Editorial

Temporomandibular Joint Disorder and Other Medically Unexplained Symptoms in Rheumatoid Arthritis, Osteoarthritis, and Fibromyalgia

In this issue of *The Journal*, Wolfe and colleagues present data on jaw pain in patients with fibromyalgia (FM) and other conditions[1]. They deserve our admiration, appreciation — and friendly, constructive criticism.

The authors have analyzed data from 22,720 patients participating in a prestructured longitudinal study: 17,683 labeled "RA," 4011 labeled "OA," and 1026 labeled "FM." The investigation focuses on "jaw pain" or "TMD" (temporomandibular joint disorder, a common[2], medically unexplained symptom[3], in a large family of symptoms, aggregated in a rapidly growing literature as "MUS" (medically unexplained symptoms).

In their database, the jaw is not a defined anatomical structure, but a region, like a shoulder or hip. As noted in the introduction, no joint swelling is found and "neither the authors nor Theodore Pincus (personal communication) can recall more than a single case of persistent, severe TM joint involvement in our clinical practices over 25 years. Clinically important TM joint disease seems, therefore, to be relatively uncommon in RA."

Others are more specific: the tenderness primarily affects the muscles of mastication, as does restriction, if present[3]. Tenderness is *not* generalized. The horizontal ramus of the mandible and teeth are rarely involved, even though the third division of the trigeminal nerve serves both the symptomatic and asymptomatic areas. With severity comes bilaterality, but the severity of pain is often asymmetrical.

Their present article[1] should be read in conjunction with earlier reports by the author and colleagues, including the 1990 FM criteria study[4], the whiplash study with Buskila[5], and the Development and Validation of the Regional Pain Scale study[6].

In the 1990 criteria article, it was found that "Tender points (TPs) were the most powerful discriminator between fibromyalgia patients and controls." In the Buskila whiplash study, 102 subjects with neck injuries were compared with 59 with leg fractures. Twenty-two subjects with neck injury, but only one subject with leg fracture, met the 1990 criteria for FM. While these patients met the 1990 criteria for FM, their pattern of tenderness was *not* generalized, but showed upper/lower asymmetry. "The mean number of active tender points (TP) in the upper part of the body was significantly higher in the patients with neck injuries versus those with leg fractures (4.3 vs 1.8), while in the lower part of the body, no significant differences were noted (1.0 vs 0.9). This finding suggests that neck injury may trigger the development of a localized pain syndrome (in the neck and chest area) that evolves into a diffuse musculoskeletal disorder, namely, FM." The authors specified "neck and chest," but did not discuss the head. "Headache" was present in 30% of all neck injury patients, but in 10% of those with leg fractures. It was present in 86% of those with FM. [Prevalence of jaw pain was not ascertained.] [Comments in square brackets are editorial.]

In their 2003 article, Wolfe and colleagues surveyed 12,799 patients, 74.8% with diagnoses of RA, 21.0% with OA of the knee or hip, and 4.2% with FM. Diagnoses were made by reporting rheumatologists (n = 641). From that study evolved a regional pain scale, subsequently combined with fatigue, pain, and reported comorbidity, to identify RA patients with FM-like features, as an alternative to the 1990 set, and feasible within the constraints of their database (i.e., no data on TP). "Nonarticular" regions most commonly involved were the neck and low back. Jaw pain was listed in 31% of FM patients and in 13% of those with RA. Those with jaw pain were likely to have pain in most of the other listed regions (in order): the chest, abdomen, lower arm, upper leg, lower leg, upper back, hip, shoulder, neck, and low back. Common pain areas such as the head were not included. In the database, there were no entries for areas that were rarely painful though very sensitive, such as lips, tongue, nipples.

JAW PAIN AND WHIPLASH

The Buskila study introduced the problem/opportunity of regional pain syndromes (RPS), and the abundant, if inconsistent, literature linking TM dysfunction with whiplash. Jaw pain is not commonly described in the best of these papers. It was not listed by Buskila[5] or by Radanov[7,8]. In a well-controlled study of the symptoms produced in volunteers by low-speed (4 and 8 km/h) rear-end automobile collisions, TM joint symptoms were listed in only one of 42 subjects. Headaches and posterior neck symptoms predominated and were present after 15 trials. Anterior cervical and

See: Jaw pain: Its prevalence and meaning in patients with RA, OA, and FM, *page 2421*

posterior thoracic symptoms developed in 6[9]. The Quebec Task Force noted the occurrence of TM joint disorders associated with whiplash, and included "reduced/painful jaw movements" in their recommended protocol[10]. [This recommendation was ignored by most other investigators. TP were assessed only by Buskila, and none addressed the question of asymmetry.]

REGIONAL PAIN AND MEDICALLY UNEXPLAINED SYMPTOMS (MUS)

A common MUS is headache. Remember when these were often called "tension" headaches? This name had to change to "tension-type" headache when many studies (for example, Clark, *et al*[11]) showed that electromyographic activity in area muscles was not different from controls. The pain mechanism remains unexplained.

