Joint Counts to Assess Rheumatoid Arthritis for Clinical Research and Usual Clinical Care: Advantages and Limitations

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KEYWORDS

• Joint examination • Self-report questionnaire
• Joint count • Quantitative assessment

A careful joint examination is required to establish a diagnosis of rheumatoid arthritis (RA),[1] and quantitative counts of swollen and tender joints are the most specific measures for patient assessment.[2–5] The number of swollen and tender joints is regarded as the most important measure for RA clinical trials to distinguish active from control treatments,[6] and the best measure of status in usual clinical care.[7]

It might be ideal if a swollen joint count could serve as the *only* measure—a ''gold standard''—to assess and monitor all individual patients with RA. However, some individual patients may have many swollen joints but little pain, whereas other patients may have considerable pain and few swollen joints, yet both may receive identical treatments. Therefore, the joint count is included in a Core Data Set[8–10] for pooled indices to assess individual patients (see ''Complexities in Assessment of Rheumatoid Arthritis: Absence of a Single Gold Standard Measure,'' by Pincus and colleagues, in this issue).[11]

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The primary indices that include a joint count, the disease activity score (DAS),[12,13] and clinical disease activity index (CDAI),[14] weight joint count data at higher levels than the other 5 Core Data Set measures. Nonetheless, several limitations of the joint count have been described, as with all quantitative measures (**Table 1**),[15–27] as summarized in this article and described in greater detail elsewhere.[28,29]

JOINT COUNTS ARE POORLY REPRODUCIBLE

Joint counts are poorly reproducible in formal studies.[15–27] For example, in one study interclass correlation coefficients for tender and swollen joint counts were found to be lower than seen for patient self-report questionnaire and radiographic scores (**Table 2**).[27] Similar results were seen in several other studies.[27]

Variation in joint count results can be reduced by training rheumatologists and other assessors to standardize scores.[21,25,26] Nonetheless, all protocols for clinical trials and other clinical research studies in RA require that a joint count must be performed by the same observer at each assessment. Most measures such as temperature, pulse, or blood pressure are regarded as ascertainable by any trained health professional at any time.

The need for the same person to perform each joint count in a given patient presents a serious limitation to use of joint counts as rigorous indicators of a need for changes in therapy, responses to therapy, or to document quality of care. Possible collaborative care between rheumatologists and family practitioners or other health professionals to manage patients is limited by a requirement for the same observer. By contrast, a patient self-report questionnaire always involves the same single observer—the patient.

JOINT COUNT MEASURES ARE AT LEAST AS LIKELY, OR MORE LIKELY TO IMPROVE WITH PLACEBO TREATMENT THAN THE OTHER 5 RA CORE DATA SET MEASURES

In clinical trials, patients who receive placebo or control treatments almost always show improvement according to swollen and tender joint counts as great as or greater than according to other Core Data Set measures.[30] For example, the last RA clinical trial conducted with a placebo (without ''background'' methotrexate or other disease-modifying antirheumatic drug treatment) compared leflunomide or methotrexate with placebo.[31] Placebo treatment resulted in improvement in patient status of 21% for swollen joint count, and 20% for tender joint count, compared wtih 12%

Table 1
Some limitations of joint counts

1. Joint counts are poorly reproducible,[15–27] with a need for the same observer to perform a joint count at each subsequent visit, excluding other health professionals
2. Joint count measures are at least as likely or more likely to improve with placebo treatment than the other 5 RA Core Data Set measures[30]
3. Joint counts have similar or lower relative efficiencies than global and patient measures to document differences between active and control treatments in clinical trials[30–40]
4. Joint counts may improve over 5 years while progressive joint damage and functional disability may occur[41]
5. Joint counts are not as sensitive in detecting inflammatory activity as ultrasound[59,61,62]
6. Most visits to a rheumatologist include a careful joint examination, but do not include a formal joint count[60]