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Inflammatory Bowel Diseases Results in Worse Hospital Outcomes in Patients Admitted for Acute Diverticulitis: A Study of the National Inpatient Sample

Mohammad Aldiabat, MD; Yazan Aljabiri, MD; Odai Alkhdour, MD; Yassine Kilani, MD; Ali Horoub, MD; Mubarak Yusuf, MD; Fnu Farukhuddin, MD;
NYU Langone Health-Long Island, Yarmouk University, Lincoln Medical Center

Background

The association between Acute Diverticulitis (AD) and Inflammatory Bowel Diseases (IBD) is extremely rare in literature and not well studied as a result of the scarcity of reports and overlapping clinical and radiological features. In this study, we aim to investigate the clinical impact of IBD on the outcomes of patients admitted for AD.

Methods and Materials

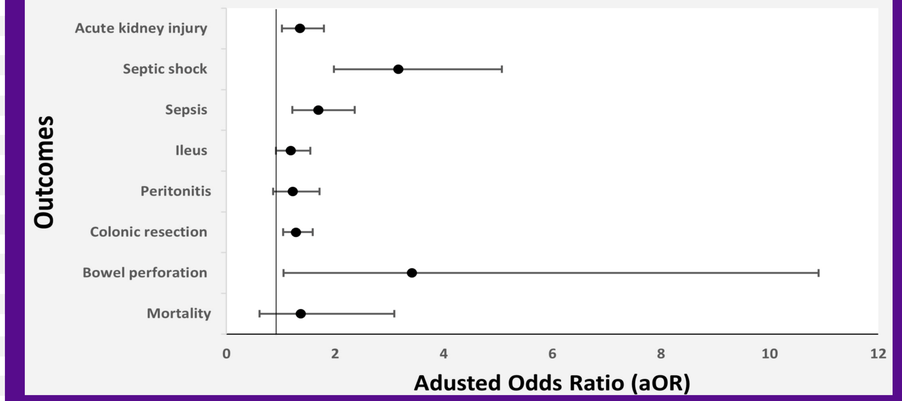
The National Inpatient Sample Database of the years 2016 to 2019 was analyzed, and patients who were hospitalized for AD, with or without a secondary diagnosis of IBD (Crohn's Disease and ulcerative colitis) were identified using the 10th Revision of International Classification of Diseases codes. Univariates and Multivariate logistic regression analysis was performed to determine risk difference in mortality and AD-related complications. Data was considered statistically significant with p-value < 0.05.

Results

A total of 313,054 adults AD hospitalizations were identified, among which 3090 (1%) had a history of IBD. AD patients baseline characteristics and comorbidities are listed in Table 1 stratified by IBD diagnosis. IBD patients found to have 27% increase in risk of AD than IBD-free patients (adjusted odds ratio (aOR) 1.27, p< 0.001) with no difference in risk of mortality between the two groups (aOR 1.37, p=0.437). AD/IBD patients had significant increased risk of bowel perforation (aOR 3.41, p=0.04), sepsis (aOR 1.69, p=0.002), septic shock (aOR 3.16, p< 0.001), acute kidney injury (aOR 1.35, p=0.036) and undergoing colonic resection (aOR 1.28, p=0.018) than AD/non-IBD group. In term of healthcare resources utilization, IBD patients had a prolonged length of stay (adjusted mean difference (aMD) 1.39 days, p< 0.001) and increased cost of care (aMD 16993$, p< 0.001) when hospitalized for AD when compared to non-IBD patients.

