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2 *TMJ pathology: is it real?*

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9 **Clinical scenario: can poor athletic performance or behavioural problems, such as**  
10 **quidding, headshaking or dysphagia, be attributed to temporomandibular joint disorder**  
11 **(TMJ)?**

12 P (population) = adult horses with poor-/under-performance or behavioural problems and no other localising signs

13 I (intervention/indicator) = clinical history and diagnostic testing (diagnostic imaging, arthrocentesis or intrasynovial  
14 anaesthesia, surgery)

15 C (comparator/control) = N/A

16 O (outcome) = diagnosis of poor performance attributable to the TMJ

17 **Search Strategy**

18 PubMed, search date 1 May 2014: ('temporomandibular joint' [MeSH Terms] OR ('temporomandibular' [All  
19 Fields] AND 'joint' [All Fields]) OR 'temporomandibular joint' [All Fields]) AND ('horse' [All Fields] OR  
20 'equine' [All Fields]).

21 **Quantity of Evidence**

22 PubMed result: 32 papers, including 12 single case reports or case series, 11 experimental studies of imaging  
23 (radiography, computed tomography, ultrasonography, magnetic resonance imaging), diagnostic (arthrocentesis)  
24 or surgical (arthroscopic) techniques (8 such studies used only cadaveric material, 7 used healthy live horses and  
25 4 studies used both cadavers and live horses), 4 editorials or invited reviews, 2 experimental kinematic studies  
26 (1 technique validation and 1 measuring impact of dietary change), 2 studies of molecular biology (1 study of  
27 the correlation of TMJ cytokine profiles with dental pathology scores, and 1 of the cytokine response of TMJ  
28 compared to metacarpophalangeal joints).

29 **Quality of Evidence**

30 An absence of systemic reviews, controlled clinical trials, case-control studies or large case series means that  
31 definitive evidence of TMJ disorder in horses is limited. This search used broad search terms, and only found  
32 mention of TMJ disorder amongst editorials and review articles. The experimental studies of diagnostic  
33 approaches are robust and provide good evidence for the benefits of advanced imaging modalities for this  
34 complex structure.

35 **Can this evidence be applied in my case population/clinical scenario?**

36 Anatomical studies have provided robust data for the application of a variety of diagnostic and surgical  
37 techniques, including radiography (Townsend et al. 2009), delayed phase nuclear scintigraphy (Weller et al.  
38 1999a), computed tomography (CT: Rosenstein et al. 2001; Devine et al. 2005; Nagy and Simhofer 2006) and  
39 ultrasonography (Weller et al. 1999b; Rodríguez et al. 2007), but these have primarily been applied to the  
40 management of fractures (Devine et al. 2005), luxations (Hurtig et al. 1984; Hardy and Shiroma 1991), and  
41 septic and nonseptic arthritis (Carmalt and Wilson 2005; Nagy and Simhofer 2006), rather than the more vague  
42 TMJ disorder.

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44 Experimental evidence regarding the cytokine response in the TMJ indicates that this joint may show different  
45 cytokine dynamics to other diarthrodial joints (Carmalt et al. 2011), and does not definitively support the  
46 possibility of putative TMJ disorder contributing to the cluster of vague clinical signs listed. Dental pathology  
47 has been postulated as one cause of TMJ disorder; however, TMJ articular pro-inflammatory cytokine  
48 concentrations did not correlate with age and dental pathology score in one study (Carmalt et al. 2006).

#### 49 **Clinical message**

50 Confirmed reports of TMJ disorder in horses are absent, but this may be due to the diagnostic challenge that  
51 results from nonspecific signs. It is clear from this search that diagnostic techniques have progressed and should  
52 allow more specific diagnoses to be made. It is hoped that robust (multi-centre) case series will follow.

#### 53 **Author's declaration of interests**

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