Editorial

Are Physician-derived Joint Counts Obsolete?

In rheumatoid arthritis (RA) it is clear that persistent synovitis leads to joint destruction and disability. Currently, the goal in the treatment of RA is to achieve remission both clinically and radiographically. Remission implies the absence of synovitis as assessed by the absence of tender and swollen joints clinically, lack of radiographic progression, and a normal acute-phase reactant (APR). In this context, the tender (TJC) and swollen joint counts (SJC) are central to the clinical assessment of synovitis[1,2]. The importance of joint counts as a measure of synovitis is seen by their prominence in the 2 major clinical composite indices, the American College of Rheumatology (ACR) and European Disease Activity Score (DAS). In the ACR index the TJC and SJC must improve by 20%, 50%, or 70% to achieve an ACR20, 50, and 70 response, respectively, regardless of improvement in 3 of the other 5 core set measures. In the DAS score, the TJC and SJC constitute 2 of the 4 outcome measures. The TJC and SJC together contribute numerically to ~50% of the score.

Despite the importance of the TJC and SJC to both clinical and radiographic outcomes, the tendency among rheumatologists is to do less frequent assessment of joint counts. Thus, a recent report has shown that formal quantitative joint counts by rheumatologists are carried out in a minority of patients[3]. Coupled with the trend to use patient-derived outcomes exclusively as a measure of disease activity, the quantitative joint count as the preeminent outcome may be waning[4].

Kavanaugh, *et al* have taken the next logical step to evaluate the possibility that patient self-assessment might be a reliable alternative to monitoring by healthcare providers[5]. In this issue of *The Journal* they evaluate the correlation between the DAS28 based on physician- and patient-derived joint counts in a retrospective analysis of an open-label study investigating the immunogenicity of etanercept in the treatment of RA[6]. Correlations between physicians' and patient-derived joint counts were determined at baseline and at 12 and 24 weeks. Their results demonstrate a high correlation between physician- and patient-derived DAS28, Clinical Disease Activity Index (CDAI), and Simplified Disease Activity Index (SDAI). However, the clinical utility of these composite indices using the physician-derived indices may be quite different versus patient-derived indices. The fundamental difference between the 2 instruments stems from differences between the physician- and patient-derived SJC. While the authors demonstrate a strong correlation between patient- and physician-derived TJC (i.e., 0.78), there was a more modest correlation with the SJC (0.43–0.55). Of critical importance, agreement between physician and patient individual joint assessment by kappa statistics revealed a modest correlation with the SJC for large joints such as the knee and elbow (0.25–0.55) and a poor correlation with the wrists, metacarpophalangeal (MCP) joints, and proximal interphalangeal (PIP) joints (0.08–0.33). As the authors note, other studies comparing the level of agreement between physician and patient assessment of TJC and SJC have also demonstrated stronger agreement for TJC compared with SJC. The stronger correlation between physician- and patient-derived TJC, coupled with the stronger weighting of the TJC (vs the SJC) in the DAS, may account in part for the good correlation between the physician- and patient-derived DAS. However, the CDAI and SDAI, in which patient and physician TJC and SCJ are weighted equally, demonstrate correlations similar to the DAS28.

The weak correlation between physician- and patient-derived SJC, particularly for the small joints, is a major limitation of the patient-derived outcome. The authors note a considerable average difference between physician and patient SJC at baseline (mean 5.7), with a mean baseline SJC of 14.8 and SJC at Week 24 (mean 4.4). This difference is significant since the SJC is a stronger predictor of structural damage than the TJC[7]. Therefore, despite similar DAS scores the physician- and patient-derived DAS may have a different clinical significance with respect to longterm outcome of the patient. Since a poor correlation was observed in this study between the patient and physician SJC for the wrists, MCP, and PIP of the hands, it follows that pati-

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ent-derived DAS28 scores will not measure the same clinical outcomes as the physician SJC. This is particularly problematic since structural damage as assessed by Sharp Score evaluates radiographic changes in the small joints of the hands and wrists. The stronger agreement between physician and patient TJC is less relevant given its weak association with structural damage.

The differences between patient- and physician-derived joint counts noted in this and other studies are compounded by recent observations of dissociation between clinical and radiographic outcomes[8]. Thus, radiographic progression has been observed in some patients in clinical remission. This observation is explained by the definition of the composite indices, i.e., DAS and ACR, that define remission. In patients in DAS remission, as many as 8 swollen joints may be present, while ACR remission allows up to 13 swollen joints[9]. A SJC that significantly deviates from the physician SJC will likely result in a greater discrepancy between clinical and radiographic outcomes. Further, the discrepancy between findings on sensitive imaging techniques such as the ultrasound and magnetic resonance imaging versus clinical assessment will likely be enhanced with the patient-derived SJC.