VARIABLE	ALL AD %, NO.	WITHOUT IBD %, NO.	WITH IBD %, NO.	P value
	(100.0) 313054	99.0 (309964)	1.00 (3090)	
Patient's characteristics				
Age, mean years	58.4	58.4	60.3	0.001
Female	49.8 (155901)	49.8 (154362)	54.3 (1678)	0.028
Racial distribution				<0.001
White	76.3 (238860)	76.3 (236503)	83.4 (2577)	
Black	8.62 (26985)	8.65 (26812)	6.46 (200)	
Hispanic	11.0 (34436)	11.1 (34406)	6.29 (194)	
Others	2.29 (7169)	2.29 (7098)	2.65 (82)	
Insurance type				0.002
Medicaid	36.5 (114265)	36.5 (113137)	43.4 (1341)	
Medicare	11.2 (35062)	11.2 (34716)	9.43 (291)	
Private	45.7 (143066)	45.7 (141654)	42.7 (1319)	
Uninsured	6.49 (20317)	6.52 (20210)	4.38 (135)	
Charlson comorbidity index score				0.082
1	22.1 (69185)	22.1 (68502)	21.5 (664)	
2	9.20 (28801)	9.18 (28455)	11.6 (358)	
≥3	9.86 (30867)	9.85 (30531)	11.3 (349)	
Median annual income, us$				0.281
1–43,999	23.9 (74820)	23.9 (74081)	23.1 (714)	
44,000–55,999	26.1(81707)	26.2 (81211)	23.4 (723)	
56,000–73,999	26.3 (82333)	26.3 (81521)	27.0 (834)	
≥74,000	23.5 (73568)	23.4 (72532)	26.2 (810)	
Hospital characteristics				
Hospital region				0.079
Northeast	20.8 (65115)	20.8 (64473)	24.7 (763)	
Midwest	22.6 (70750)	22.6 (70052)	23.4 (723)	
South	38.0 (118961)	38.0 (117786)	35.2 (1088)	
West	18.4 (57602)	18.4 (57033)	16.5 (510)	
Hospital bed size				0.338
Small	23.3 (72942)	23.3 (72222)	22.6 (698)	
Medium	31.0 (97047)	31.0 (96089)	28.8 (890)	
Large	45.6 (142753)	45.6 (141344)	48.5 (1499)	
Hospital location				
Rural location	9.76 (30554)	9.78 (30314)	8.09 (250)	0.023
Urban location	25.0 (78264)	25.0 (77491)	21.3 (658)	
Teaching hospital	65.2 (204111)	65.1 (201787)	70.5 (2178)	
Comorbidities				
Hypertension	41.8 (130857)	41.8 (129565)	40.6 (1255)	0.534
Diabetes mellitus	13.9 (43515)	14.0 (43395)	11.3 (349)	0.055
Smoking history	40.0 (125222)	39.9 (123676)	42.7 (1319)	0.171
Hyperlipidemia	29.5 (92351)	29.5 (91439)	30.4 (939)	0.617
Obesity	19.5 (61046)	19.5 (60443)	16.0 (494)	0.030
Chronic kidney disease	6.45 (20192)	6.44 (19962)	8.41 (260)	0.045
Coronary artery disease	10.2 (31932)	10.2 (31616)	11.4 (352)	0.284
Peripheral vascular disease	1.07 (3350)	1.06 (3286)	2.27 (70)	0.003
Congestive heart failure	5.01 (15684)	4.99 (15467)	7.44 (230)	0.005
Chronic obstructive lung disease	8.68 (27173)	8.66 (26843)	11.0 (340)	0.039
Chronic liver disease	4.97 (15559)	4.97 (15405)	5.02 (155)	0.961
Constipation	8.46 (26484)	8.46 (26223)	8.74 (270)	0.800

Forest plot of study outcomes



Conclusion

This is the first descriptive analysis to demonstrate the effect of IBD on outcomes of patients with AD. IBD patients are at higher risk of developing AD, and IBD patients admitted for AD were found to have had higher risk of bowel perforation, sepsis, septic shock, acute kidney injury and undergoing colonic resection with significant increase in healthcare resources utilization. As such association is unique in clinical practice, misdiagnosis can occur and therefore physicians should keep high index of suspicion in this challenging scenario to primarily avoid catastrophic outcomes and decrease resources utilization.

Contact

Mohammad Aldiabat, MD
Clinical Fellow, Division of Geriatrics
NYU Langone Health– Long Island
NYU Long Island School of Medicine
222 Station Plaza North, Suite 518
Mineola, NY 11501
Tel: 516-663-2588
Email: Mohammad.Aldiabat@nyulangone.org