Durability of Remission in Rheumatoid Arthritis Based on Various Criteria

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Introduction

The treatment target of Rheumatoid Arthritis (RA) is disease remission.

At least four remission definitions are in use:
- Disease Activity Score 28-C-reactive protein (DAS28-CRP) <2.6 and <2.3 score
- American College of Rheumatology (ACR) remission criteria from 1981
- Simplified Disease Activity Index (SDAI) <3.3 score
- Clinical Disease Activity Index (CDAI) <2.8 score

Recently, the ACR, the European League against Rheumatism (EULAR) and the Outcome Measures in Rheumatology Initiative (OMERACT) developed new remission criteria.

There are few data about the duration of remission by any criteria.

Aim

To describe the duration of remission in Rheumatoid Arthritis (RA) patients from the Brigham and Women's Rheumatoid Arthritis Sequential Study (BRASS).

Methods

BRASS is a prospective, observational, single-center cohort of patients diagnosed with RA.
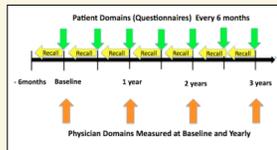
Annually collected disease activity variables were analyzed and the proportion of patients in a state of remission was determined by the following criteria:

DAS28-CRP <2.6 and <2.3, ACR from 1981, SDAI <3.3, CDAI <2.8, and 2010 ACR/EULAR remission criteria.

For the analyses we only included patients with
1) at least two years follow-up
2) at least one remission time-point with subsequently 12 months or more follow-up (see **Figure 1**).

The primary outcome was time in sustained remission according to the various remission criteria.

For every RA patient in BRASS, the first time-point in remission according to one of the remission criteria, was considered the baseline (T=0) for that patient for that specific definition of remission.

The Kaplan-Meier (KM) curves and log-rank-test were used to assess the difference of survival functions between the six groups.

Multiple imputation by chained equations was performed to replace missing values (9%) in the variables requested for calculation of remission criteria.

Results

Table 1; Patient and disease characteristics at entrance BRASS cohort of all 519 patients in remission according to various criteria with 12 months follow-up

	N (%)		Median (25%-75%)
Female	426 (82)	Age (years)	56 (45-63)
Positive anti-CCP or RF status	346 (72)	Disease duration (years)	8 (3-18)
Any stiffness	277 (57)	Stiffness duration (minutes)	30-60 (10-90)
Smoking	29 (6)	CRP (mg/L)	2.2 (0.9-5.9)
Remission at entrance BRASS	197 (38)		
NSAIDs	306 (59)		
Corticosteroids	127 (25)		
MTX	251 (48)		
Non-biologic DMARDs (not MTX)	197 (38)		
Biologics	194 (37)		

Of the 1095 RA patients in BRASS, 871 had at least two years of follow-up.

Of these patients, 550 were in remission at one or more time-points, and 519 had 12 months of follow-up after their first remission time point (see **Figure 1**).

Median follow-up time for the cohort was 5.0 years.

Overall median survival time of remission using all criteria was one year.

The proportion of patients considered to be in remission significantly differs according to different remission criteria.
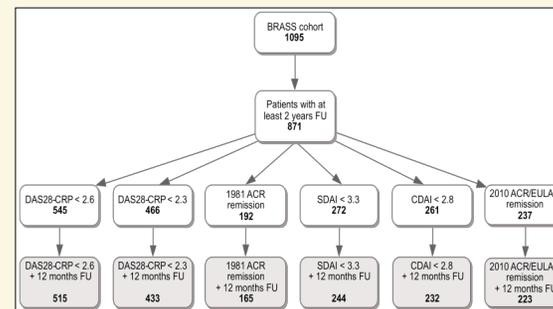
Figure 1 Patient selection
For the analyses, we only included patients with 1) at least two years follow-up, and 2) at least one remission time-point with subsequently 12 months or more follow-up study cohort assembly.

Results
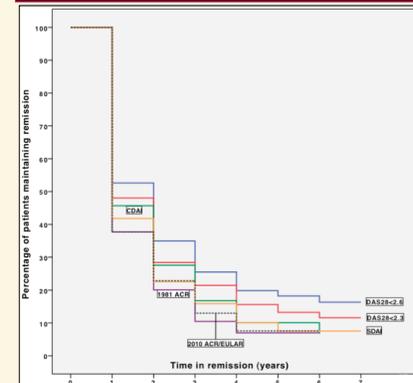
Figure 2 Kaplan-Meier survival curve
Kaplan-Meier survival curve for the percentage of patients maintaining remission over time. Curves represent the following remission definitions: blue DAS28-CRP < 2.6, red DAS28-CRP < 2.3, green CDAI, purple 1981 ACR, yellow SDAI, and black dotted 2010 ACR/EULAR.

Limitations

Of the 519 patients evaluated in this study, 38% were in remission at BRASS entrance. We do not know the true duration of these subjects' remission.

Although the BRASS cohort has very detailed information on all variables required to calculate remission, some missing values required imputation.

Conclusions

Approximately half of the RA patients who reached a state of remission maintained this one year later.

Even after multiple years in remission, patients drop out of remission.

According to the Kaplan-Meier curve analyses, chance of patients experiencing active disease after remission, decreases as the years in remission increases.

Acknowledgements