The RDC/TMD Validation Project: An Important or a Final Step Towards a Revised Version of the RDC/TMD?

The RDC/TMD Validation Project, previously published in the *Journal of Orofacial Pain*,[1–6] provides a valuable series of studies on the reliability and validity of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD), and presents recommendations for a revised and updated version. This series gives rise to the important question of how far we are in developing a revised version of the RDC/TMD.

The original RDC/TMD provide an internationally recognized classification system for TMD.[7] It includes operationalized data collection procedures and clear diagnostic parameters, which allow for a unique level of comparability of TMD research across studies. An important feature of the RDC/TMD is their dual-axis approach, providing descriptions not only of the physical findings (Axis I) but also of the psychological status and pain-related disability (Axis II) of TMD patients. However, even though the RDC/TMD have dominated the field of TMD research for 18 years, there are serious concerns regarding their validity,[8,9] which, remarkably, has not been studied until recently.[3,10] In 2008, the International Consortium for RDC/TMD-Based Research organized a Symposium at the General Session of the International Association for Dental Research (IADR) in Toronto, where preliminary results of the Validation Project were presented and concerns regarding the RDC/TMD's validity were discussed.[11] Clearly, there is a vast need to revise and update the original RDC/TMD.

To address this need, an International Consensus Workshop was organized prior to the 2009 IADR General Session in Miami. Unfortunately, due to time constraints and lack of consensus, the Workshop discussions did not lead to clear decisions in all areas.[12] In part, the unresolved issues are related to controversies in the available scientific evidence and in the expert opinions. This is illustrated by two recently published studies that deal with the validity of the original RDC/TMD.[3,10] While both studies agree that the validity is insufficient, a closer look at their results shows contradictory findings: the Multicenter Study[10] showed a high sensitivity and a low specificity for the RDC criteria for TMD pain, whereas the Validation Project[3] generally showed opposite results. Without going into details, these deviating findings probably relate to differences in the choice of reference standards (both with their own strengths and weaknesses) and of the control groups (in the Multicenter Study, a patient-based control group with chronic dental pain highlighted that specificity findings are overestimated when studied in healthy controls). The complexity of the revision process is further illustrated by the Validation Project's conclusion that their recommended revised (clinical) RDC/TMD are also inadequate for a valid diagnosis of several TMD subclassifications.[5]

Hence, the results from the RDC/TMD Validation Project can be considered as an important, but not a final, step towards a new version of the RDC/TMD. The new version should be based upon all available scientific evidence and be complemented by consensus of experts in the field of TMD where the evidence is ambiguous. Since the consequences of a new version will be large, we suggest that, as a next step, the revision process should be continued in another consensus workshop.

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The Revised RDC/TMD for Myofascial Pain with Limited Opening: What Should It Mean to Us?

As a graduate student of oral medicine at the University of Washington, I was privileged to acquire the ability to use the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) in the process of diagnosis, treatment, and research of TMD patients. With this knowledge, I moved back to my homeland, Israel, to pursue my profession, ie, orofacial pain clinician and researcher. I was, however, about to discover that orofacial pain could be different here.

I had been working in Israel for but a week when a 14-year-old patient with a proposed diagnosis of TMD was referred to me. The patient's chief complaints included decreased hearing and fullness in his left ear, limitation of range of (mouth opening) motion (ROM), and mild facial pain. Examination revealed active ROM of 23 mm, while passive maximum assisted opening was increased to 25 mm only. While the patient exhibited tender muscles upon palpation, which could correspond with the requirement for a diagnosis of myofascial pain with limited opening, the requirement for maximum assisted opening in passive stretch of 5 mm or more than pain-free unassisted opening was not met. In fact, this patient was eventually diagnosed as suffering from nasopharyngeal carcinoma.[1] Since then, I acknowledged the importance of first ruling out non-TMD orofacial conditions prior to applying the RDC/TMD. I also realized that the differences I experienced in diagnosing orofacial pain in Israel did not stem from the varying quality of the physicians, but rather from the simple fact that I moved from a tertiary clinic to a primary-secondary clinic.

Over the years, while I developed some criticism of the RDC/TMD, I continued using it as a research tool as well as in my clinical practice, and realized that the RDC/TMD was a good, reliable tool to help differentiate TMD cases from myospasm. And, indeed, life-threatening conditions such as giant cell arteritis,[2] peritonsillar abscess, and orofacial space-occupying lesions, were all referred with a proposed diagnosis of TMD, mainly because of limitation of ROM. All of these cases could have fulfilled the diagnosis of myofascial pain, except for not meeting the requirement for maximum assisted opening of 5 mm or more than pain-free unassisted opening. This, I learned to appreciate, was a cardinal sign to suspect a serious pathology which presented as myospasm.

