

Do the Anti-Inflammatory Effects of Statins Benefit Patients in Inflammatory Bowel Disease Flares?

Dr. Alvin Boyd Caro, Dr. Vamsee Mupparaju, Dr. Vanessa Florival, Dr. Ivan Rascon-Aguilar



Background

- Ulcerative colitis and Crohn's disease, are chronic gastrointestinal diseases that manifest through local and systemic non-infectious inflammation.
- Both UC and Crohn's are associated with frequent hospitalizations and surgery, reductions in quality of life, increased risk of colorectal cancer, and increased mortality¹.
- Statins (3-hydroxy-3-methyl-glutaryl-CoA reductase inhibitors), commonly used to treat hypercholesterolemia, exhibit anti-inflammatory and antifibrotic effects.
- This study aims to investigate the therapeutic benefit of statins in the inpatient treatment of inflammatory bowel disease.

Objective

This study's primary objective is to track the length of stay in patients taking statins vs non-statin users who are admitted for an IBD flare.

Methods

The methods of this study included a retrospective chart review of records across HCA West Florida Division Hospitals (16 total hospitals).

Selection

Individuals >18 who have been previously diagnosed with IBD, who are admitted for IBD flare.

Time period: 2019/01/01 – 2022/12/31

19,602 Unique Patients Reviewed and Included in Final Data Set

Descriptive analyses of the relevant variables including age, race, sex, BMI, comorbid illness, type of IBD. Mean and standard deviation or median and range for continuous variables. Frequencies for categorical variables.

- Outcome Variables:** Length of Stay, Incidence of Hemicolectomy
- Predictor Variables:** Statin users vs non-users, dosages of stain use vs non-users

Results

Descriptive Category		Count (%)
Sex	Female	12481 (63.7)
	Male	7121 (36.3)
Statin Intensity	High	1014 (5.2)
	Low	275 (1.4)
	Medium	1270 (6.5)
	None	17043 (86.9)
Hemicolectomy	No Procedure	17998 (91.8)
	Procedure Performed	1604 (8.2)

Likelihood of Hemicolectomy Odds Ratio Estimates and Wald Confidence Intervals				
Odds Ratio	Estimate	95% Confidence Limits		p-Value
Statin High vs Low	0.618	0.437	0.873	0.0063
Statin High vs Medium	0.918	0.725	1.163	0.4795
Statin High vs None	1.024	0.841	1.247	0.8111
Statin Low vs Medium	1.487	1.066	2.076	0.0197
Statin Low vs None	1.659	1.220	2.256	0.0013
Statin Medium vs None	1.115	0.935	1.330	0.2245

Length of Stay					
Statin	Statin	IRR	IRR 95% CI		p-value
High	Low	0.931155	0.78075	1.110488	0.4273
High	Medium	1.065677	0.953715	1.19077	0.2614
High	None	1.2467	1.139968	1.363561	<.0001
Low	Medium	1.144422	0.96306	1.360021	0.1254
Low	None	1.338969	1.140766	1.571452	0.0004
Medium	None	1.169879	1.076775	1.270995	0.0002

Discussion

- Statins exhibit anti-inflammatory and antifibrotic effects. The immunomodulatory properties of statins include inhibition of T-cell activation, antigen-presenting function and leukocyte infiltration of target organs².
- Studies have also shown that statins reduce proinflammatory markers such as c-reactive protein, interferon gamma, interleukins 6 and 8, and NF-kappa B³.
- These same markers are heavily involved in the inflammatory pathophysiology of UC and Crohn's².
- Among IBD patients admitted for disease flare, those taking high, medium, and low dose statins had higher length of hospital stay compared to those who were not taking statins.
- Additionally, IBD patients on low dose statins were 1.659 times as likely to undergo hemicolectomy compared to those not taking statins.
- Additional research is necessary to assess if statins have adverse effects in patients with IBD.

Conclusion

- This study shows that statin medications do not have significant benefit in reducing length of hospital stay in those admitted for IBD flares. In addition, statin use does not prove favorable in reducing need for surgical intervention in IBD patients.

References

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