Use of Disease Activity Score (DAS28) and Routine Assessment of Patient Index Data 3 (RAPID3) for Assessment of Rheumatoid Arthritis Disease Activity, in the Indian Setting

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Abstract

Introduction: Patient outcomes in rheumatoid arthritis (RA) have significantly improved with the advent of disease modifying anti rheumatic drugs and the newer biological agents. Various scoring systems available for monitoring disease activity in RA have not yet been put into full use in patient management in India. We aim to study the disease activity score 28 (DAS28) and Routine assessment of patient index 3 (RAPID3), their correlation and patient outcomes in RA.

Materials and Methods: The study was conducted between March 2011-May 2011. A total of 81 patients were included. Patient’s history was noted. Clinical examination for tender and swollen joint counts was performed. DAS28 was calculated. MDHAQ was administered to each patient in a language they understood and responses noted. Correlation between DAS28 and RAPID3 was studied using Pearson’s correlation coefficient.

Results: RAPID3 and DAS28 showed Pearson’s correlation coefficient of 0.8699 (p<0.001). Of the 53 patients who met with DAS28 severity criteria of >5.1, 82.7% showed similar results with RAPID3 suggesting severe disease activity. (X² = 33.512 and p<0.001). A greater proportion of those whose DMARD initiation was 2 years after disease onset, had higher disease activity as compared to those with earlier initiation.

Conclusion: Early diagnosis and immediate initiation of aggressive DMARD therapy should be the protocol. Regular patient outcome assessment using either of the two proposed scoring systems can be a good adjunct to physician’s clinical judgment in treatment decisions.
Methodology

This prospective observational study was conducted in the rheumatology outpatient department (OPD) of B.Y.L Nair Charitable Hospital, a tertiary care centre, in Mumbai. The study was approved by the institutional ethics committee.

Patients of RA diagnosed by ACR criteria (1987), above the age of 18 years and on a regular course of conventional DMARD therapy, that included weekly methotrexate singly or in combination with chloroquine/hydroxychloroquine or sulphasalazine were included in the study. Newly diagnosed cases of RA and patients on DMARD therapy for a duration of less than 6 months were excluded from the study.

A written informed consent was taken from each patient. The study was conducted between March 2011- May 2011. Each patient’s history was noted and was clinically examined for tender and swollen joints. Relevant clinical information like age, sex, duration of therapy, treatment followed and the latest ESR by the Westergreen’s method were obtained by review of individual patient record. Duration of disease in terms of onset of appearance of symptoms, delay in initiation of therapy since onset of disease were enquired for. Patient’s general health on a visual analog scale was also recorded. DAS28 was calculated for each patient.

The MDHAQ was administered to each patient in a language they understood and their responses noted. Respective RAPID3 score was calculated by adding the physical function (FN), Pain (PN) and patient global status score (PTGL).

The data collected was analysed using the SPSS software and Graphpad Instat.

Correlation between DAS28 and RAPID3 was studied using the Pearson’s correlation coefficient. Severe disease activity was defined as >5.1 in DAS28 and >12 in RAPID3. Patients were divided into 2 groups on the basis of delay in initiating DMARD therapy from onset of disease activity. One group with duration of <=2 years and second with duration of >2 years and patient outcome in terms of disease severity as recorded on DAS28 >5.1 and RAPID3 as >12, studied.

Results

Off the 81 patients included in the study, 70 were females and 11 were males, with a male to female ratio of 1: 6.36. Thirty eight of 81 patients showed the presence of various deformities. The correlation between DAS28 and RAPID3

RAPID3 and DAS28 have a Pearson’s correlation co-efficient of 0.8699 and p<0.0001 suggesting considerable correlation (Figure 1).

Also, cross-tabulation studies were performed on the two scoring systems. Patients falling into DAS28 severity criteria as defined as a score of more than 5.1, and RAPID3 severity criteria as defined as a score of more than 12 were compared. It was observed that of the 53 patients who met with DAS28 severity criteria of >5.1, 82.7% showed similar results with RAPID3 i.e., they had a score of more than 12 suggesting severe disease activity. Also 86.2% of patients who had DAS28 score of less than 5.1 suggesting moderate to less disease activity or remission had a RAPID3 score of less than 12 suggesting the same.

