

# Joint Involvement and Disease Activity in Systemic Lupus Erythematosus (SLE) Patients: Calculation of Swollen to Tender Joint Count Ratio in a Real World Cohort in the US

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## Background

- Joint swelling and tenderness are common in patients with SLE.
- Swollen to tender joint count ratio (STR) is an index originally used in rheumatoid arthritis (RA) which assesses severity of disease activity based on 28 joint counts [1].
- In RA, STR is a predictor of treatment response with a higher score indicating greater likelihood of responding.

## Objective

- To characterize SLE patients in a real-world cohort based on disease activity as defined by STR.

## Methods

- The OM1 SLE Registry (OM1, Boston, MA) follows more than 37,000 SLE patients longitudinally with deep clinical data, including laboratory, patient-reported and disease activity information, and linked administrative claims, starting from 2013.
- Patients  $\geq 16$  years of age with swollen and tender joint counts based on 28 joints on the same encounter were included. STRs were calculated by inserting 1 if the denominator was 0 [2].
- Patients were categorized by first available STR as having low (STR  $< 0.5$ ), moderate ( $0.5 \leq \text{STR} \leq 1.0$ ), or high (STR  $> 1.0$ ) disease activity [3]. Clinical characteristics were summarized by disease activity group with p-values derived from Chi-squared tests for categorical variables and ANOVA for continuous variables.
- Definitions of SLE treatments were based on 2019 EULAR recommendations [4].

## Results

- As of December 2019, 9,919 patients had at least one STR in the OM1 SLE Registry.
- Mean age overall was 52.1 years (standard deviation: 14.8), 92.1% were female, and 71.8% of 7,730 patients with known race were white.
- STR was low in 80.4%, moderate in 12.2%, and high in 7.4% of patients.
- Moderate and high STRs were more common among patients with SLE plus RA, psoriatic arthritis, or ankylosing spondylitis compared to patients with SLE alone (Figure 1).
- The following results refer to Table 1:
  - Antimalarial use in the 60 days prior was higher among patients with low STR. Immunosuppressant use increased with increasing STR. Use of select DMARDs was lowest among patients with low STR.
  - Lupus nephritis was more common in patients with low STR. A higher proportion of patients with moderate STR had osteoarthritis.
  - The proportion of patients with anxiety and depression decreased with increasing STR.
  - On average, patient and physician global assessments from MDHAQ were higher for patients with moderate STR.

## Conclusions

- Differences in treatments received were apparent between patients of varying disease activity groups with trends towards increased use among patients with higher disease activity.
- Additional research is needed to determine the utility of this measure for assessing SLE-related outcomes.

Figure 1. STR among patients with SLE alone vs. SLE plus a comorbid inflammatory arthritis condition

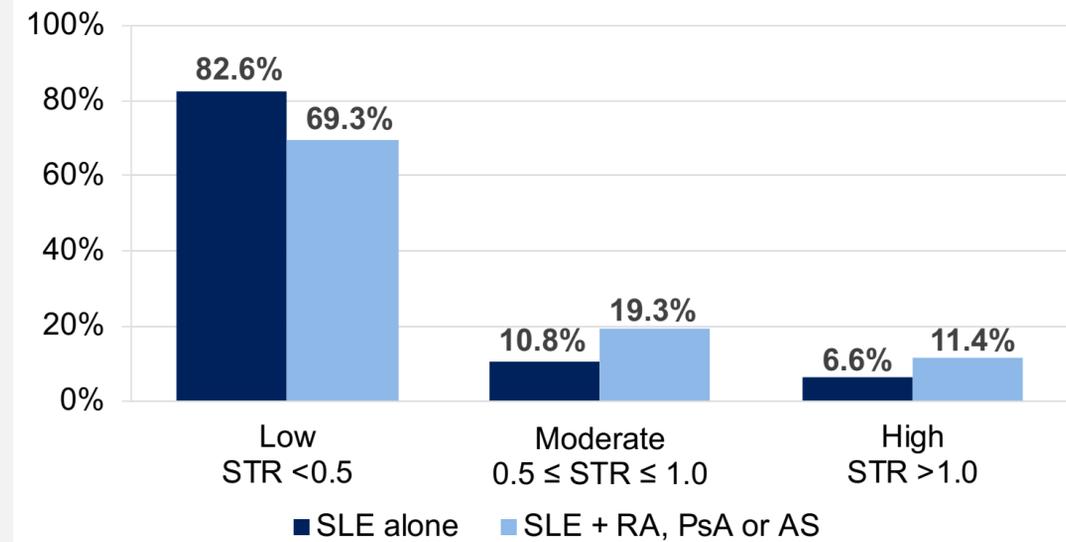


Table 1. Clinical characteristics of patients with SLE by swollen tender joint count ratio group

	Low STR < 0.5 (N=7,970)	Moderate 0.5 ≤ STR ≤ 1.0 (N=1,211)	High STR > 1.0 (N=738)	P-value
Treatment in the 60 days prior to STR, n (%)				
Antimalarial	3,263 (40.9%)	439 (36.3%)	275 (37.3%)	0.002
Biologics (belimumab or rituximab)	269 (3.4%)	61 (5.0%)	32 (4.3%)	0.009
Select DMARDs <sup>1</sup>	313 (3.9%)	79 (6.5%)	50 (6.8%)	<.0001
Immunosuppressants	1,336 (16.8%)	249 (20.6%)	156 (21.1%)	0.0002
Steroids	2,183 (27.4%)	452 (37.3%)	258 (35.0%)	<.0001
Disease conditions prior to STR, n (%)				
Anxiety	266 (3.3%)	25 (2.1%)	12 (1.6%)	0.004
Depression	1,127 (14.1%)	149 (12.3%)	80 (10.8%)	0.01
Lupus nephritis	984 (12.3%)	117 (9.7%)	72 (9.8%)	0.005
Osteoarthritis	2,336 (29.3%)	393 (32.5%)	193 (26.2%)	0.01
Osteoporosis	631 (7.9%)	95 (7.8%)	47 (6.4%)	0.32
MDHAQ, N	1,991	388	230	
MDHAQ, mean (SD)				
Patient global assessment (0-10)	4.5 (2.9)	5.3 (2.7)	4.4 (2.8)	<.0001
Physician global assessment (0-10)	2.8 (2.7)	3.8 (2.6)	2.8 (2.3)	<.0001

1. Includes abatacept, anakinra, etanercept, infliximab, leflunomide, tocilizumab, tofacitinib.

### References:

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