Joint counts in routine practice

Swollen and tender joints are the most characteristic features of rheumatoid arthritis (RA) and disease severity is directly related to the numbers of swollen and tender joints. Consequently, clinical trials of disease-modifying anti-rheumatic drugs and biologicals use reductions in swollen and tender joint counts as key outcome measures. Despite their central place in RA, we believe that joint counts are not always recorded in specialist clinical care. Our purpose in this editorial is to make the case for their invariant adoption in routine practice.

Counting the number of swollen joints is a clinical method of quantifying the amount of inflamed synovial tissue. Joint tenderness, by contrast, is more closely associated with the amount of pain. As the relationship between joint swelling and tenderness varies from case to case and time to time in the same patient, it is traditional to assess them both. There is no existing consensus on a single standardized method of counting the number of joints involved. The methods available vary in the number of joints assessed, whether these joints are weighted according to size, and whether the joint abnormality is scored on a graded scale or simply as being normal or abnormal [1]. The favoured methods include the extended 66/68-joint count, the Ritchie articular index [2] and the reduced 28-joint count [3]. As there is no advantage in examining large numbers of joints, the 28-joint count is becoming the international standard [4, 5].

Several studies provide the rationale for using the simple 28-joint count. A longitudinal study by Prevoo et al. [6] compared a number of different joint counts and indices. They found that their validity and reliability did not differ substantially, though weighted indices performed less well. Subsequently, Smolen et al. [7] compared the 28-joint count with the 66/68-joint count in 735 prospectively studied RA patients. The joints in the 28-joint count were more commonly involved than others, and findings from the 28-joint count correlated highly with the 66/68-joint count. These studies show that the 28-joint count is the preferred measure as it is not only a reliable and valid measure but is also easier to perform than the 66/68-joint count, and it evaluates the joints that are critically involved.

This does not mean that joint counts are ideal measures. Several studies [8–12] reported considerable variation in joint counts between both individual observers and centres in clinical trials and in routine clinical practice. Despite this, determining the numbers of swollen joints and tender joints is the most stable method of clinical assessment. Furthermore, training to standardize methods [13] increases the sensitivity of counting swollen and tender joints and reduces the variability of measurement, though it does not entirely abolish it.

As the assessment of RA should integrate several clinical and laboratory measures, there has been a growing belief in indices that combine the various assessments to give an overall clinical score. There are many examples of such combined indices. These include the Stoke index [14], the Mallya and Mace index [15], the Overall Status in RA (OSRA) measure of Symmons [16] and the Disease Assessment Score (DAS) [17]. Both the Stoke index and the Mallya and Mace index require more clinical data and are more complicated and less able to discriminate between patients than the DAS, and the OSRA has never been widely used. Consequently, the DAS has become the preferred combined index.

The development of the DAS dates back to 1983, when a modification of an existing disease activity index was used in a small clinical trial [18]. Subsequently all patients with early RA were assessed and classified into cases with high or low disease activity. This classification was based on a joint decision by the rheumatologist and the patient. Using this classification, it was possible to identify a combination of variables that discriminated best between these two disease states, which led in turn to the development of the DAS [19]. The original DAS used the Ritchie articular index, a 44-swollen joint count, the erythrocyte sedimentation rate (ESR) and a general health assessment on a visual analogue scale (VAS). However, the DAS was subsequently modified to include 28-joint counts for swelling and tenderness [20]. Serial measurements of DAS28 are strong predictors of physical disability and radiological progression [21, 22] and provide a sensitive discriminator between patients with high and low disease activity [23]. Unlike the American College of Rheumatology (ACR) response criteria [24, 25], the DAS score was derived for use in clinical practice as well as clinical trials. We believe that it is sensible to combine the use of joint counts with the calculation of DAS scores in routine specialist practice.

We have considered carefully whether or not there is room for further simplification of joint scores or DAS. The 28-joint count includes the shoulders, and it is likely that assessment of shoulder involvement is relatively insensitive and inaccurate. There is thus a case for removing the shoulder joints from routine counts. The use of reduced joint counts in the clinic has been considered by Wolfe et al. [26], and this group of experts believe an 18-tender and/or swollen joint count, which...
uses Ritchie grouping of the MCP, PIP and MTP (metatarsophalangeal) joints, is preferable. They point out that such a joint count actually examines 42 joints, but with Ritchie compression the number reduces to 18. They further consider that it is possible to eliminate the MTP joint, reducing further the joint count to 16, and they argue that this type of joint count has been shown to be as sensitive to clinical change as those used in randomized controlled trials [27]. They have formed the view that further reducing the burden of joint examination by using a 16- or 18-joint count will encourage formal joint evaluation. However, as it will take considerable effort to show that such a reduced joint count will actually deliver a worthwhile benefit, we prefer to remain with a relatively simple and validated system based on examining 28 joints for the immediate future.

Why should rheumatologists measure disease activity in routine clinical practice? One of the most cogent arguments in favour of clinical measurement is the need to provide high-quality clinical care. We remain concerned that much of the care currently provided for RA patients is not of sufficiently high quality when judged by patients’ views of their care, the current relatively poor long-term prognosis, and studies of the organization of clinical care. The limitations of current care are illustrated by a survey of 1542 Norwegian RA patients. This found that 11% reported global dissatisfaction with treatment and 40% felt incompletely involved in treatment choices [28]. Better-educated patients and those cared for by rheumatologists rather than generalists felt more involved and were more satisfied. A survey of 100 RA patients in the USA showed that almost all wanted full information about medication risks and treatment options [29].