One of the most dramatic forms of MUS is non-cardiac chest pain. In the introduction to an early controlled trial, it was stated that "Nearly half of patients hospitalized with unstable angina eventually receive a non-cardiac-related diagnosis." Their data: Of 424 patients with chest pain seen in the emergency department, only 22 who entered either a chest pain observation unit or who were admitted to hospital had "primary [cardiac] events"; and 17 more had cardiac events in the 6 months after discharge. There was no cardiac diagnosis in 90%, and there was no discussion of alternative explanations for the symptoms[12]. A recent larger study summarized: "Of 1819 patients, 13.2% were assigned a 30-day diagnosis of acute myocardial infarction and 8.6% definite unstable angina. 398 of 1819 patients evaluated for chest discomfort had a diagnosis of ACS confirmed within 30 days." [Thus 1421 or 78% had no definite diagnosis; again a problem not emphasized or discussed.] A further trial mentioned other symptoms: "A subgroup (n = 56) with persistent disabling chest pain at six weeks were invited to take part in a randomised controlled trial of cognitive behavioural treatment. At six weeks, most had persistent, clinically significant symptoms and distress."[13]

TENDER POINTS AS MARKERS OF REFERRED PAIN: THE C 6–7 SYNDROME

What should have been done? We have recently reviewed the evolution of TP in experimental as well as clinical referred pain syndromes[14], and briefly referred to the C6–7 syndrome[15], in part as an example of a specific pattern of TP, not listed in the 1990 criteria, and indicating a problem originating in the lower cervical spine. While attempting to recruit patients for the 1990 study, I found that many treated patients who had previously met our criteria for FM were no longer tender at trapezius, supraspinatus, 2nd costochondral junction, and lateral elbow sites, but were still symptomatic. In these, we identified a new pattern of marked tenderness, at the medial epicondyle, origin and insertion of pectoralis minor, and the lowest part of the anterior cervical spine, in the vertebral bodies immediately adjacent to the C6–7 level. For research purposes this "training" sample was excluded, a protocol was defined, and 151 such patients were recruited to a new study over a 14-month period. Prior FM by our criteria had been identified in 91[4]; 60 presented as regional upper body pain syndromes. Jaw pain was a complaint in 27 of those with prior FM (30%) and in 15% of those without prior FM. Anterior headache was common, in 50% of the prior FM group, and 15% of the others.

The subjects were defined by the contrast between lack of tenderness in sites listed in the 1990 criteria and marked tenderness in the newly defined pattern. But there was also a striking left/right asymmetry in 56 subjects, as shown in Table 1 and Figure 1 (these presentations were not included in the earlier publication[15]).

The distribution of tenderness was not random. Scores at any right–side point correlated strongly with other points on the right side, but weakly with those on the left (and vice versa). Mean r value for ipsilateral points was 0.65, and for contralateral points 0.17. The lateral pectoral point was the most sensitive.

THE CURRENT STUDY

What has all this to do with the current study[1]? The authors quote 2 previous studies of the prevalence of jaw pain in control populations, of 6% and 12%, greater in females, decreasing with age. In this study[1], jaw pain was reported in 19% of patients with RA, 18% of those with OA, and 41% of those with FM (unadjusted figures). Pain was commonly bilateral. (In their earlier study, jaw pain was recorded in 13% with RA, and 31% with FM.) As before, jaw pain was strongly related to the number of areas identified by regional pain scale, and also with fatigue, symptom count, a quality of life index, and a tender joint count in both RA and OA. In related studies, evidence of active inflammation in the TM

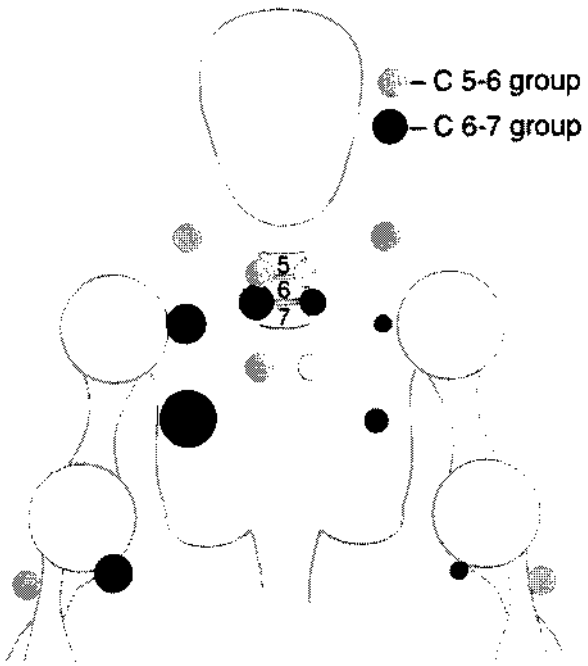

Figure 1. Asymmetric pattern of tenderness in the C6–7 syndrome.

Table 1. C6-7 tender point scores: correlation matrix. The distribution of tenderness was not random. Scores at any right-side point correlated strongly with other points on the right side, but weakly with those on the left (and vice versa). Mean r value for ipsilateral points was 0.65, and for contralateral points 0.17. The lateral pectoral point was the most sensitive.

