Unusual manifestations of canine oral disease

Mary Krakowski Volker, DVM, DAVDC
Fetch Kansas City Meeting 2019

The experienced veterinary clinician is likely comfortable diagnosing common canine oral pathology: periodontal disease, fractured teeth, missing teeth, discolored teeth etc. However there are some diseases that occur in the canine oral cavity which are unique and not widely discussed. Several of these diseases are explored in this lecture including canine chronic ulcerative stomatitis, Wegener’s granulomatosis, mandibular periostitis ossificans, odontogenic cysts (dentigerous and keratinizing odontogenic cysts) and peripheral odontogenic fibroma.

In order to diagnosis abnormal, the practitioner must be comfortable identifying the oral cavity in health. Briefly, the gingiva should be pink or pigmented, firm (or stippled) and smooth. The mucosa should be pink or pigmented, smooth, moist and elastic. The jugae (bony protuberances) of the maxillary dentition should be able to be palpated externally and be pain free. The mandibular cortices are hard, firm and smooth and symmetrical. The tongue is pliable, the papilla are distinct and the dorsum is clearly delineated from the ventral lingual mucosa. The mouth should have minimal to no odor. The mouth should be able to be open and closed in normal, atraumatic, nonpainful occlusion.

Canine chronic ulcerative stomatitis

Stomatitis is an idiopathic disease that occurs in both dogs and cats. In cats the etiology of stomatitis is suspected to be multifactorial, likely an aberrant hyperimmune response to bacterial plaque and/or feline viruses. In dogs, the presumed primary antigen is bacterial plaque. Canine chronic ulcerative stomatitis (CCUS) is characterized by multifocal to diffuse oral ulcerations and also areas of necrosis. Lesions may be present in the mucosa opposite the plaque-laden dentition, however there are frequently widespread ulcerations that occur on the mucocutaneous junction of the lips, along the lingual margins, along the palatal mucoperiosteum etc. CCUS has been reported to be most common in neutered male dogs, dogs less than 10 kg and terrier breeds. The Maltese, Cavalier King Charles Spaniel, Labrador Retriever, Greyhound, Scottish terrier and Cocker Spaniel are most commonly affected. A recent report discusses the similarity of CCUS with human oral lichen planus. Dogs present with clinical signs of oral pain, dysphagia, oral malodor, thick ropey saliva, and various degrees of hyporexia. Medical history typically includes improvement or temporary cessation of these clinical signs in response to antibiotics, pain medication and/or a professional dental cleaning, but the clinical signs return after a brief period of time. Differential diagnoses for the clinical presentation of stomatitis include several autoimmune diseases (mucous membrane pemphigoid, bullous pemphigoid, erythema multiforme, lupus erythematosus, pemphigus vulgaris), epitheliotropic T-cell lymphoma and uremic stomatitis. Histopathology and a minimum database (CBC, Chemistry profile, Urinalysis) are important to r/o any of the above diseases. Treatment of CCUS is strict, judicious oral homecare and frequent professional dental cleanings. Unfortunately this regimen is typically unmanageable for clients and/or clients and patients are not compliant; commonly only partial resolution of ulcerations occur, thus partial to full mouth extraction are performed. Some clients are resistant to extractions, and they must be counseled that medical management (antibiotics, pain medications) is frequently unrewarding. Partial to full mouth extraction usually results in resolution of the patient’s stomatitis, however anecdotally this author and another author have noted in some patients ulceration and scarring continues despite lack of dentition. This author also has an unpublished case series of dogs that developed squamous cell carcinoma in sites of persistent inflammation. These particular dogs’ owners did not consent to full mouth extraction and stomatitis was present for at least 3+ years. Immunosuppressive medication could potentially be used instead of or in conjunction with extractions (after professional dental cleaning and aggressive treatment of periodontal disease), however there are no published studies discussing the effectiveness of this
medication and/or length of time required. Currently the most reliable treatment is extraction of teeth (usually full mouth extraction).

Wegener’s granulomatosis

Wegener’s granulomatosis (WG) is an idiopathic, autoimmune vasculitis, and our knowledge of this disease largely stems from human literature. In humans, the disease is uncommon and consists of granulomatous inflammation occurring in the lungs and kidneys, and in the oral cavity lesions appear as hyperplastic gingivitis. Similarly, oral lesions in dogs appear as focal to multifocal areas of red to purple proliferative gingivitis. The gingival lesions are typically persistent despite medical management with antibiotics and anti-inflammatories. Clinical signs of oral pain are usually present. Differential diagnoses include gingival hyperplasia (breed predisposition vs. drug-induced), infectious disease (fungal vs. other), pyogenic granuloma (secondary to multiple nonvital teeth) vs. multi-focal neoplasia (lymphoma, plasma cell tumors vs. other). Diagnosis of the disease in veterinary medicine is based on physical examination, histopathology and then response to therapy. Histopathology is similar to human lesions and contain pyogranulomatous gingivitis, microabcessation with multi-nucleated giant cells and vasocentric granulomas. Additional testing in humans is usually performed (anti-neutrophil cytoplasmic antibodies) but since this test doesn’t exist in veterinary medicine, confirmation of diagnosis is based on response to treatment using immunosuppressive medication. One veterinary case study discusses the successful use of cyclophosphamide and prednisone after histopathologic confirmation. The case study presented here describes the successful use of extraction of associated teeth and debridement of abnormal tissue (with histopathologic confirmation of WG and negative infectious disease testing) followed by immunosuppressive therapy (prednisone). Similar to the published veterinary case study, focal horizontal bone loss was present at all areas of granuloma lesions. Following slow taper of prednisone, neither the clinical case nor published case had recurrence of disease.

