

## Background

- The pathogenesis of nonalcoholic fatty liver disease (NAFLD) has not been clearly understood, but several studies suggest intestinal bacteria may play a role.
- Similarly, diverticulitis is associated with changes in the gut microbiome.
- However, there is a lack of studies on how NAFLD affects the outcomes of diverticulitis.
- Thus, this study aims to assess the outcomes of diverticulitis among patients with NAFLD.

## Methods

- Adult patients hospitalized with diverticulitis from the National Inpatient Sample (NIS), Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality 2014 were selected.
- Diagnoses were identified by using ICD-9 CM codes.
- Patient demographics and outcomes of diverticulitis were compared between the groups with and without NAFLD.
- The outcomes of interest were inpatient mortality, length of stay, total hospital charge, shock/hypotension, colectomy, abscess, obstruction, fistula, and perforation.

- Chi-squared tests and independent t-tests were used to compare proportions and means, respectively. Multivariate logistic regression analysis was performed to determine if NAFLD is an independent predictor for the outcomes, adjusting for age, sex, race, and the Charlson Comorbidity Index.

## Results

Patient Demographics and Characteristics			
	NAFLD	Without NAFLD	P-value
N = 48,214	1,184	47,030	
Patient age, mean (SD)	54.1 (13.8)	60.6 (15.4)	<0.05
Sex			<0.05
Female (%)	640 (54.1)	27385 (58.3)	
Male (%)	543 (45.9)	19618 (41.7)	
Race, N (%)			<0.05
White	798 (67.4)	34787 (74.0)	
Black	78 (6.6)	3740 (8.0)	
Hispanic	221 (18.7)	4816 (10.2)	
Asian or Pacific Islander	11 (0.9)	416 (0.9)	
Native American	*	181 (0.4)	
Other	31 (2.6)	1027 (2.2)	
Length of stay, in days (SD)	4.2 (3.7)	4.7 (4.4)	<0.05
Total hospital Charges, in \$ (SD)	34392.3 (39499.9)	38652.2 (54587.9)	<0.05
Inpatient Mortality (%)	0 (0)	178 (0.4)	<0.05
Charlson comorbidity index (SD)	2.9 (1.8)	2.5 (2.1)	<0.05

\*Omitted due to a small sample size

Multivariate Regression Analysis of Outcomes			
Outcomes	Adjusted Odds Ratio*	Confidence Interval	P-value
Shock/hypotension	0.38	0.09-1.53	0.17
Colectomy	0.44	0.34-0.57	<0.05
Intestinal abscess	0.67	0.55-0.81	<0.05
Intestinal obstruction	0.64	0.41-1.01	0.054
Intestinal fistula	0.56	0.25-1.26	0.16
Intestinal perforation	0.29	0.04-2.11	0.22

\*Adjusted for age, sex, race, and the Charlson Comorbidity Index

- Among 48,214 patients with diverticulitis, 1,184 patients had a history of NAFLD.
- Patients with NAFLD had shorter length of stay (4.2 days vs. 4.7 days,  $p < 0.05$ ), lower hospital charge (\$34,392 vs. \$38,652,  $p < 0.05$ ), and lower mortality (0.0% vs. 0.4%,  $p < 0.05$ ).
- After adjusting for age, sex, race, and the Charlson Comorbidity Index, NAFLD was an independent protective factor for colectomy (OR 0.44, 95% CI: 0.34-0.57,  $p < 0.05$ ) and intestinal abscess (OR 0.67, 95% CI: 0.55-0.81,  $p < 0.05$ ).
- Adjusted odds ratios of other outcomes were not statistically significant.

## Conclusion

- Our study indicates that NAFLD is associated with **better outcomes** of diverticulitis, such as lower rates of colectomy and intestinal abscess among patients hospitalized with diverticulitis, in contrast with worse outcomes associated with NAFLD in many other conditions.
- The limitation of this study using the NIS database is the difficulty in comparing the severity of diverticulitis between the groups and exact treatment methods, which may have affected the results.
- Future studies to assess the potential protective effect of NAFLD on outcomes of diverticulitis and understand the pathophysiology of NAFLD and diverticulitis are warranted.