Prevalence and Predictors of Pain in Rheumatoid Arthritis Patients in DAS28 Remission

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Background

- Pain is the most common reason rheumatoid arthritis (RA) patients seek medical care
- With the development and initiation of targeted immunomodulating agents, an increasing number of RA patients are able to achieve remission
- Despite improvements in inflammatory disease activity, mean pain levels have remained steady over the past 20 years
- Among patients in DAS28 remission, many still have enough pain to negatively impact health satisfaction
- Little data exist to guide the treatment of patients who report pain but have no other evidence for inflammatory disease

Objectives

- To assess the prevalence of pain among RA patients in DAS28 remission
- To examine the associations between baseline RA disease characteristics, mental health, sleep and fatigue and 1-year pain severity scores among RA patients in DAS28 remission

Methods

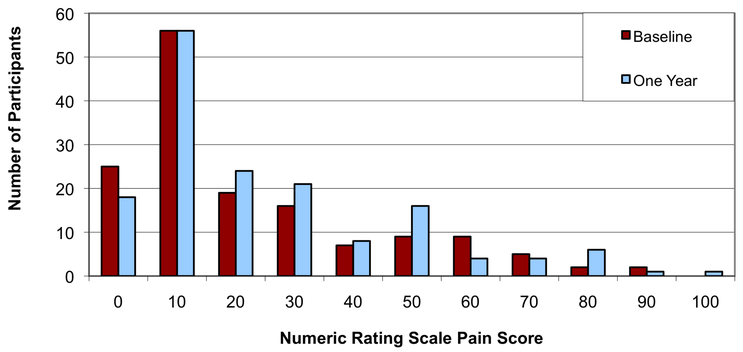
- Study Population:
  - 164 RA patients in the Brigham Rheumatoid Arthritis Sequential Study (BRASS) in DAS28 remission (DAS28 < 2.6) at baseline and one-year follow-up
  - Inclusion criteria:
    - Diagnosis of RA by a board-certified rheumatologist
    - Age > 18 years
- Statistical Analyses
  - Outcome: Pain intensity at 1-year, numeric rating scale (0-100, high scores = more pain)
  - Predictors:
    - RA-associated variables (CRP, DAS28, Sharp score), categorized into tertiles
    - Psychosocial variables
      - Fatigue: Numeric rating scale (0-100, high scores = more fatigue)
      - Sleep: MDHAQ sleep questions (0-3, high scores = more sleep problems)
      - Self-efficacy: Arthritis self-efficacy scale (10-100, high scores = more self-efficacy)
      - Mental health: Mental Health Index - 5 (0-100, high scores = good mental health)
  - Covariates: Age, gender, baseline pain intensity
  - Models:
    - Unadjusted analyses using t-tests, Wilcoxon rank sum tests and ANOVA
    - Multivariable linear regression models adjusted for (age, gender and baseline pain intensity) obtained through backward selection with $P < 0.05$ for inclusion

Results

Table 1. Baseline characteristics of 164 RA patients in remission

Characteristics	Value
Mean age in years (SD)	52.6 (13.7)
Female (N, %)	140 (85.4)
Caucasian (N, %)	151 (93.2)
Median disease duration in years (IQR)	6.0 (13.0, 17.0)
Rheumatoid factor/Anti-CCP positive (N, %)	116.0 (71.6)
Median DAS28-CRP (IQR)	1.8 (1.4, 2.2)
Methotrexate use (N, %)	82 (50.0)
Anti-TNF use (N, %)	72 (43.9)
Corticosteroid use (N, %)	33 (20.1)
Non-steroidal anti-inflammatory drug use (N, %)	81 (49.4)
Opioid use (N, %)	12 (7.3)

Figure 1: Comparison of NRS pain scores at baseline and 1-year among RA patients in DAS28 remission



- 18.7% of RA patients in DAS28 remission had an NRS pain score ≥ 40
- Unadjusted analyses
  - Baseline RA-associated variables (CRP, DAS28, Sharp score) were not significantly associated with 1-year NRS pain score
  - Baseline fatigue was significantly associated with 1-year NRS pain score
  - Baseline sleep was significantly associated with 1-year NRS pain score
  - Baseline self-efficacy was significantly associated with 1-year NRS pain score
  - Baseline mental health was not significantly associated with 1-year NRS pain score

Results

Table 2. Independent association between baseline clinical variables and 1-year NRS pain score (multivariable linear regression)

Baseline Clinical Factors	Mean 1-Year NRS Pain Score	95% Confidence Interval	*P**
Age			**0.04**
< 50 years	21.7	16.1-27.3	
50-59 years	30.8	24.4-37.2	
≥ 60 years	27.8	21.8-33.9	
Gender			0.16
Female	23.9	20.7-27.2	
Male	29.6	21.8-37.4	
Pain NRS			**<0.0001**
< 10	16.6	10.7-22.6	
10-29	22.4	16.7-28.2	
≥ 30	41.2	33.7-48.7	
Fatigue NRS			**0.002**
< 20	19.0	12.4-25.5	
20-49	26.3	19.7-32.9	
≥ 50	35.0	29.1-40.9	

• *P* for trend in multivariable linear regression models including age, gender, pain NRS and fatigue NRS

Limitations

- Model does not consider multi-directional relationships between pain, fatigue, sleep problems and self-efficacy
- DAS28 does not assess inflammation in the feet
- Lack of data regarding pain distribution and extent

Conclusions

- 18.7% of RA patients in DAS28 remission had an NRS pain score ≥ 40 at baseline, indicating that clinically significant pain is common despite DAS28 remission
- Baseline fatigue was strongly associated with NRS pain score at one-year
- Physicians should consider non-inflammatory etiologies of pain that may respond to treatments to reduce sleep problems and enhance self-efficacy
- Future studies involving quantitative sensory testing techniques may elucidate pain mechanisms in patients who continue to have pain despite lack of inflammatory disease activity