepted definition of periodontitis or periodontal disease.

Although papers and texts on periodontal disease provide average incidence levels, it is clear to veterinary practitioners that not all breeds suffer PD and its consequences equally. Labradors, for example, seem to suffer less and have healthier mouths than greyhounds or small terriers.

Dog breeds with certain risk factors will have higher levels of disease. These risk factors include:

- small size – less than 10kg in weight;
- crowded teeth, making good dental hygiene more difficult;
- dental malocclusions – particularly when teeth make abnormal contact with other teeth or contribute to crowding;
- brachycephalic head shapes that contribute to both above two factors; and
- increasing age for all breeds, but worse for all the above criteria.

One of the best recent studies using 98 dogs (Kortegaard, 2008) summarises its findings as follows: “The prevalence of clinical attachment loss (CAL) greater than 1.0mm was 20 per cent in one-year-old dogs, increasing to 84 per cent in dogs aged more than three years. The prevalence increases with age, but is already high at the age of two years.”

Periodontal means “around the tooth”. The definition of PD is clinical attachment loss. Gum disease is an often used lay term that can mean simple gingivitis or PD. Clinical attachment loss is loss of attachment of the tooth to the supporting structures and involves loss of attachment to both the soft tissues (gingiva) and bone. It can be measured by a probe and seen on a radiograph. Periodontal probes provide a guide to the existence of a pocket and, in addition, a measurement of depth. This is only half the equation required for an accurate prognosis, diagnosis and treatment.

A radiograph provides vital information as to how much attachment remains. This second half of the equation provides a clearer course of action. As a rough guide, attachment loss of 50 per cent or more is an indication to remove the affected tooth. Advanced periodontal surgery and grafting may be possible, but for most animal patients the scrupulous postoperative hygiene necessary is difficult to achieve.

The survey also prompted respondents to describe which of nine signs were associated with periodontal disease. The answers showed that the level of understanding is broadly good, although there is concern over the misconception that 57 per cent felt dental caries was associated with PD.

Dental caries is defined as the progressive destruction of teeth by decay, and is different from PD. In humans, the prevalence level can be very high, with more than 90 per cent of children and adults affected in some parts of the world. Education and fissure sealing has reduced this markedly in developed countries.

The quoted level in dogs is much lower, and estimated at approximately five per cent (Hale, 1998). There are a number of reasons. Caries requires regular supplies of refined carbohydrates (commonly manufactured biscuits and the like). In addition, only dog molars have the flat occlusal surfaces with pits and fissures into which the food can be trapped. Finally, the cariogenic bacteria (*Streptococcus mutans* and others) that initiate fermentation of the carbohydrates appear to be mostly absent from dog mouths. Dogs also have a higher salivary pH, which prevents a continued acidic environment from forming. If caries is found early with a sharp explorer, treatment by restorative methods and changes in diet carries a good prognosis. Once caries is advanced to the point where it is easily visible, the chances of successful restoration are very poor and extraction is usually the only safe option. It should be remembered there are normally 10 molars in dog mouths. Advanced caries in one molar may mean early caries in others, so all molars should be thoroughly checked. The susceptibility of the individual will be a lifelong concern for the practice.

When the respondents were asked to describe which of the nine signs of PD would resolve with treatment, the majority considered, correctly, that plaque, calculus and up to moderate gingivitis would resolve with correct treatment. This treatment would be professional scaling and polishing, followed by an effective daily plaque control regime. Once attachment loss of the tooth has happened (gingival recession and/or alveolar bone loss – stage two to stage four PD) simple scaling and polishing will not, in itself, result in the return of these tissues. As such, this loss would then be irreversible. The message for practitioners is to deal with PD much earlier to prevent irreversible attachment loss.

The time to discuss oral care is clearly limited by the exposure the practice has to an animal through the year. The annual health check and vaccination is by far the best time for this, and 98 per cent of vets stated they did so. The worry is that annual health examinations, by definition, come round only once a year. For many dogs and cats, this may be too long an interval. Practices that offer routine dental check-ups more frequently clearly offer a better service in this regard.

The use of plaque-disclosing solution is an important part of these consultations. The ability of the vet or nurse to show the distribution and extent of the invisible film (until stained) that is dental plaque is very graphic to owners, and helps them understand how effective their brushing is. It also shows them where the improvement in technique should be focused. Disclosing solution is very inexpensive, at less than £5 for a 30ml bottle, and will last years. It is widely available and should

be in every consulting room and used at each routine oral examination.

Puppy parties were more popular with nurses (48 per cent) than vets (31 per cent) for routine dental discussions, probably because they are more likely to be involved in them. For most owners, this is the best time for them to start a daily oral hygiene programme. Anecdotal reports often state owners that initiate daily tooth brushing early often have better general control over their dog. Holding the muzzle and brushing the teeth is a very dominant act.

Practices recommended various methods of improving dog's oral health. For many years now, it has been accepted by the veterinary dental community that the gold standard for any hygiene regime is daily tooth brushing. A seminal paper (Gorrel, 1996) established that brushing every second day was not enough to maintain clinically healthy gingivae in dogs. The same paper established that the addition of a dental hygiene chew to a regime of tooth brushing every other day reduced the gingivitis scores, and reduced the accumulation of dental deposits (plaque, calculus and stain). The authors stated "providing a dental hygiene chew daily gave an added health benefit when tooth brushing is less frequent, and provides the pet owner with a useful adjunct for home care".

Dry main meals were considered a benefit to oral hygiene by 76 per cent of respondents, followed by dental hygiene chews by 50 per cent and 37 per cent of respondents respectively, depending on brand. While dry diets and oral hygiene chews can clearly be considered safe, it is very concerning to note rawhide chews and hard nylon toys were recommended by 38 per cent and 31 per cent respectively of those surveyed as being good for dogs' teeth.