There is also considerable evidence from observational studies that RA patients treated in specialist units often have persistent disease activity, a poor quality of life and unacceptable outcomes, with progressive disability and damage, significant comorbidity and increased mortality [30–34]. This may partly reflect poor responses to treatment, but there is evidence that many patients do not receive all appropriate treatments [35, 36]. Studies of decision-making about specific aspects of care, such as drug monitoring [37] and changing the disease-modifying drug [38], suggest that these decisions are not taken on a uniform basis and do not appear evidence-based. From the perspective of evidence-based medicine, we consider it both rational and necessary to measure RA severity and activity routinely, by recording swollen and tender joint counts.

UK surveys indicate the requirements for providing rheumatology services [39], though the systems needed for individual conditions have received little attention [40]. One group in the USA examined process measures for RA management (annual visits, ESR, drug monitoring) by applying ACR guidelines to 1335 case records [36]. The average quality of care score was 62%, and was higher for specialists (76%) than generalists (47%). However, the study provided no data on outcomes, patient satisfaction or cost. Specialist care has been shown previously to improve outcome [41, 42]; Health Assessment Questionnaire (HAQ) scores deteriorated more rapidly in patients seen by generalists than in those seen by rheumatologists (0.020 vs 0.008 units/yr). Patients attending specialists are more satisfied with care [28], and such care is not more expensive [43]. One potential explanation for these differences is that patients seen by specialists receive more disease-modifying drugs [35], though the disparity in prescribing did not appear to be accounted for by differences in disease status [35].

The ways in which rheumatologists take clinical decisions was investigated in detail in the 1980s by Kirwan et al. [44–47]. As a group, rheumatologists do not adopt a single underlying policy for the assessment of changes in disease activity; each has his or her own approach to such judgements. Some rheumatologists are inconsistent in applying their judgement policies, leading to disagreements even when underlying policies are similar. The relative importance rheumatologists attached to different clinical and laboratory variables showed very wide variation, and these stated policies were generally poor in predicting their actual judgements when assessing ‘paper patients’ [48]. Surprisingly, in the 15 yr since this research was completed there has been relatively little advance in the application of routine clinical methods to everyday practice. Until we regularly use joint counts in specialist practice, it seems unlikely the situation will improve.

The Swiss Clinical Quality Initiative [49, 50] involved a prospective RA cohort in which there was feedback from clinical and patient-based assessments of activity and damage. This feedback was used to optimize drug therapy. Clinical assessments included DAS28 and X-ray scores. Patient-based assessments included the RA Disease Activity Index (RADA1) and HAQ scores. The data, fed back graphically, were used to modify DMARD doses so that treatment could be adjusted or titrated against ongoing disease activity. In reports of single cases, it appeared to be effective, despite the time needed and variability of individual HAQ scores [51]. This system has yet to be formally evaluated, and it is recognized that recording clinical data is not without significant costs and limitations [52]. Fransen et al. [53] have argued cogently for the extension of clinical-quality care into routine practice. They have pointed out that the goal of treatment of RA is to control rheumatoid inflammation as soon and as completely as possible, and this control should be maintained for as long as possible. To decide if treatment goals have been reached and to support adaptations of the treatment programme, the management of RA patients in daily clinical practice should include systematic and regular evaluation of rheumatoid inflammation. Our preference for including joint counts within routine assessment is merely one specific example of this general approach.

Another rationale for routine clinical assessment is the increasing evidence that early treatment of RA is more likely to result in remission and improved outcomes. This is particularly shown in a second report based on the Finnish early RA study, which found that a delay of
a few months from the onset of symptoms to institution of therapy decreased the ability of the traditional single-drug strategy to induce remission in early RA [54]. As a consequence of this research, Pincus et al. [55] have called for urgent care and tight control of RA, including the development of early RA clinics. Such changes should be accompanied by greater clinical monitoring, including the routine use of joint counts. The increasing use of high-cost biological treatments further focuses attention on clinical assessments. Reports from both EULAR [56] and the UK [57] recommend basing the decision to treat patients with anti-tumour necrosis factor (TNF) therapy on DAS28 scores. There is some diversity of opinion about what the minimum DAS28 score should be, with a higher level of 5.1 used as a guide for suitability for treatment with anti-TNF in the UK. Experience in the clinical use of anti-TNF therapy at a single European centre has suggested that monitoring treatment with DAS28 scores allows titration of the dose to achieve maximal benefit at minimal dosage [58]; given the high cost of anti-TNF treatment, the savings in drugs needed should make the process cost-effective.

It is often argued that self-completed questionnaires such as the HAQ should be used in routine clinical care and that they are as helpful as joint counts. Pincus and Wolf have made a strong case for their use in everyday clinical care [59]. Analysis of a database of patients given leflunomide has suggested that the conventional HAQ gives the most useful information [60]. We have no doubt that it is better to record HAQ scores than to have no data available, even though using HAQ scores to assess individual patients is the subject of some controversy [51]. However, further work from Wolfe et al. [61] suggests that HAQ scores play a relatively small role in decisions about treatment with disease-modifying drugs. Using a classification tree analysis, they found that the most important predictors of changes in drug therapy were pain and tender joint count.

We believe the time has come to change the way in which RA patients are managed in routine clinical care and that all patients should be assessed fully when they are seen in a specialist clinic. This assessment should include swollen and tender joint counts, together with estimation of the ESR and the patient’s general health or global disease activity, measured on a 100 mm VAS. At present, 28-joint counts seem preferable and the DAS28 should be calculated using this data. It appears reasonable to recommend that these measures should become a clinical quality standard and that they should be recorded every time a change in disease-modifying drugs or biological therapy is considered. We believe it is also sensible to supplement these basic measures with a self-completed HAQ.

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