Validity of the Research Diagnostic Criteria for Temporomandibular Disorders Axis I in Clinical and Research Settings

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The authors of the Focus Article[1] present a critical appraisal of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) Axis I and its classification system. They recognize the impact that the cornerstone paper published by Dworkin and LeResche in 1992 has had on clinical research.[2] Research has since yielded important changes and the authors raise a number of important issues, some being very well supported while others are more debatable. The authors conclude that the time has come to update and broaden the scope of the RDC/TMD, which should be more clinically oriented and better oriented to treatment decision making. My commentary addresses the major points from each of the four sections of the Focus Article.

Clinical Examination

The authors draw our attention to the fact that studies using the RDC/TMD tend to report much higher prevalence of muscle disorders than joint pain disorders. They see a potential systematic bias in the examination protocol, which includes five times more muscle than joint palpation sites (20 versus 4). Combined with the poor reliability of several muscle sites (lateral pterygoid, temporalis tendon, submandibular anterior and posterior) included in the RDC/TMD examination protocol, this would favor the report of more Group I muscle disorders at the expense of Group III joint pain disorders. I agree that these muscle sites may contribute by themselves to reach the cutoff number needed to rule in a diagnosis of Group I muscle disorders. A recent study confirms the authors' contention of the poor discriminative value and, therefore, the false-positive rate associated with the palpation of the temporalis tendon and lateral pterygoid, two intraoral muscle sites included in the RDC/TMD protocol.[3] As suggested, I certainly favor the withdrawal of these palpation sites from the examination protocol.

As pointed out by the authors, peripheral and central sensitization associated with non-TMD pain conditions are potentially contributing to a number of misdiagnoses of TMD pain disorders. When this happens, however, it is likely to affect both the Group I and the Group III disorders. On the other hand, I do not share the authors' view that a diagnosis of Group I disorder could be made at the expense of a joint pain disorder because there is an overrepresentation of muscle palpation sites. The RDC/TMD allow multiple diagnoses for conditions belonging to different groups of disorders and, consequently, a muscle disorder diagnosis cannot be made at the expense of a joint disorder. We should rather question the diagnostic criteria for a joint pain disorder and it might be that the false-negative rate is higher than is generally assumed. In fact, the amount of pressure recommended for joint palpation (eg, 0.5 kg) has never been really validated and at least one report indicates that more pressure might be needed to do a better assessment of the temporomandibular joints.[4] The same applies to the pressure recommended for masticatory muscle palpation. As far as assessing other clinical features of the masticatory muscles, the issues are the reliability, interpretation, and specificity of such information. We have to demonstrate that it improves the accuracy of our diagnoses and influences the treatment decision.

Diagnostic Algorithm

The authors use the results of two studies and question the validity and relevance of the prevalence data derived from research conducted with

the RDC/TMD.[5,6] In both cases the patients were recruited from a TMD clinic; therefore, these results are not surprising at all and apply to a similar population. The characteristics of each study population certainly account for the differences seen in the prevalence reported for Group I conditions. Cultural differences and genetic backgrounds are also plausible explanations for the difference seen worldwide in the frequency of TMD subtypes.[7] The authors seem to find the cutoff point for the muscle sites tender to palpation on the side of the ongoing pain is too low. One has to look at the impact such a change would have on the false-negative rate. The best way to find the balance between sensitivity and specificity is to use a receiver operator characteristic (ROC) curve and see what happens with different cutoff points.

As the authors note, the clinical algorithm leading to the diagnosis of muscle and joint disorders needs revision as new knowledge becomes available. They suggest a list of potential criteria and they certainly have legitimate reasons to propose them. But first, one needs to know the reliability of the procedures associated with the data collection, and second, serious consideration should be given to criteria shown to improve the overall sensitivity and specificity of the diagnostic algorithm. What is important to assess with multiple criteria is the increment of the discriminative value that is associated with each additional criteria. As for Group II disorders, we can question the addition of a criterion like "loudness of a click" knowing that assessment of joint sounds has the lowest intra- and interexaminer reliability. That type of information is highly subjected to interpretation even after the calibration of examiners. Moreover, we have no data indicating that it has a significant meaning for the gradation of the Group II disorders or the treatment decision.

Reliability and Validity

As underlined by the authors, the reliability of the clinical examination procedures recommended for the RDC/TMD varies according to the signs and symptoms that are targeted by the assessment. The two types of reliability studies that have been conducted with the RDC/TMD assessed the reproducibility of the examination procedures and the reliability of the diagnostic classification scheme embedded in the RDC/TMD. However, both types of studies require different sample sizes and types of subjects. The guidelines cited by the authors are certainly appropriate for testing the reliability of an examination procedure. Enough subjects with the signs and symptoms are needed to prevent any systematic bias. Thus, it is relevant to exclude subjects with only Group II or III disorders for such a study. On the other hand, these guidelines are inappropriate when the goal is to test the reliability of a diagnostic classification. One needs a bigger sample size and enough subjects with the different disorder subtypes to reliably test each component of the classification scheme. This has been clearly shown in the study the authors are referring to on the reliability of the RDC/TMD diagnosis.[8]

Regarding the gold standard, I agree with the authors' comment that it does not solve the validity issues. However, a gold standard serves as a reference and is needed even though the cause of a condition is unknown. In the medical sciences we search for the truth which is "out there" and the gold standard becomes the best approximation one can make of it. We also have to define the gold standard according to the clinical context. Magnetic resonance imaging (MRI) of the temporomandibular joint has become the gold standard for the diagnosis of disc derangement. It has been shown that almost one out of three TMD patients with a negative clinical diagnosis of joint disorders according to the RDC/TMD have a positive MRI finding of the temporomandibular joint.[9–11] The question that arises is "What conclusion can we draw when there is no history and no pain upon joint palpation?" An MRI diagnosis of disc derangement is hard to refute, although disagreement between examiners does happen. The weight given to MRI findings becomes an issue in the treatment decision knowing that up to 30% of normal subjects can have a disc derangement.[12] For joint pain, the patient report is probably a much better gold standard than the MRI findings.[13] That is to say, an MRI finding does not invalidate the absence of joint pain.