Since 1998, we have known that the main cusp of the upper carnassial of a 20kg dog will fracture with 90kg of force (Duke, 1998). Given the fact a dry rawhide chew will take a simulated tooth probe more than 200kg of force to enter, it puts this in perspective.

We don't know what force it takes to enter a hard nylon toy, stone or bone, because the probe breaks at levels significantly higher than it takes to break a tooth. Dogs also vary significantly in head shape and size. They also vary in how aggressively they use a chew toy. Rawhide chews can be given to some dogs for years without mishap, while in others teeth will fracture very quickly. One remedy is to soak the rawhide before use to soften them enough to allow a carnassial tooth cusp to make an impression in them without fracturing.

The debate for and against RMB and BARF diets has raged across the letters pages of *Veterinary Times* and other publications for years. Of those who responded to this survey, 14 per cent and five per cent respectively considered RMB and BARF good for dog's teeth. Conversely, 36 per cent (RMB) and 21 per cent (BARF) also considered them bad for dog's teeth and, when asked about items bad for dogs' overall health and safety, 56 per cent were concerned about BARF and 71 per cent for RMB. A correspondent to the *Veterinary Times* letters page some years ago made the perceptive comment that RMB and BARF diets are a lifestyle choice for owners. Given that the

advocates for and against are unlikely to ever reach common ground, that seems a fair summary.

Owners and practice personnel must consider the benefits of feeding raw food against the potential problems they may encounter.

It is important to consider the shape of their pet's head and the size of bones they are likely to give. Most domestic dogs have a facial shape that is longer than it is wide. A hyena, for example, is the opposite head shape, with a short, wide skull and very large carnassial teeth. Carnassial teeth are not normally used by carnivores to crush, but as scissor blades enabling them to reduce their prey to swallowable strips. Mostly this means skin, hair, feathers, muscle and the like. The prey skeleton of a small dog is likely to be rabbits and other small herbivores. Their carnassial teeth can handle this load without fracture.

If larger, weight-bearing bones (such as ox femurs) are introduced to them as diet or toys, tooth fracture is a common consequence.

Advocates of RMB/BARF often point to the oral health of wild carnivores as a positive example. Many studies exist in literature, indicating the dental health of wild carnivores is no better than their domestic counterparts. Steenkamp et al quoted thus in their 1999 paper: "The spectrum of oral disease seen in wild canids and felids is very similar to domestic carnivores, including periodontal disease, traumatic tooth injuries with pulpal exposure and endodontic complications. Predators with higher bone content in their diet have a higher prevalence of tooth fractures. These findings suggest the natural diet of wild carnivores does not protect the animal from oral and dental disease. We conclude these wild carnivores suffer from the same oral diseases as their domestic relatives, suggesting that a natural diet does not protect against these diseases."

A further significant consideration is the potential for feeding pathogens in a raw food diet. Bacterial species, such as *Salmonella*, *Escherichia coli*, *Clostridium* and *Campylobacter*, can all pose a risk to health.

Barriers to practices recommending products for oral hygiene

The top three barriers to practices recommending some products for oral hygiene were concerns over the product's safety (43 per cent), calorie content (37 per cent) and lack of efficacy (23 per cent).

There is no doubt that many products in common use lack scientific evidence for their claims of efficacy. It has long been substantiated by the most comprehensive study of evidence-based medicine research into preventing PD that tooth brushing daily is the gold standard.

The study (Roudebush et al, 2005) looked at many of the alternatives to tooth brushing and evaluated them. The authors stated that: "Over the years, many therapeutic and preventive

interventions have been developed or advocated for periodontal disease, but evidence of efficacy or effectiveness is highly variable. Accordingly, the main objective of this systematic review is to identify and critically appraise the evidence supporting various aspects of home care for prevention of canine and feline periodontal disease.”

Practices are correct to worry products they may sell or recommend to owners to improve dental hygiene may be neither safe nor effective, given they have a clear duty of care to their clients’ pets in both regards. Toys that allegedly clean teeth, but end up breaking them, are unlikely to go down well with clients or reflect positively on the practice. Items such as pigs’ ears, horse hooves, deer antlers and the like can be included in this list, in addition to the hard items mentioned previously. All are common causes of dental fractures. The Roudebush study used the principles of evidencebased medicine to evaluate products, but given many of these products exist outside the testing required by prescription drugs, there is often a problem sourcing enough information from the manufacturer.

This author believes it is always worth asking yourself if a product sounds too good to be true and whether you might use it in your own mouth instead of tooth brushing or, alternatively, ask your dentist whether he or she might advocate its use in humans. Make a point of asking company representatives for the full research – not just sales information – and read it carefully to determine if any testing has been done with regard to the target species of dog or cat, and also to determine if the conclusions appear scientifically valid. The Veterinary Oral Health Council (www.vohc.org) is a not-for-profit organisation that exists to test such products, with a transparent protocol established over many years. Its seal of approval is awarded if the product passes its tests. Submission of products is voluntary, but the downside, from a UK perspective, is that many of the products are only available in North America.

One study worth reviewing in this regard as a good example is Brown et al (2005). The subject of the study trial is available in the UK as Dentastix. The researchers used a mixed population of dogs in their trial and each group entered each test phase with clean teeth. The groups crossed over after the initial test phase. The chew resulted in a claimed average reduction of 28 per cent of plaque and 54 per cent calculus.

Clearly, such studies are expensive and time-consuming, but we should ask no less of a company that sells products into the veterinary market with claims of effective oral health benefits.

Further reading

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