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

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Introduction

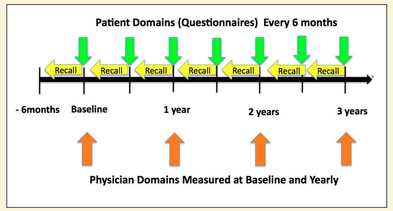
- The current treatment goal in patients with rheumatoid arthritis (RA) is disease remission to prevent pain, reduce joint damage and improve functional status.
- Although it is presumed that patients with RA in sustained remission have a more favorable outcome, data are lacking regarding time in remission and change in functional outcome.

Aim

To describe change in functional outcome in relation to the number of annual examination in remission in RA patients.

Methods

BRASS is a prospective, observational, single-center cohort of patients diagnosed with RA.



Annually collected disease activity variables were analyzed and the proportion of patients in a state of remission was determined by the following criteria:
DAS28-CRP <2.6 and <2.3, SDAI <3.3, CDAI <2.8, and 2011 ACR/EULAR remission criteria.

The primary outcomes were repeated measurements of the difference between baseline mdHAQ and follow-up mdHAQ (delta mdHAQ) for each yearly follow-up visit. General linear mixed models were used to examine the association between time in remission and change in functional status.

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

Table 1; Patient and disease characteristics at entrance BRASS cohort of all 665 patients not in DAS28-CRP<2.6 at baseline remission

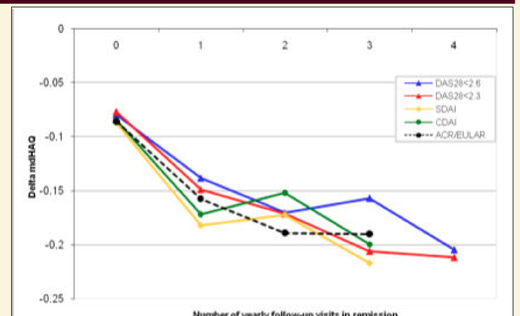
N(%)		Median (25%-75%)	
Female	549 (83)	Age (years)	59 (45-67)
Positive anti-CCP or RF status	346 (72)	Disease duration (years)	12 (4-24)
Any stiffness	511 (77)	Stiffness duration (minutes)	30-60 (10-90)
Smoking	53 (9)	CRP (mg/L)	4.1 (1.5-11.3)
NSAIDs	404 (61)	Total follow-up time in BRASS	5.0 (3.8-6.0)
Corticosteroids	231 (35)		
MTX	311 (47)		
Non-biologic DMARDs (not MTX)	206 (31)		
Biologics	234 (35)		

Results

Figure 1; This figure illustrates the change in mdHAQ with respect to follow-up visits in remission.

The change in mdHAQ is calculated as the difference between baseline and specified number of follow-up visits in remission. For example, patients in DAS28-CRP<2.6 remission ≥4 follow-up visits experienced a 0.21 improvement in mdHAQ per year compared with the improvement of 0.14 per year of patients with only 1 follow-up visit in remission.

The data at the bottom of the figure shows the number of follow-up visits with the specified number of visits in remission, allowing patients to contribute multiple observations. The ellipse (…) denotes the follow-up visits with <50 observations.



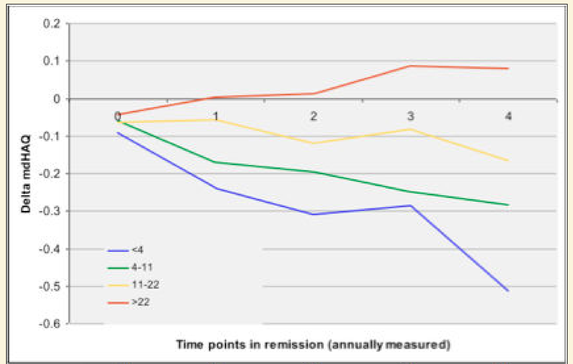
	0	1	2	3	4
DAS28-CRP<2.6	2329	636	269	144	99
DAS28-CRP<2.3	2708	619	229	105	74
SDAI	3526	394	141	107	…
CDAI	3605	382	153	104	…
ACR/EULAR	3633	373	123	94	…

Patients in remission at ≥1 yearly follow-up examinations, regardless of the remission criteria, had a more favorable mdHAQ outcome compared to patients who never reached remission (DAS28-CRP<2.6, β= -0.30, p<0.001). More follow-up examinations in remission was associated with more favorable outcomes.

Figure 2; This figure demonstrates the change in mdHAQ stratified according to disease duration for remission defined according to DAS28-CRP<2.6.

As with Figure 1, it shows the number of follow-up visits in remission in relation to the change in mdHAQ. The four curves show the data stratified according to quartile of disease duration.

The table shows the number of observations per follow-up visit, not the number of patients.



	0	1	2	3	4
≤4 years	359	113	43	9	1
4-11 years	483	175	86	63	40
11-22 years	651	175	69	44	40
>22 years	834	172	71	28	18

Results

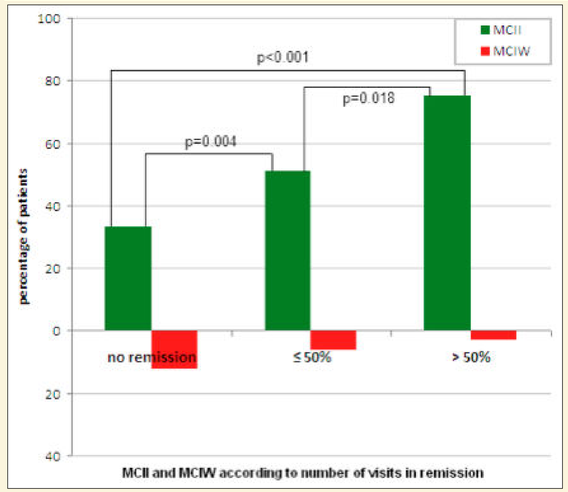


Figure 3; This figure shows percentage of patients meeting Minimal Clinical Important Difference (MCID) at 4 years follow-up (unadjusted analysis).

Groups were divided in patients with no visits in DAS28-CRP<2.6 remission, less than 50% of visits in remission and more than 50% of visits in remission.

There was a statistically significant difference between groups in reaching Minimal Clinical Important Improvement (MCII), but not Minimal Clinical Important Worsening (MCIW).

After 4 years follow-up, 75% of patients with >50% of time in DAS28-CRP<2.6 remission reached the MCII versus 51% (p=0.018) among patients in remission <50% of time versus 33% (p<0.001) among patients with no remission.

Limitations

- Data from this study are from a single-center and most patients enter the cohort with longstanding disease.
- Although the BRASS cohort has very detailed information on all variables required to calculate remission, some missing values required imputation.

Conclusions

- We found a strong relationship between time in remission and improvement in functional status, regardless of the remission definition applied.
- Patients with very long-term disease did not improve, which suggests that permanent damage may be adversely affecting their function and thus impacting their mdHAQ score.
- An important implication is that tight control to induce sustained remission is crucial for the best possible functional outcome in RA.

Acknowledgements

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BRASS
Brigham and Women's Hospital Rheumatoid Arthritis Sequential Study.