Assessing Comorbid Inflammatory Arthritis Conditions and Swollen to Tender Joint Count Ratios in a Real-World Systemic Lupus Erythematosus Cohort

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Background

- Joint swelling and tenderness are common in patients with systemic lupus erythematosus (SLE) and other inflammatory arthritis conditions such as rheumatoid arthritis (RA), psoriatic arthritis (PsA), and ankylosing spondylitis (AS).
- Swollen to tender joint count ratio (STR) is an index originally used in RA which assesses severity of disease activity based on 28 joint counts with a higher score indicating greater likelihood of treatment response [1].
- Given the prevalence of joint involvement in SLE, STR has potential application in this patient population.

Objective

To assess the overlap of SLE and other inflammatory arthritis conditions in a real-world cohort and characterize patients based on joint involvement, 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 ≥16 years of age with swollen and tender joint counts based on 28 joints on the same encounter were included. Patient cohorts were defined as SLE+ (RA, PsA, or AS) vs. SLE alone.
- 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 ≤ STR ≤ 1.0), or high (STR >1.0) disease activity [3].
- Clinical characteristics were summarized by disease activity group and STR group. Definitions of SLE treatments were based on 2019 EULAR recommendations [4].

Results

- The study included 9,919 patients with at least one STR available in the OM1 SLE Registry. Of the 17.0% of patients in the SLE+ cohort, 94.8% had RA, 6.7% had PsA, and 1.6% had AS. STR by cohort is displayed in **Figure 1**.
- Baseline characteristics by STR group for the full cohort are described in **Table 1**. When stratified by SLE cohort, SLE+ patients were older at 57.1 years (SD:13.1) compared to 51.1 (SD: 14.9) for SLE alone.
- Comorbid osteoarthritis was more common in the SLE+ cohort (46.3% vs. 26.0%).
- For SLE+, immunosuppressant use increased with higher STR from 44.5% (low STR) to 54.2% (high STR). For SLE alone, immunosuppressant use was lower overall (26.5%) with similar use among STR groups (**Figure 2**).
- Select disease-modifying antirheumatic drug (DMARD) use was higher among SLE+ patients (33.9% vs. 3.9%) with highest use in the moderate STR group (39.2%; **Figure 3**).
- Use of biologics (belimumab or rituximab) was higher among SLE+ (13.7% vs. 7.5%) with highest use in the low STR group (14.3%; **Figure 3**).

Conclusions

- Higher STR and differences in treatment patterns were observed in the SLE+ cohort
- Additional research is needed to assess the relationship between STR and treatment response in SLE and relevant subphenotypes