Mandibular periostitis ossificans

Mandibular periostitis ossificans is an uncommon oral malady of immature, large breed dogs. A published veterinary case series discusses periosteal inflammation which resulted in periosteal new bone formation of the caudal mandible of 5 young large breed dogs. The dogs of the case series were between 3 and 5 months of age. Unilateral lesions occurred in all of the dogs of the study – 4 in the left mandible and 1 in the right. Pain was not associated with the mandibular swelling. Radiographically periosteal reaction of the caudal mandible was noted with thickening and multi-layering (double cortex) formation of the ventral mandibular cortex. Histopathology via incisional biopsy of 4 of the cases confirmed periosteal new bone formation without infection or neoplasia. Spontaneous partial to complete resolution of the swelling was noted at variable times postop. A similar case is presented here: a 6 month old pit-bull puppy with non-painful left caudal mandibular swelling. Biopsy revealed periosteal new bone formation. Resolution of the swelling was confirmed by conversation with the owner 3 months after biopsy. It is thus recommended that mandibular periostitis ossificans be a differential for caudal mandibular swelling in an immature large breed dog. Other differentials include craniomandibular osteopathy (CMO), idiopathic calvarial hyperostosis (ICH) and trauma (healing fracture callous). CMO frequently involves more than one bone, is painful, and usually affects small breed dogs (terriers in particular though many other breeds have been reported). ICH affects young male mastiff dogs, and does not involve the mandible as it is periosteal thickening of the calvarium. Both of these diseases are self-limiting once skeletal maturation is reached, however CMO typically requires medical management to reduce morbidity. A healing fracture callous likely would be suspected if there was a history of trauma. Mandibular periostitis ossificans is idiopathic, however the case series discusses similarity to human periostitis ossificans, and is hypothesized to potentially be associated with an inflamed, infected or developing mandibular first molar dental follicle.

Odontogenic cysts
There are a variety of different cysts that occur in the canine oral cavity – when they are associated with dentition they are commonly called odontogenic cysts. The most frequent in the dog is the dentigerous cyst; this cyst is associated with the crown of an unerupted tooth. The mandibular first premolar tooth is the most common tooth to be unerupted and thus the most likely tooth to cause the development of a dentigerous cyst. Brachycephalic breeds of dogs are the most frequent dogs to have impacted or embedded mandibular first premolar teeth and thus also dentigerous cysts. Other teeth reported to be associated with dentigerous cysts are the maxillary and mandibular canines. It is important to note than any unerupted tooth can develop a dentigerous cyst. Dentigerous cysts are slow-growing and are usually nonpainful unless they become infected or rupture into the oral cavity. They have the potential to be very destructive – they can grow very large destroying adjacent bone and dentition and can eventually lead to pathologic mandibular fracture. The presence or absence of complete dentition should be noted both of the deciduous teeth and the permanent teeth. If any teeth are missing then timely radiographic evaluation is recommended. Extraction of unerupted teeth is strongly recommended, and debridement and histopathology of any associated cystic lesion. A recent study found that 29.1% of impacted teeth had radiographically apparent cystic lesions. Which means almost 1/3 of unerupted teeth will potentially develop a dentigerous cyst!

Dentigerous cysts account for about 71% of oral cystic lesions in dogs. These cysts can typically be treated with enucleation of the cyst (thorough debridement of the cystic lining) after extraction of the associated unerupted tooth. More aggressive oral cysts in dogs include the canine odontogenic parakeratinized cyst and odontogenic keratocyst. These cysts have parakeratinized or orthokeratinized cystic epithelium and they demonstrate much more aggressive behavior than dentigerous cysts. These lesions seem to be most common in the maxilla, associated with the roots of normally erupted teeth without resorption of those roots and cause marked buccal bone expansion. Simple enucleation does not usually result in resolution of either type of cyst – recurrence is common and en bloc resection of the entire cyst may be needed to prevent continued cyst expansion. It is very important to perform histopathology of any type of cyst lesion in the oral cavity of dogs, to rule out a more aggressive cyst like one of the keratinizing cysts described above, or even in rare cases to diagnose transformation of a cyst to ameloblastoma or squamous cell carcinoma.

Peripheral odontogenic fibroma

A review of odontogenic tumors discusses two types of benign oral masses that were previously called ‘epuli’ – these are the peripheral odontogenic fibroma (POF) and focal fibrous hyperplasia (FFH). The POF is a gingival mass which contains odontogenic epithelium, whereas FFH does not contain odontogenic epithelium. POF replaces the terms ‘fibromatous epulis’ and ‘ossifying epulis’. Interestingly, both POF and FFH can have osseous metaplasia present, thus histopathology is necessary to distinguish between these two common gingival masses.

Clinically it is essential to understand that the canine acanthomatous ameloblastoma (previously called ‘acanthomatous epulis’) is NOT a POF. The term ‘epulis’ invokes complacency regarding the mass. Canine acanthomatous ameloblastoma is highly aggressive and requires complete surgical resection to achieve a cure – whereas a POF may or may not recur following incomplete or partial resection. Both are benign masses, but treatment is very different: the CAA requires at least en bloc resection whereas a POF can be treated with incisional or excisional biopsy depending on the associated dentition and periodontal status.

This paragraph is written to stress the importance of understanding and incorporating new veterinary medical nomenclature into a veterinary practitioner’s daily practice. Proper nomenclature is necessary for complete and valid medical records. It is also vital to create understanding among professionals in the veterinary community. There are few disciplines that have had more nomenclature changes over the last decade than the field of veterinary dentistry! A complete review can be found by visiting the American Veterinary Dental College (AVDC) website at www.avdc.org and clicking the link for Nomenclature.
References