	R 6–7	R Elbow	R Lat Pect	R Coracoid	L 6–7	L Elbow	L Lat Pect
R elbow	0.61						
R Lat Pect	0.61	0.48					
R coracoid	0.60	0.57	0.54				
L 6–7	0.24	–0.02	0.08	0.06			
L elbow	0.08	0.44	0.06	0.17	0.58		
L Lat Pect	0.09	0.01	0.26	0.05	0.71	0.56	
L coracoid	–0.02	0.03	–0.03	0.31	0.62	0.60	0.63

joint of patients with RA complaining of jaw pain is quite uncommon. All of this is consistent with the findings in the C6–7 syndrome study, that is, in patients with regional pain symptoms, treatable by appropriate regional strategies.

But Wolfe, *et al* conclude that jaw pain is "a part of a general pain disorder, rather than being a specific disorder of the temporomandibular joint." Throughout their text, they use the terms "general" or "generalized" rather than "widespread" or "regional."[1]

A strength of their article is a clear documentation of the prevalence of jaw pain in patients with FM. The literature on this point has been surprisingly slender. Further, the symptom seems to contaminate patients referred for study by collaborating rheumatologists, with unqualified diagnoses of RA and OA, but with important additional symptoms, the origin of which is not probed.

A weakness is their failure to define and explore the null hypothesis, that jaw pain is not fully explained as part of a general pain disorder. To explore this possibility, we need more information, some of which is not in their database: Was there an excess association with other upper body pain; headache, neck, shoulder, upper arm, forearm, anterior chest and upper back? More deeply, why the specificity of jaw pain, if the excess sensitivity is generalized. Forget fibromyalgia for a moment: are the pain patterns generalized in those with OA and jaw pain?

As we move away from the Socratic method of drawing out the pattern of symptoms, to the use of prestructured questionnaires or touch-sensitive computer screens, we are increasingly restricted by the inadequacies of purely verbal approaches, and the traps of asking specific questions of often suggestible patients. Hand gestures are very helpful, but pain diagrams often fail (see Wolfe 2003[6], which fails to record anterior headache). Of course, it would be helpful if clinicians would resume using and teaching tender point assessments in patients whose unexplained symptoms may be due to referred pain[16].

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REFERENCES

1. Wolfe F, Katz RS, Michaud K. Jaw pain: Its prevalence and meaning in patients with rheumatoid arthritis, osteoarthritis and fibromyalgia. J Rheumatol 2005;32:2421-8.
2. List T, Wahlund K, Wenneberg B, Dworkin SF. TMD in children and adolescents: prevalence of pain, gender differences, and perceived treatment need. J Orofac Pain 1999;13:9-20.
3. Burton HG. Whiplash and jaw pain: A multifactorial non-structural relationship. BC Medical Journal 2002;44:261-2.
4. Wolfe F, Smythe HA, Yunus MB, et al. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia; report of the Multicenter Trial Committee. Arthritis Rheum 1990;33:160-72.
5. Buskila D, Neumann L, Vaisberg G, Alkalay D, Wolfe F. Increased rates of fibromyalgia following cervical spine injury. Arthritis Rheum 1997;40:446-52.
6. Wolfe F. Pain extent and diagnosis: development and validation of the Regional Pain Scale in 12,799 patients with rheumatic disease. J Rheumatol 2003,30:369–78.
7. Radanov BP, Sturzenegger M, De Stefano G, Schnidrig A. Relationship between early somatic radiological, cognitive and psychological findings during a one-year followup in 117 patients suffering from common whiplash. Br J Rheumatol 1994;33:442-8.
8. Radanov BP, Sturzenegger M, De Stefano G. Long-term outcome after whiplash injury. A 2-year follow-up considering features of injury mechanism and somatic, radiologic and psychosocial findings. Medicine 1995;74:281-97.
9. Brault JR, Wheeler JB, Siegmund GP, Brault EJ. Clinical response of human subjects to rear-end automobile collisions. Arch Phys Med Rehabil 1998;79:72-80.
10. Spitzer WO, Skovron ML, Salmi LR, et al. Scientific monograph of the Quebec Task Force on Whiplash-Associated Disorders: redefining "whiplash" and its management. Spine 1995;20:1S-73S.
11. Clark GT, Sakai S, Merrill R, Flack VF, McArthur D, McCreary C. Waking and sleeping temporalis EMG levels in tension-type headache patients. J Orofac Pain 1997;11:298-306.
12. Farkouh ME, Smars PA, Reeder GS, et al. A clinical trial of a chest-pain observation unit for patients with unstable angina. Chest Pain Evaluation in the Emergency Room (CHEER) Investigators. N Engl J Med 1998;339:1882-8.
13. Mayou RA, Bass CM, Bryant BM. Management of non-cardiac chest pain: from research to clinical practice. Heart 1999;81:387-92.
14. Smythe HA. Incarnations of fibromyalgia. J Rheumatol 2005;32:1422-5.
15. Smythe HA. The C6-7 syndrome — clinical features and treatment response. J Rheumatol 1994;21:1520-6.
16. Wolfe F. Stop using the American College of Rheumatology criteria in the clinic. J Rheumatol 2003;30:1671-2.