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

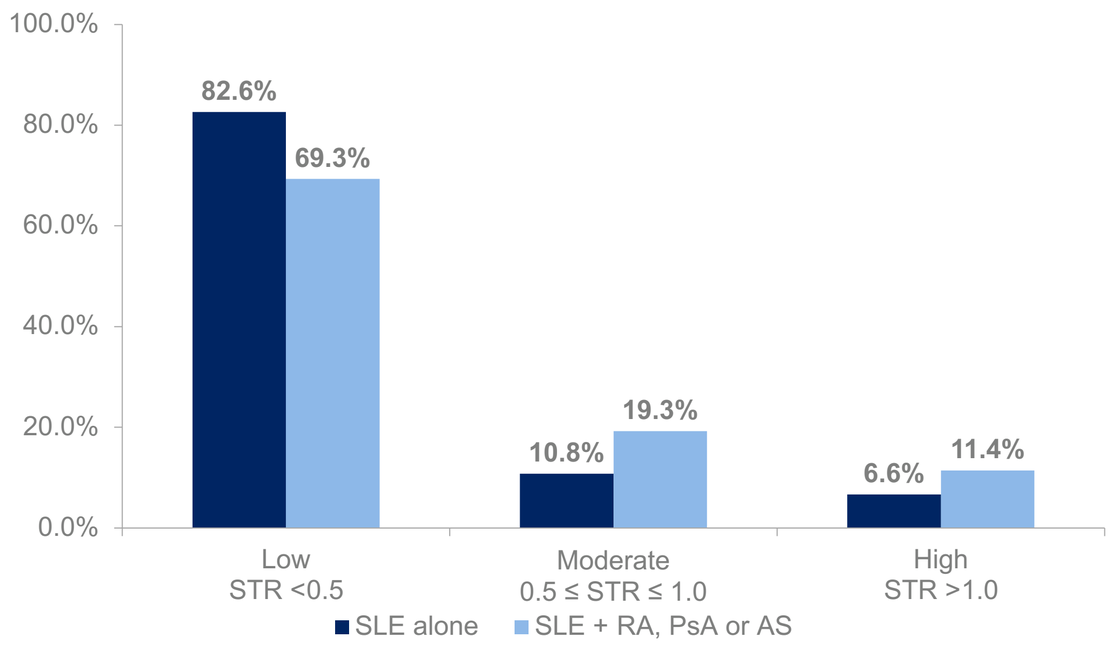


Table 1. Baseline characteristics by STR group

	Low STR ≤ 0.5 (N=7,970)	Moderate 0.5 ≤ STR ≤ 1.0 (N=1,211)	High STR > 1.0 (N=738)
Age, mean (SD)	51.8 (14.9)	53.9 (14.3)	53.5 (14.9)
Female, n (%)	7,357 (92.3%)	1,103 (91.1%)	680 (92.1%)
Race, n (%)			
Black	1,546 (24.7%)	261 (28.3%)	128 (23.8%)
White	4,526 (72.2%)	636 (69.0%)	385 (71.7%)
Other	199 (3.2%)	25 (2.7%)	24 (4.5%)
Unknown	1,699	289	201
Charlson Comorbidity Index, n (%)			
0-1	4,693 (58.9%)	726 (60.0%)	446 (60.4%)
2-3	2328 (29.2%)	335 (27.7%)	206 (27.9%)
4-5	662 (8.3%)	87 (7.2%)	55 (7.5%)
≥6	287 (3.6%)	63 (5.2%)	31 (4.2%)

Figure 2. Prior immunosuppressant use by SLE cohort and STR group

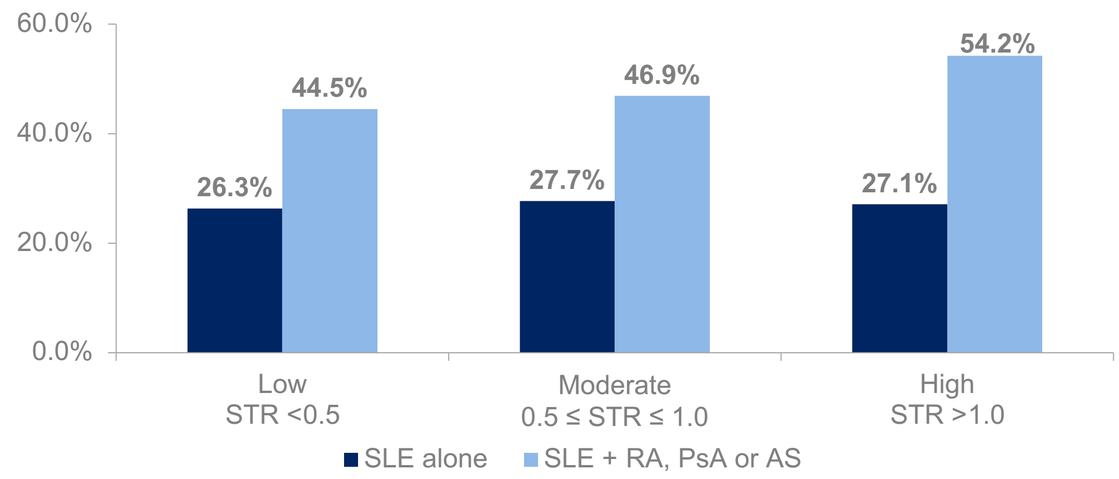
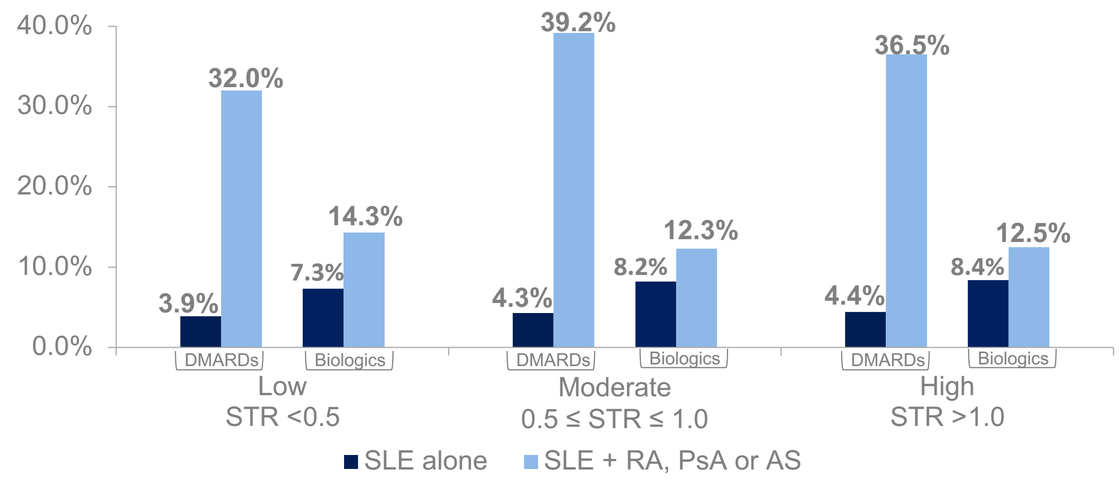


Figure 3. Prior use of DMARDs and biologics by SLE cohort and STR group



Presented at 2020 ICPE All Access | September 16-17, 2020

1. Cipriano E et al., Reumatismo 2015 Sept 16;67(2):62-7
2. Hammer HB et al., Arthritis Rheumatol 2016; 68 (suppl 10)
3. Kristensen LE et al., Arthritis Care Res 2014 Feb;66(2): 173-9
4. Fanouriakis A et al., Ann Rheum Dis. 2019;78:736-745