Differences Between Early and Established Rheumatoid Arthritis in Time to Achieving CDAI but not Fatigue Low Disease Activity and Remission: Results From The Ontario Best Practices Research Initiative (OBRI)

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BACKGROUND

- Previous studies have shown that early diagnosis and treatment of rheumatoid arthritis (RA) is important for achieving comprehensive disease control and have identified established disease as an independent predictor of worse clinical outcomes. However, it is not clear whether these differences are driven by patient-reported or objective outcome measures.

OBJECTIVES

- To compare the time to achieving low disease activity (LDA) and remission based on both objective and patient-reported outcomes (PRO) in people with early vs. established RA followed in the Ontario Best Practices Research Initiative (OBRI); a clinical registry for RA (OBRI-RA registry) followed in routine care in Ontario-Canada (www.obri.ca).

METHODS

- RA patients enrolled in the OBRI between January 2008 and January 2019 were included if they had their first physician visit and first interview within 60 days' gap, and at least two visits including baseline visit, and 6 months' follow-up. Patients are defined as early RA if they disease duration since diagnosis was one year or less.
- We excluded those patients with missing data on clinical disease activity index (CDAI), swollen joint count (SJC-28), patient global assessment (PtGA), pain, or fatigue score at baseline. Patients were also excluded if they were in low/remission state based on these outcomes at baseline.
- *Outcome Definition:*
  - Remission: CDAI ≤ 2.8; SJC-28 ≤1.0; TJC-28 ≤1.0 ;PtGA ≤ 1.0; PhGA ≤1.0; pain ≤ 1.0; fatigue ≤ 1.0
  - Low disease state: CDAI ≤ 10; SJC-28 ≤2.0; TJC-28 ≤2.0; PtGA ≤ 2.0; PhGA ≤2.0; pain ≤ 2.0; fatigue ≤ 2.0
- Kaplan-Meier survival analysis and the log rank test were used to assess differences in time to first LDA/remission between early and established RA.

RESULTS

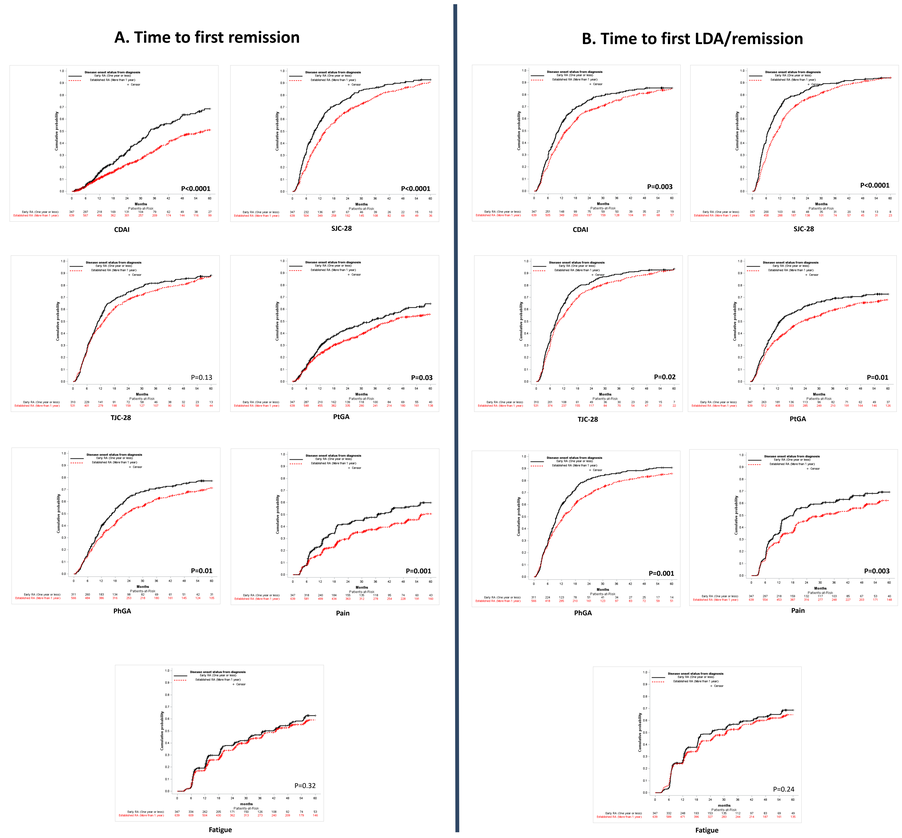
- A total of 986 patients were included, 347 (35%) with early and 639 (65%) with established RA (Table 1).
- Patients with early RA were significantly younger (55.8 vs. 58.3 years) and were less likely to have a comorbidity (94.5% vs. 97.5%) or an erosion (26.7% vs. 62.6%), be RF-positive (65.6% vs. 74.2%), use bDMARDs (7.5% vs. 26.6%), and be non-smokers (38.9% vs. 47.3%) (Table 1).
- Time to achieving remission based on CDAI (HR [95%CI]: (1.50 [1.22,1.84]), SJC28 (1.35 [1.17,1.55]), PtGA (1.22 [1.02,1.47]), PhGA (1.25 [1.06,1.47]), and pain (1.37 [1.14,1.65]) were significantly shorter in early RA compared to established RA (Figure 1A).
- Similarly, time to achieving LDA based on CDAI (HR [95%CI]: (1.23 [1.07,1.43]), SJC28 (1.32 [1.15,1.51]), TJC28 (1.18 [1.02,1.36]), PhGA (1.28 [1.10,1.49]), PtGA (1.23 [1.05,1.44]), and pain (1.29 [1.09,1.52]) were significantly shorter in early RA (Figure 1B).
- No differences were observed in time to remission based on TJC28 (1.12 [0.96,1.31]) and either LDA or remission based on fatigue (LDA (1.10 [0.94,1.30]); remission (1.09 [0.92,1.31]) (Figure 1A and 1B). Adjustment for age, sex, presence of comorbidities, and baseline scores did not alter the results.

