Vestibular Symptoms and Inpatient Outcomes in Systemic Lupus Erythematosus: A National Inpatient Analysis

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Background

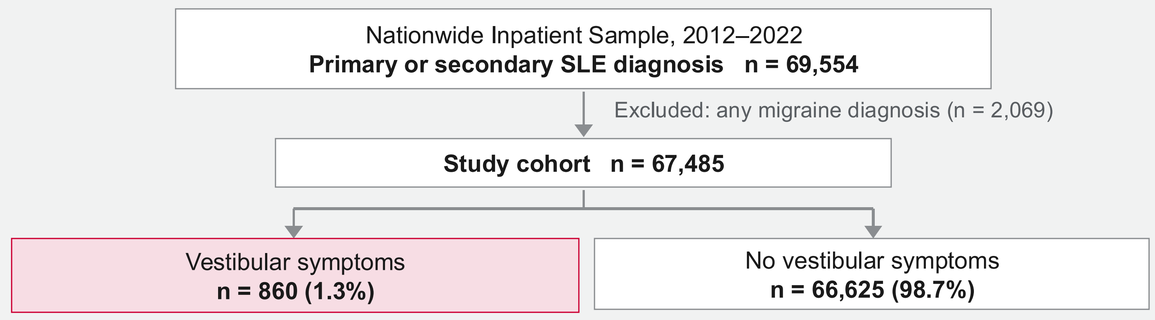
- Systemic lupus erythematosus (SLE) affects ~204,000 US adults, is about nine times more common in women, and is most prevalent among marginalized populations.[1]
- SLE injures the inner ear through immune complex deposition, vasculitis, and microthrombosis; temporal bone studies show vestibular hair cell damage.[6–8]
- Vestibular symptoms in SLE are known only from small outpatient cohorts. Inpatient outcomes have never been studied nationally.[9–14]

Objectives

- Determine whether vestibular symptoms independently predict discharge disposition, length of stay (LOS), and in-hospital mortality for SLE.
- Characterize the comorbidity profile of these hospitalized SLE patients.

Methods

Hospitalizations with a primary or secondary SLE diagnosis were identified in the Nationwide Inpatient Sample, 2012–2022. Vestibular symptoms were defined by ICD codes for dizziness, unsteadiness, and abnormal gait. Survey-weighted regressions were adjusted for demographics, hospital factors, and comorbidities (STATA v19.5).



24 hospitalizations with missing discharge data were excluded from the regression models.

Results

Vestibular symptoms were associated with 37% higher adjusted odds of non-routine discharge and a 12% longer length of stay.

- 860 of 67,485 SLE hospitalizations (1.3%) had vestibular symptoms.
- They were older (52.7 vs 43.6 years), more often on Medicare (41.6% vs 29.0%), and had more arrhythmias, hypertension, other neurologic disorders, and depression ($p < 0.05$).
- There was no association with in-hospital mortality ($p = 0.15$).

Characteristic	Vestibular symptoms (n = 860)	No vestibular symptoms (n = 66,625)	p
Age, mean ± SD, years	52.7 ± 18.1	43.6 ± 17.3	**<0.001**
Female, %	91.4	89.5	0.067
Race — White / Black / Hispanic, %	45.7 / 31.9 / 16.0	41.8 / 33.6 / 17.1	0.108
Payer — Medicare / Medicaid / private, %	41.6 / 23.1 / 28.1	29.0 / 29.1 / 33.3	**<0.001**
Urban teaching hospital, %	74.0	74.8	0.486
≥6 Elixhauser comorbidities, %	16.1	13.2	**0.049**
Length of stay, mean ± SD, days	5.09 ± 5.53	4.53 ± 6.09	**0.005**
Total charges, mean, USD	$45,181	$50,435	**0.011**
Discharge — routine / home, %	64.9	79.7	**<0.001**
Discharge — home health care, %	18.0	10.0	**<0.001**
Discharge — transfer to SNF / ICF, %	13.7	6.0	**<0.001**
In-hospital mortality, %	0.00	0.43	0.155

Table 1. Baseline characteristics by vestibular symptom status, NIS 2012–2022. p-values are Bonferroni-adjusted; significant values in red. SNF, skilled nursing facility; ICF, intermediate care facility.