Kavanaugh, *et al* found that the level of agreement between physician and patient DAS28 decreased with low disease activity: less than 50% of patients classified at a low disease state by the physician were so classified by the patient. Thus, use of the patient-derived DAS28 as a therapeutic target would seem problematic.

Given data presented above, it is apparent that the SJC is often the primary outcome upon which we base our therapeutic decisions. Since the patient global assessment correlated much better with the TJC and not with the SJC, patient-derived outcomes in the absence of joint counts could be misleading in some circumstances, such as fibromyalgia or severe joint damage. Moreover, we have published data demonstrating that a substantial proportion of patients with well established disease exhibited high patient global assessments of disease activity in the face of relatively mild disease activity, as observed by a SJC of ≤ 5 joints[10]. For this reason SJC are critical to assessment of patient outcomes. That the APR can be used as a surrogate for this SJC is misleading, given the weak correlation between the SJC and APR. In fact, the SJC correlates better with radiographic progression than with APR[11].

The authors conclude by suggesting their data support the use of patient self-assessment of tender and swollen joints during RA treatment but it is not meant to replace physician assessment. Moreover they state that patient self-assessment is likely to result in more frequent monitoring, which may allow for more rapid medication adjustment by the physician, thereby improving patient outcomes. It would seem to this rheumatologist that patient-derived outcomes such as a global assessment, in the context of a physician-derived SJC and APR, would provide a much more accurate assessment on which to base therapeutic decisions. The 120 seconds it takes a physician to do a 28 swollen joint count is well worth it. It's time for rheumatologists to get back to the time-honored tradition in which they were trained. They might even enjoy it.

EDWARD C. KEYSTONE, MD, FRCPC,
Professor of Medicine, University of Toronto;
Director, Rebecca MacDonald Centre for Arthritis and Autoimmune Disease; Director, Division of Advanced Therapeutics in Arthritis, Toronto, Ontario, Canada

Address correspondence to Dr. Keystone; E-mail: EKeystone@mtsinai.on.ca

REFERENCES

1. Pham T, Gossec L, Fautrel B, Combe B, Flipo R-M, Goupille P, et al. Physical examination and laboratory tests in the management of patients with rheumatoid arthritis: development of recommendations for clinical practice based on published evidence and expert opinion. Joint Bone Spine 2005;72:222-8.
2. Van der Heijde DM, van't Hof MA, van Riel PL, Theunisse LA, Lubberts EW, van Leeuwen MA, et al. Judging disease activity in clinical practice in rheumatoid arthritis; first step in the development of a disease activity score. Ann Rheum Dis 1990;49:916-20.
3. Pincus T, Segurado OG. Most visits of most patients with rheumatoid arthritis to most rheumatologists do not include a formal quantitative joint count. Ann Rheum Dis 2006;65:820-2.
4. Pincus T. Can RAPID3, an index without formal joint counts or laboratory tests, serve to guide rheumatologists in tight control of rheumatoid arthritis in usual clinical care? Bull NYU Hosp Jt Dis 2009;67:254-66.
5. Kavanaugh A, Lee SJ, Weng HH, Chon Y, Huang X-Y, Lin S-L. Patient-derived joint counts are a potential alternative for determining Disease Activity Score. J Rheumatol 2010;37:1035-41.
6. Dore RK, Mathews S, Schechtman J, Surbeck W, Mandel D, Patel A, et al. The immunogenicity, safety, and efficacy of etanercept liquid administered once weekly in patients with rheumatoid arthritis. Clin Exp Rheumatol 2007;25:40-6.
7. Emery P, Genovese MC, van Vollenhoven R, Sharp JT, Patra K, Sasso EH. Less radiographic progression with adalimumab plus methotrexate versus methotrexate monotherapy across the spectrum of clinical response in early rheumatoid arthritis. J Rheumatol 2009:36;1429-41.
8. Drossaers-Bakker KW, Zwinderman AH, Vliet Vlieland TP, Van Zeben D, Vos K, Breedveld FC, et al. Long-term outcome in rheumatoid arthritis: a simple algorithm of baseline parameters can predict radiographic damage, disability, and disease course at 12-year followup. Arthritis Rheum 2002;47:383-90.
9. Brown AK, Quinn MA, Karim Z, Conaghan PG, Peterfy CG, Hensor E, et al. Presence of significant synovitis in rheumatoid arthritis patients with disease-modifying antirheumatic drug-induced clinical remission: evidence from an imaging study may explain structural progression. Arthritis Rheum 2006;54:3761-73.
10. Jamal S, Donka T, Kitamura C, Keystone C, Bykerk V, Keystone E. Patient derived outcomes alone are not sufficient of disease activity: the need for joint examination. American College of Rheumatology Annual Scientific Meeting 2006; poster 563.
11. Vastesaeger N, Eu S, Aletaha D, St. Clair EW, Smolen JS. A pilot risk model for the prediction of rapid radiographic progression in rheumatoid arthritis. Rheumatology 2009;48;1114-21.

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