

Effects of Systemic Lupus Erythematosus on Clinical Outcomes and In-Patient Mortality Among Hospitalized Patients with Diverticulitis: A Nationwide Inpatient Sample Analysis

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Introduction

Systemic Lupus Erythematosus (SLE) is an autoimmune disease that can affect any organ system and is characterized by a high inflammatory state. Diverticulitis occurs when a diverticulum becomes infected or inflamed causing symptoms such as pain and hematochezia. Though there are studies on other autoimmune diseases, the literature is deficient on the associations between SLE and diverticulitis. This study aims to evaluate the effects of SLE on clinical outcomes and in-patient mortality in patients with diverticulitis.

Methods

The NIS database was used to identify adult patients with diverticulitis related hospitalizations from 2012 to 2014 using ICD-9 codes. Primary outcomes were mortality, hospital charges, and length of stay (LOS). Secondary outcomes were effects on the complications associated with diverticulitis including perforation, gastrointestinal (GI) bleed, fistula/abscess formation, and sepsis. Chi squared tests for categorical data and independent T test for continuous data were used to compare the outcomes between the two groups. Multivariate analysis was performed to assess the primary outcomes after adjusting for confounding variables. A P value of < 0.05 represents statistical significance.

Results

Table 1: Demographics and Resource Utilization of Diverticulitis Patients, With and Without Lupus

	Diverticulitis Without Lupus N=2,539,720	Diverticulitis With Lupus N=13,600	P-Value	95% CI
Mean Age (years)	68.5 (15.0 SD)	62.5 (13.6 SD)	<0.05	5.78-6.28
Sex			<0.05	
Female	1,464,175 (57.7%)	12,265 (90.2%)		
Male	1,075,025 (42.3%)	1,335 (9.8%)		
Race			<0.05	
White	1,849,365 (76.2%)	8,210 (62.9%)		
Black	271,285 (11.2%)	2,940 (22.5%)		
Hispanic	210,785 (8.7%)	1,405 (10.8%)		
Asian or Pacific Islander	32,695 (1.3%)	115 (0.9%)		
Native American	10,660 (0.4%)	65 (0.5%)		
Others	52,740 (2.2%)	325 (2.5%)		
Length of Stay in Days	4.9 (5.1 SD)	5.2 (4.4 SD)	<0.05	(-0.37) – (-0.20)
Total charges	\$41,713 (57,201 SD)	\$43,970 (63,293 SD)	<0.05	(-3235) – (-1280)
Charlson Comorbidity Index	3.7 (2.3 SD)	4.1 (2.0 SD)	<0.05	(-0.41) – (-0.34)

SD- Standard Deviation, CI- Confidence Interval

Table 2: Clinical Outcomes in Diverticulitis Patients With and Without Lupus

	Diverticulitis Without Lupus N=2,539,720	Diverticulitis With Lupus N=13,600	P-Value	Odds Ratio	95% CI
GI Bleed	118,535 (4.7%)	600 (4.4%)	0.16	0.94	0.87-1.02
Perforation	909,855 (35.8%)	5,020 (36.9%)	<0.05	1.05	1.01-1.09
Abscess	128,545 (5.1%)	600 (4.4%)	<0.05	0.87	0.80-0.94
Obstruction	101,440 (4.0%)	445 (3.3%)	<0.05	0.81	0.74-0.89
Surgical Intervention (Colectomy)	168,150 (6.6%)	860 (6.3%)	0.16	0.95	0.89-1.02
Fistula	12,305 (0.5%)	45 (0.3%)	<0.05	0.68	0.51-0.91
Sepsis	121,855 (4.8%)	635 (4.7%)	0.48	0.97	0.90-1.05
In-Patient mortality	30,005 (1.2%)	105 (0.8%)	<0.05	0.65	0.54-0.79

CI- Confidence Interval

Results

There was a total of 2,553,320 diverticulitis related hospitalizations from 2012-2014, of which 13,600 patients had SLE. In patients with SLE and diverticulitis, 12,265 (90%) were female and the average age was 62.5. The average LOS was 5.2 days, mortality rate was 0.8% (105 patients), and total hospital charges were \$43,970. SLE was associated with a statistically significant longer LOS, higher hospital costs, and a higher CCI. In terms of clinical outcomes, SLE was statistically significant for having higher perforation rates (36.9% vs 35.8%, OR 1.05, 95% CI 1.01-1.09) and lower rates for abscess (4.4% vs 5.1%, OR 0.87, 95% CI 0.80-0.94) and fistula formation (0.3% vs 0.5%, OR 0.68, 95% CI 0.51-.091) as well as a lower mortality rate (0.8% vs 1.2 %, OR 0.65, 95% CI 0.54-0.79). Differences in complications such as sepsis, GI bleed, and requirement of surgical intervention were non-significant.

Discussion

Since SLE causes a high inflammatory state, one would expect higher rates of complications, and possibly higher mortality rates in those with concomitant diverticulitis. In this study, though the primary outcomes were significant, mortality rate was lower and only a complication of perforation was found to be higher in SLE patients. A high inflammatory state likely increases the risk of perforation and LOS in SLE patients, yet, factors such as corticosteroid/anti-inflammatory use can be a contributing factor to such complications, as well as to the mortality rate. This study identifies a lower mortality rate, but higher LOS and hospital cost association between diverticulitis and SLE and future studies are needed to further analyze the association.