The chi square value for these was 33.512 and p<0.0001, considered highly significant (Table 1).

Additional analysis was performed to note the effect of delay in starting DMARD therapy on disease activity using DAS28 and RAPID3. Patients were divided into 2 groups. Group 1 with a delay of less than or equal to 2 years and Group 2 with a delay of more than 2 years.

Thirty eight of 45 patients (84.4%) in whom treatment was delayed by more than 2 years after disease onset (group 2) recorded a severe disease activity of >5.1 on DAS28 while 61.1% of patients from group 1 had their DAS28 score less than 5.1 (Table 2). Recorded difference being statistically significant. Comparing this with the results obtained with RAPID3, it is observed that similarly significant results are obtained. Thirty five of 45 patients from group 2 recorded severe disease activity of >12 on RAPID3 and 58.3%patients from group 1 had RAPID3 scores of <=12, the observed difference being statistically significant (Table 3).
Discussion

The present study shows that DAS28 and RAPID3 significantly correlated. This suggests that DAS28 a quantitative measure of disease activity obtained by a formal tender and swollen joint count, and RAPID3 (MDHAQ) give similar results of disease activity of patients. As the values obtained from RAPID3 match with those obtained from DAS28, which is considered as a highly specific measure of RA disease activity, RAPID3 can be conveniently used in as an important aid in routine clinical decisions.

Similar results have been obtained in multiple foreign studies as well as few Indian studies that reveal significant correlation between DAS28 and RAPID3. In a study conducted by Singh et al (2012),13 they concluded that RAPID3 and DAS28 provide similar quantitative information and hence, can be used to monitor patients of RA and guide treatment decisions. However, their study included 200 literate patients which made it easier to calculate the score before the patient met the physician, taking around 10s. Present study being conducted in a tertiary care centre in Mumbai, the major bulk of patient population included were illiterate which made it necessary that each question be explained to them in a language they understood taking up around 3-5 minutes per patient. Hence, as in the present study, in similar set ups in India, MDHAQ will have to be separately administered to the patient by the doctor or the nursing staff and RAPID3 then calculated from it. This is where paramedical and nursing staff may also be included to help provide the much needed patient data during each follow up visits and in turn improve patient care. The advantage of having documented objective data far outweighs this minor hurdle and ensure more informed decisions on patient management.

When treatment strategies are concerned, it has been observed that DMARDs are particularly beneficial when the treatment is initiated as early as possible from the onset of disease symptoms, as has also been established by Furst DE et al.12 An intensive approach using the DMARDs as soon as the patient is diagnosed with rheumatoid arthritis can improve patient quality of life and significantly reduce morbidities.

In our study it has been observed that the effect of delay in starting DMARD therapy on disease activity shows similar results using DAS28 and RAPID3. Off the 45 patients initiating DMARD therapy after 2 years of onset of disease activity, 84.4% showed severe disease activity using DAS28 and 75.6% showed severe disease activity using RAPID3 again proving that RAPID3 gives similar results as DAS28 regarding patient disease activity.

With the Indian scenario as slightly different from the international one, it is the need of the hour, to ensure a more stringent approach towards patient care in rheumatoid arthritis. Inclusion of these scoring systems in daily clinical practice will definitely help to quantify disease activity. The DAS28 and RAPID3 seem to be of utility in our setting, with a minor disadvantage of being time consuming. However, both giving similar results, it can be the treating physician’s call as to which one suits best in their respective setting.

It can thus be concluded that early diagnosis and immediate initiation of aggressive DMARD therapy should be the protocol. Patient should be followed up using either of the two proposed scoring systems, and a regular record of the patient’s disease activity should be maintained. Treatment decision including dose titration/stepping up to biologics should be made using these records. Thus these scoring systems may be a good adjunct to a physician’s clinical judgment in the management of rheumatoid arthritis.

Acknowledgement

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References

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