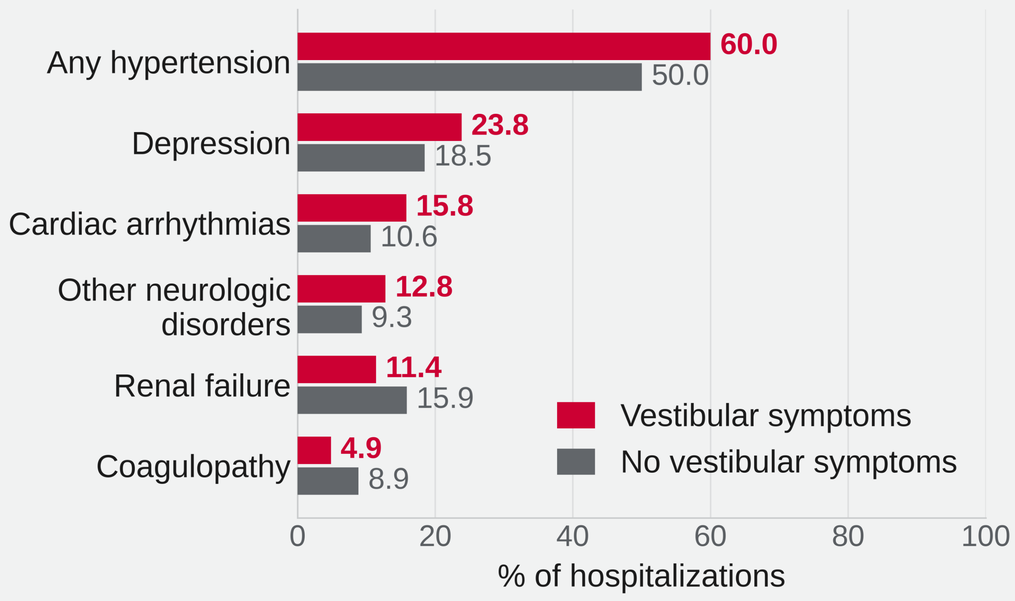


Figure 1. Comorbidities differing significantly between groups.

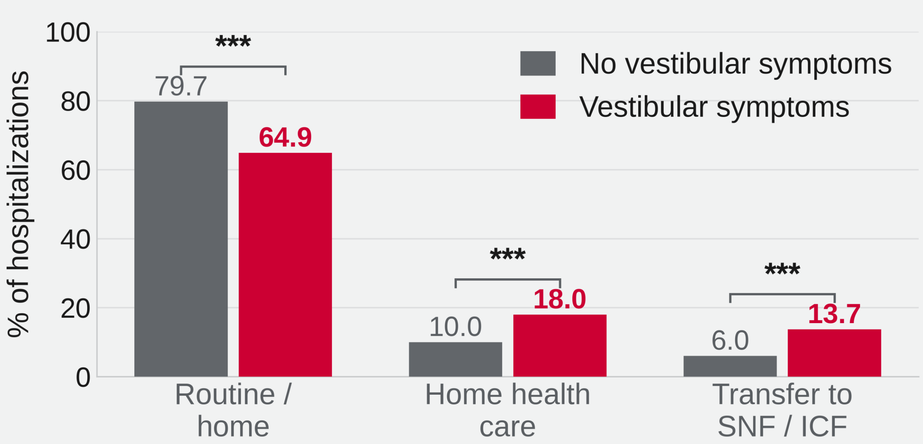


Figure 2. Discharge disposition. ***p < 0.001 for the overall distribution.

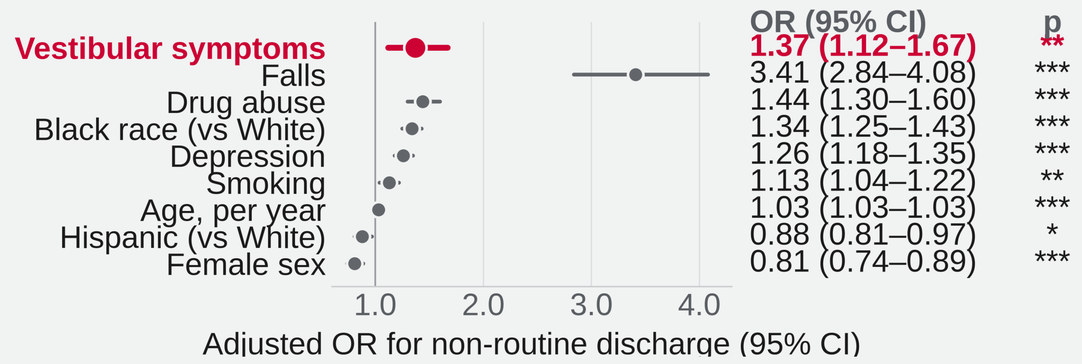


Figure 3. Adjusted odds of non-routine discharge (survey-weighted logistic regression, Benjamini-Hochberg FDR). *p<0.05, **p<0.01, ***p<0.001

Discussion, Limitations, and Conclusions

- Vestibular symptoms were uncommon (1.3%), but were associated with marked longer stays and greater post-discharge care needs, without higher mortality.
- Outpatient cohorts report much higher rates; the lower inpatient rate likely reflects ICD coding and limited screening on admission.
- A higher comorbidity burden suggests these symptoms mark overall disease severity rather than an isolated finding.
- ICD-based ascertainment likely underreports symptoms, and severity, vestibular testing, and disease activity were unavailable.
- Each record is a hospitalization, so a patient admitted more than once is counted more than once. The cross-sectional design allows no causal inference.
- **Conclusion: Screening for dizziness and imbalance during SLE admissions may flag patients at risk for greater healthcare use.**

References/Acknowledgments

The authors have no relevant financial disclosures or conflicts of interest. Data were obtained from the Healthcare Cost and Utilization Project Nationwide Inpatient Sample, Agency for Healthcare Research and Quality.

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