Recently, a revised RDC/TMD was proposed.[3] While validation of the original version of the RDC/TMD showed the diagnosis of "myofascial pain with limited opening" achieved sensitivity of 0.79 and specificity of 0.92, the revised diagnostic criteria increased sensitivity to 0.93 and specificity to 0.97. However, one of the modifications included elimination of the criterion of maximum assisted opening of 5 mm or more than pain-free unassisted opening which was previously required for diagnosis of myofascial pain with limited opening.

I could not help thinking how these revised diagnostic criteria of myofascial pain with limited opening will affect my diagnosis process. Sadly, I recognize that specifically the revised diagnostic criteria for myofascial pain with limited opening might lead to false-positive diagnoses of TMD in primary-secondary TMD clinics, with potentially fatal consequences.

Sincerely,

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Response

We appreciate the comments of Dr Shoshana Reiter in reference to the revision that we proposed for the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) diagnostic algorithm for myofascial pain with limited opening based on the findings from the Validation Project.[1] She is correct in making her important

statement that patients with serious pathology including tumors may present with findings that suggest a primary TMD. Before application of the RDC/TMD diagnostic algorithm to any patient, it is essential that reasonable efforts be made to rule out other forms of pathology that may produce findings identical to those seen in individuals with TMD, including pain and limitation or jaw deviation during opening. Dr Reiter's description of cases masquerading as TMD while hiding potentially lethal pathology is an important reminder that occasionally uncommon but serious pathology may mimic a lesser disorder.[2] It is, however, important to point out that patients with the types of serious pathology she describes may or may not present with painful or pain-free limitations in opening and the amount of increased opening with assistance, as described as part of the RDC/TMD diagnostic protocol, may vary considerably in the presence of serious pathology as it does with myofascial pain.

We also appreciate the comments by Visscher et al regarding the advancement of the specifications and diagnostic algorithms of the RDC/TMD.[3] Both the Multicenter Study and the Validation Project reported that the diagnostic tests for RDC/TMD Axis I pain-related disorders did not reach the target sensitivity of ≥ 0.70 and specificity of ≥ 0.95.[4,5] We agree that the likely source of the disagreement in the estimates of sensitivity and specificity between these studies lies in the choice of reference standards, which, in turn, reflects the complexity of establishing diagnostic validity for pain disorders when there is no objective "truth." The two studies addressed this in different ways. While the choice of another pain condition (eg, pulpitis) as a comparison group for assessing the specificity of a test for TMD is intriguing,[5] there are other tests that more directly address the diagnosis of pulpitis. The Multicenter Study and the Validation Project used different methods to establish the reference for TMD pain in order to address the circularity issue: the classification based in the former only on history[5] and in the latter on consensus diagnoses by two TMD experts derived from independent examinations using all available data.[6] These are clearly ongoing issues for further research.

The initial findings of the Validation Project were presented in Toronto in 2008 and several colleagues were invited discussants. All comments will be published together, providing a more complete story of the state of the science at that time. The Validation Project subsequently derived parsimonious, reliable, and valid revised diagnostic algorithms for myofascial pain and arthralgia.[1] Based on the Toronto symposium, a 2.5-day workshop was held in Miami in 2009[7] to develop Diagnostic Criteria for TMD (DC/TMD) that could be used by both clinicians and researchers in order to move the best practice of diagnostic procedures from the research laboratory to the clinical setting. The 36 invited participants were from 12 countries representing 11 organizations and had expertise in bioinformatics, epidemiology, medical ontology, neurology, neuroscience, TMD and orofacial pain disorders, patient advocacy, physical therapy, psychology, and radiology. A complete review of the relevant literature was provided to the participants prior to the workshop; the recommendations emerged from consideration of all of the information available to this broad-based group of experts. Members submitted 41 questions for discussion and voting by all of the participants; 32 exhibited sufficient endorsement, providing the necessary evidence that the diagnostic procedure or diagnostic criterion was now ready for implementation into clinical guidelines. The nine workgroup questions that did not receive clear endorsement at the Miami meeting will be addressed in a future publication that will outline a research roadmap towards future evaluation and diagnosis of TMD. Ontological principles, mechanisms, etiology, and neuroscience considerations will inform these future developments, which will reflect the collective efforts of researchers involved in this field. However, at present, sufficient consensus and data exist for establishment of a DC/TMD for use in the clinical and research settings.

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