The Relationship Between Time in Remission and Functional Status in Rheumatoid Arthritis

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Objective: It is presumed that patients with rheumatoid arthritis (RA) in sustained remission have a more favorable outcome. Our objective was to describe change in functional outcome in relation to the number of annual examination in remission in RA patients.

Methods: We analyzed annually collected disease activity variables and outcomes from a prospective, observational, single-center RA cohort, including participants with at least two years follow-up (n=871). Remission was determined by the DAS28-CRP4<2.6, SDAI≤3.3 and 2010 ACR/EULAR criteria. The outcome of functional status was measured using the multidimenstional HAQ (mdHAQ) and data were analyzed using linear mixed models. For a secondary analysis we examined the relationship between remission and the minimal clinical

important improvement (MCII) in mdHAQ (set at -0.3). In the secondary analysis, subjects with mdHAQ<0.5 at baseline were excluded since improvement is unlikely.

Results: Subjects in remission at one or more annual examinations, regardless of the remission criteria, had a more favorable outcome of mdHAQ compared to subjects who never reached remission ($p<0.001$). In addition, more time points in remission produced more favorable outcomes (see **Figure**). After 4 years of follow-up, more subjects (72%) with >60% of time in DAS28 remission reached the MCII compared to subjects with <60% ($p=0.03$) or no examinations in remission ($p<0.001$). When stratifying according to baseline mdHAQ, subjects with a low mdHAQ (0-0.5) at baseline remained at approximately the same level when in DAS28 remission (mean change mdHAQ= -0.004), while subjects with a high mdHAQ (1.0-3.0) at baseline showed improvement in functional status during DAS28 remission (mean change mdHAQ= -0.504, $p<0.001$) after 4 years.

Conclusions: In our study, subjects with more annual examinations in remission experienced greater improvement in mdHAQ. During sustained remission, subjects with high baseline mdHAQ scores improved more than those with lower baseline mdHAQ.
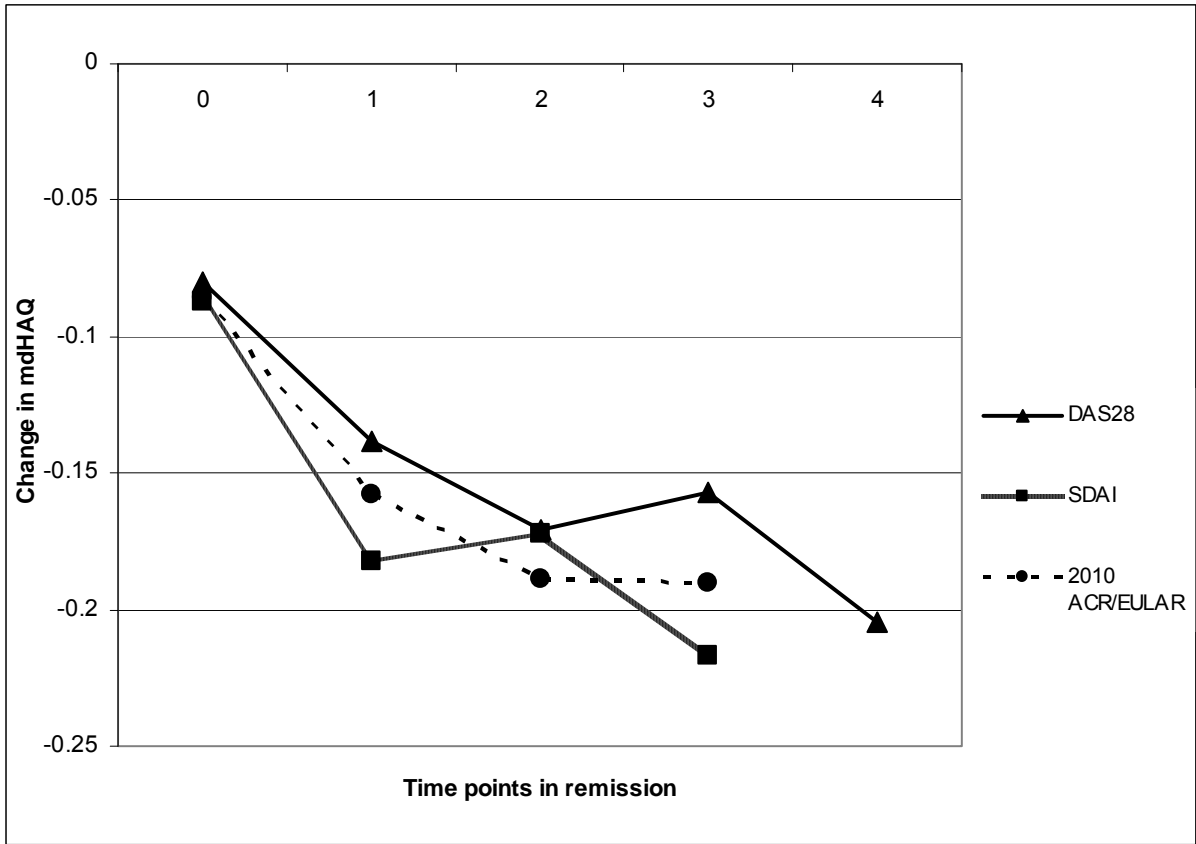
Figure; Change in mdHAQ score in relation to the number of time points in remission. For instance, for patients in DAS28 remission ≥ 4 time points mdHAQ improved with 0.21 per year compared with the improvement of 0.14 per year of patients with only 1 time point in DAS28 remission.