Proceedings of the American Association of Equine Practitioners

Focus Meeting on Dentistry
Charlotte, NC, USA – Aug. 4-6, 2013

Next Meeting:

Annual Convention
Dec. 7-11, 2013 - Nashville, TN, USA

Resort Symposium
Feb. 6-8, 2014 - Rio Grande, Puerto Rico, USA

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Temporomandibular Joint Disease

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Take Home Message—True temporomandibular joint disease in the horse is likely rare. Simply relying on clinical examination (such as by palpation) is likely to be met with over-diagnosis, rather than under diagnosis. A significant effort needs to be made to ensure an accurate diagnosis, either by arthrocentesis and laboratory examination of synovial fluid, local intra-articular analgesia or advanced imaging techniques (computed tomography [CT] or magnetic resonance imaging [MRI]); this is most important in cases other than joint sepsis. Appropriate treatment may be medical or surgical and at this time, an inter-relationship with dental malocclusions is not known.

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I. INTRODUCTION

It has been suggested that dental abnormalities lead to temporomandibular joint (TMJ) inflammation and pain that may be mitigated by regular dental care. Most of these anecdotal reports are based on eliciting a pain response to deep palpation of the area surrounding the TMJ. There have also been several acupuncture points in this area that have been associated with this diagnosis, none of which have been shown to be associated with true joint pain or disease. There is considerable literature on the pathophysiology of equine joint disease, including elegant studies on cytokine profiles in appendicular joints, under a variety of disease conditions. There is however, very little research into equine TMJ inflammation. Carmalt et al. (2005) reported on the effects of dental malocclusions on cytokine (IL-1, IL-6, IL-8, TNFα and TGF-β1, -β2, -β3) concentrations of the equine TMJ. These researchers found that in their study population, dental malocclusions (dental overgrowths, extreme molar occlusal angles, the presence of diastemata or missing teeth) did not lead to increased levels of inflammatory cytokine levels in the equine temporomandibular joint (TMJ). There was however, an age related effect of IL-8 concentration. Subsequent to this Zambrano et al. (2011) examined the cytokological and physiochemical aspects of TMJ fluid from 24 horses of different ages and could find no effect of age.

This research has led to the supposition that, in general, dental malocclusions do not lead to TMJ disease in the horse.

This is a gross generalization and it is likely foolhardy to extrapolate from small groups of research horses to the equine population at large. While this may be the case, there are several scenarios in which this theory may be questioned.

Dental Malocclusion → Increased Cytokine Concentration (TMJ)

Animal models of acute synovitis have shown that antigen injection into appendicular joints results in severe inflammation, but that this was not the case in the TMJ. Researchers have thus postulated that the TMJ does not respond to acute insults or chronic degenerative joint disease in the same way as other joints. An LPS-challenge model recently examined this theory and confirmed that the equine TMJ was able to quash acute inflammatory cytokine responses better than that of the fetlock joints. In this double blinded, randomized, controlled clinical trial horses also continued to eat when their TMJs showed visible and palpable inflammation, re-enforcing the previously reported difficulty of examining a horse for TMJ disease. Here were horses with known bono-fide disease that were eating normally and without apparent discomfort.

Other than a single case report, in which a chronically degenerate joint (deemed non-septic simply because bacteria were not seen in the joint fluid) underwent a salvage unilateral condylectomy, there are no reports of non-septic induced degenerative joint disease in the horse. There are however, elegant anatomical studies and a number of case reports and case series detailing condylectomy and partial condylectomies for the treatment of post-septic degenerative joints. The lack of simple degenerative joint disease publications pertaining to the equine TMJ is intriguing. Possibilities are that the disease is common but that no-one writes about them or that they are incredibly rare or that horses are able to cope with such problems and we do not appreciate a clinical problem.

Interestingly, publications examining the cytokine profiles of normal and diseased appendicular equine joints have shown that in cases of chronic degenerative joint disease, inflammatory cytokine concentrations are not significantly elevated above normal. This research has not been repeated in diseased equine TMJs.

Proceedings of the AAEP Focus on Dentistry - AAEP Focus Meeting, 2013 - Charlotte, NC, USA
The authors’ experiences with equine TMJ disease are not massive. Cases include peri-articular abscessation (with no associated joint sepsis), true joint sepsis (treated arthroscopically), temporomandibular joint subluxation (associated with a historical mandibular fracture and trauma to the TMJ, diagnosed on computed tomography [CT] examination) and post-sepsis associated degenerative joint disease have all been seen. In each case, the primary complaint was failure to prehend and chew feed properly. Upon physical examination, the striking feature of these cases was that vertical opening of the mouth was strongly resented by all animals. Lateral movements did not elicit an avoidance response. In no case was there an abnormality noted in either the molar occlusal angle or the amount of clinical reserve crown present within the mouth. This may be because the onset of disease was rapid enough as to not have had time to affect dentition prior to veterinary examination or that insufficient animals have been seen.

REFERENCES