Clinical Setting

The authors mention that the RDC/TMD classify essentially nonspecific temporomandibular conditions. Still nowadays, the most common diagnoses among the TMD are those falling under the umbrella of nonspecific musculoskeletal pain conditions.[14] They also remind us that the aim of the RDC/TMD was to cover the most common TMD for clinical research purposes.

For clinical purposes, the authors are clearly expressing their preference for the American Academy of Orofacial Pain (AAOP) classification

because it has a broader scope. The AAOP also provides a set of diagnostic criteria for each TMD included in the classification scheme as does the RDC/TMD. The authors continue by saying that "if therapeutic decisions are restricted to RDC/TMD Axis I and II categorizing only, this would mean patient neglect." It is based merely on the assumption that clinicians are likely to limit their reasoning process to the list of disorders included in the bottom half of Fig 1 of the Focus Article. It also means that clinicians using the RDC/TMD are less likely to rule out other potential orofacial pain conditions that are able to mimic the clinical presentation of common TMD. However, the authors do not substantiate their view with any evidence that it has been detrimental to patients to use the RDC/TMD.

I do not support the authors' view that what is good for clinical research is not appropriate for clinical use. This would mean less stringent standards for clinical use and an increased risk of gathering unreliable data that contribute to questionable diagnoses and poor treatment decisions. With classification systems developed for widespread use, it certainly helps to know the reliability and validity of a given system and, right now, we only have data for the RDC/TMD classification scheme. As pointed out by the authors when they refer to the RDC/TMD, meeting the AAOP criteria does not necessarily predict the underlying condition.

I conclude by saying that the authors of the Focus Article have raised a number of relevant issues that will certainly contribute to the improvement of the RDC/TMD. As taxonomic classifications are not updated at the same pace as new knowledge emerges, clinicians must be familiar with the diagnostic space and therefore the limitations associated with any classification system they elect to use when dealing with orofacial pain patients.

References

1. Steenks MH, de Wijer A. Focus article: Validity of the research diagnostic criteria for temporomandibular disorders Axis I in clinical and research settings. J Orofac Pain 2009;23:9–16.
2. Dworkin SF, LeResche L. Research diagnostic criteria for temporomandibular disorders: Review, criteria, examinations and specifications, critique. J Craniomandib Disord Facial Oral Pain 1992;6:301–355.
3. Rodrigues Conti PC, Sylva DSR, Nunes Rossetti LM, Ferreira Da Sylva RDO, Do Valle AL, Gelmini M. Palpation of the lateral pterygoid area in the myofascial pain diagnosis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008;105:e61–e66.
4. Shaefer JR, Jackson DL, Schiffmann EL, Anderson QN. Pressure pain thresholds and MRI effusions in TMJ arthralgia. J Dent Res 2001;80:1935–1939.
5. List T, Dworkin SF. Comparing TMD diagnoses and clinical findings at Swedish and US TMD centers using research diagnostic criteria for temporomandibular disorders. J Orofac Pain 1996;10:240–253.
6. Yap AUJ, Dworkin SF, Chua EK, List T. Prevalence of temporomandibular disorders subtypes, psychologic distress, and psychological dysfunction in Asian patients. J Orofac Pain 2003;17:21–28.
7. Stohler CS. Temporomandibular joint disorders—the view widens while therapies are constrained. J Orofac Pain 2007;21:261.
8. John MT, Dworkin SF, Mancl LA. Reliability of clinical temporomandibular disorder diagnoses. Pain 2005; 118:61–69.
9. Schmitter M, Kress B, Rammelsberg P. Temporomandibular joint pathosis in patients with myofascial pain: A comparative analysis of magnetic resonance imaging and a clinical examination based on a specific set of criteria. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2004;97:318–324.
10. Limchaichana N, Nilsson H, Ekberg EC, Nilner M, Petersson A. Clinical diagnosis and MRI findings in patients with TMD pain. J Oral Rehabil 2007; 34:237–245.
11. Manfredini D, Guarda-Nardini L. Agreement between research diagnostic criteria for temporomandibular disorders and magnetic resonance diagnoses of temporomandibular disc displacement in a patient population. Int J Oral Maxillofac Surg 2008;37:612–616.
12. Kircos LT, Ortendahl DA, Mark AS, Arakawa M. Magnetic resonance imaging of the TMJ disc in asymptomatic volunteers. J Oral Maxillofac Surg 1987; 45:852–854.
13. Haley DP, Schiffman EL, Lindgren BR, Anderson Q, Andreasen K. The relationship between clinical and MRI findings in patients with unilateral temporomandibular joint pain. J Am Dent Assoc 2001;132:476–481.
14. Drangsholt M, LeResche L. Temporomandibular disorder pain. In: Crombie IK, Croft PR, Linton SJ, LeResche L, Von Korff M (eds). Epidemiology of Pain. Seattle: IASP Press, 1999:203–233.