Incidence of pneumonia, related hospitalization, and mortality among younger unvaccinated IBD patients in a Veteran Affairs cohort

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Background

- Community Acquired Pneumonia (CAP) is a serious infection among Inflammatory Bowel Disease (IBD) patients for whose prevention pneumococcal vaccination is recommended
- While in the general population vaccination is recommended at age 65, among IBD patients it is recommended at a younger age especially among those exposed to immunosuppressive agents.
- To the best of our knowledge, there is very limited data on the risk of acquiring CAP amongst younger unvaccinated IBD patients with or without exposure to immunosuppressive medications.
- Our study aimed to determine incidence of CAP, related hospitalization, and mortality among unvaccinated IBD population younger than 65 years and compare the rates between those exposed to immunosuppressive medications and those who were not.

Methods and Materials

- We conducted a retrospective cohort study utilizing a nationwide cohort of IBD patients who were younger than 65 years of age in the Veterans Affairs Healthcare System (VAHS) using data from the VA Informatics and Computing Infrastructure (VINCI).
- Exposure was administration of any immunosuppressive medication for IBD management. For the unexposed group, the starting time was the instance of the first 5-ASA medication.
- To be included, patients must have received first IBD medication in the VAHS system between January 1, 2000, and July 07, 2018. Patients were then followed up until June 1, 2020.
- The primary outcome was the first occurrence of pneumonia; secondary outcomes being pneumonia related hospitalization and mortality. Patients who had pneumonia confirmed based on CXR findings and individual chart review were included.

Results

Among a total of 26,707 patients, 513 patients developed pneumonia. Mean age in years (SD) was 51.67 (11.34) for the exposed and 45.91 (12.34) for the unexposed group. (Table 1) The overall crude incidence rate was 3.2 per 1000 patient-years (4.04/1000 patient years in the exposed vs 1.45/1000 patient-years in the unexposed). The crude incidence rates for pneumonia related hospitalization for all the patients, the exposed, and the unexposed were 1.12, 1.44, and 0.44 per 1000 patient-years, respectively. The crude incidence rates for pneumonia-related death for all the patients, the exposed, and the unexposed were 0.09, 0.11, and 0.06 per 1000 patient-years, respectively. In Cox regression, exposed group was associated with an increased risk of pneumonia (AHR 2.85; 95% CI 2.21 – 3.66, p < 0.001) and pneumonia-related-hospitalization (AHR 3.46; 95% CI 2.20 – 5.43, p < 0.001). (Table 3)

	Exposed (N =17727)	Not exposed (N =8980)	P-value
Age (mean +- SD)	51.67 +- 11.34	45.91 +- 12.34	<0.001
Gender			
Male	15625 (88)	8262 (92)	<0.001
Female	2102 (12)	718 (8)	
IBD type			
CD	8563 (48)	2831 (32)	<0.001
UC	9164 (52)	6149 (68)	
CCI (mean +- SD)	0.49 +- 1.06	0.52 +- 1.17	0.129
Smoking status			
Yes	7247 (41)	4260 (47)	<0.001
No	10480 (59)	4720 (53)	
Chronic Pulmonary Disease			
Yes	1785 (10)	554 (6)	<0.001
No	15942 (90)	8426 (94)	

Table 1. Characteristics and outcome of patients by exposure

Exposure	Episode of Pneumonia, N	Patient-years	Episodes per 1000 patient-years
Exposed	438	108482.40	4.04
Unexposed	75	51673.37	1.45
Total	513	160155.77	3.20
Exposure	**Pneumonia hospitalization, N**	**Patient-years**	**Episodes per 1000 patient-years**
Exposed	158	109427.77	1.44
Unexposed	23	51826.71	0.44
Total	181	161254.48	1.12
Exposure	**Episode of Pneumonia-related death, N**	**Patient-years**	**Episodes per 1000 patient-years**
Exposed	12	109860.38	0.11
Unexposed	3	51877.24	0.06
Total	15	161737.62	0.09

Table 2. Crude incidence rates by exposure

Results

		Unadjusted analysis		Adjusted analysis	
Outcomes	Exposure	HR (95% CI)	P-value	HR (95% CI)	P-value
Pneumonia	Unexposed	Reference			
	Exposed	2.79 (2.19 - 3.57)	<0.001	2.85 (2.21 - 3.66)	<0.001
Pneumonia hospitalization	Unexposed	Reference			
	Exposed	3.25 (2.10 - 5.03)	<0.001	3.46 (2.20 - 5.43)	<0.001
Pneumonia-related death	Unexposed	Reference			
	Exposed	1.93 (0.54, 6.82)	0.310	2.81 (0.76, 10.38)	0.121

Table 3. Effect of the exposure on the outcomes

Conclusions

Among younger unvaccinated IBD patients, incidence as well as the risk of pneumonia and related hospitalization were higher among those exposed to immunosuppressive medications. These findings will help guide physicians and patients to make informed decisions about vaccination.

Disclosure

This study was supported by an unrestricted grant from Pfizer Pharmaceuticals.