Table 1: Patients Profile at enrolment

	Early RA (N=347)	Established RA (N=639)	P-value
Demographic Factors			
- Age, years, mean (SD)	55.8 (13.2)	58.3 (12.4)	**0.004**
- Sex, Female, n (%)	267 (76.9)	522 (81.7)	0.08
- Education status, post-secondary, n (%)	192 (55.3)	345 (54.0)	0.71
- Household annual income, >50,000CAD, n (%)	167 (58.8) (n = 284)	261 (53.2) (n = 491)	0.09
- Health insurance coverage, (OHIP +private or ODB), n (%)	286 (82.4)	545 (85.3)	0.24
- Non-smoker, n (%)	135 (38.9)	302 (47.3)	**0.03**
Disease Factors			
- Disease duration since diagnosis, years, mean (SD)	0.3 (0.5)	12.6 (9.9)	**<0.0001**
- RF positive, n (%)	219 (65.6) (n= 334)	439 (74.2) (n = 592)	**0.01**
- Presence of erosion, n (%)	74 (26.7) (n= 334)	326 (62.6) (n = 520)	**0.01**
- CRP, mg/L, mean (SD)	18.2 (25.3) (n= 295)	13.8 (21.2) (n = 503)	**0.01**
- SJC-28, mean (SD)	8.2 (4.8)	8.3 (4.5)	0.74
- TJC-28, mean (SD)	9.9 (6.6)	9.1 (6.6)	**0.05**
- PtGA (0-10), mean (SD)	6.5 (2.0)	6.4 (1.9)	0.57
- PhGA (0-10), mean (SD)	5.9 (2.0)	5.7 (2.0)	0.07
- CDAI (0-76), mean (SD)	30.5 (11.9)	29.6 (11.6)	0.18
- Pain (0-10), mean (SD)	6.6 (1.9)	6.6 (1.9)	0.93
- Fatigue (0-10), mean (SD)	6.8 (2.0)	6.7 (2.0)	0.85
Comorbidities			
- At least one comorbidity, n (%)	328 (94.5)	623 (97.5)	**0.02**
- CVD, n (%)	37 (10.7)	105 (16.4)	**0.01**
- Hypertension, n (%)	122 (35.2)	254 (39.7)	0.16
- Diabetes Mellitus, n (%)	35 (10.1)	78 (12.2)	0.32
Medication Factors			
- Prior use of bDMARDs, n (%)	23 (6.6)	262 (41.0)	**<0.0001**
- Prior use of csDMARDs, n (%)	170 (49.3)	619 (97.2)	**<0.0001**
- Current bDMARDs use, n (%)	26 (7.5)	170 (26.6)	**<0.0001**
- Current csDMARDs use, n (%)	309 (89.0)	568 (88.9)	0.94
- Current steroid use, n (%)	83 (23.9)	133 (20.8)	0.26

OHIP: Ontario health insurance plan; ODB: Ontario drug benefit; RF: Rheumatoid factor; SJC: Swollen joint count; TJC: Tender joint count; PhGA: Physician global assessment; PtGA: Patient global assessment; CRP: C-reactive Protein; CDAI: Clinical disease activity index; CVD: Cardiovascular disease; bDMARDs: biologic disease modifying antirheumatic drugs; csDMARDs: conventional synthetic disease modifying antirheumatic drugs.

Figure 1: Time to First Remission and LDA Based on PROs or Objective Outcome Measures in Early and Established RA.



CONCLUSIONS

- Time to achieving low disease state or remission based on various objective and patient-reported measures is significantly shorter in early compared to established RA with the exception of fatigue.
- These findings suggest the positive effects of receiving early treatment and health care.

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