

Time-to-Remission, Time-To-Relapse and Disease Severity at the Time of Relapse in RA- Results from the Ontario Best Practices Research Initiative (OBRI)

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Background: Clinical remission in RA is the desired goal, however the ability to sustain remission and the timing and severity of relapse is not well known. We aimed to describe time to remission, time-to-relapse and disease activity at the time of relapse.

Methods: We performed a longitudinal data analysis of patients enrolled in the Ontario Best Practices Research Initiative (OBRI), a clinical registry of RA patients followed in routine care. The prevalence of a first occurrence of clinical remission according to the DAS28-ESR <2.6 or CDAI ≤ 2.8 following cohort entry (baseline) was determined as was the average time-to-remission. Patients achieving remission with ≥ 1 follow-up visit (typically spaced 3 to 6 months apart) were observed for the average time until relapse, defined as a DAS28 >2.6 or CDAI >2.8 . The baseline disease activity level of those achieving remission and the disease activity level at the time of relapse was examined.

Results: The total cohort (N=2305) was 78% female with mean (SD) age 57 (13) years, disease duration 8.6 (9.6) years and mean DAS28 score 4.5 (1.5) at baseline. Remission was achieved in 1081 patients (47%); 140 of these patients had low baseline disease activity, 516 had moderate and 369 had high disease activity at baseline. The median time to remission was 279 days (interquartile range [IQR] 146 – 482) and remission was reached significantly faster among those starting with low disease activity (median 218 days, IQR 148-385) at baseline compared to more severe disease (median 357 days, IQR 173-563) (P<0.001). Nine hundred eighteen patients (85%) had continued follow up after remission and 582 (59%) went on to experience a relapse. The median time-to-relapse was 197 days (IQR 126-363). The majority switched from a state of remission to mild or moderate disease activity, in contrast to the moderate to severe levels of disease activity they experienced at baseline (Table).

Conclusion: Clinical remission in routine care is achievable and occurs fastest in those with low to moderate levels of disease activity at baseline. Remission is not sustained in the majority of individuals and relapse occurs, on average, by 7 months. Further work examining the predictors and characteristics of patients who relapse to a low disease state (which may be an acceptable substitute to remission) vs. relapse to a high disease state is needed to determine the nature and timing of therapeutic intervention that may be required to prevent and manage disease flares.

Table. **Disease activity at time of relapse according to baseline level disease activity**

RA disease at baseline	Disease Activity at Time of Relapse (N=552)*		
	Low (N=257)	Moderate (N=245)	High (N=50)
Low (N=55)	26	25	4
Moderate (N=284)	140	127	17
High (N=213)	91	93	29

* 30 of the 582 patients were missing information at follow up to calculate disease activity