PAGNY RESEARCH DAY
Physician Affiliate Group of New York, P.C.

NYC HEALTH+ HOSPITALS | Harlem

Does Inflammatory Bowel Disease Itself Increase Pneumonia Risk? A Matched Cohort Study and Risk Factor Analysis Using *All of Us* Data

Yong Eun, MD[1], Joan A. Culpepper-Morgan, MD[2,3], Abiodun M. Akanmode, MD[1], Myint B. Thu, MD[1], Aprilee A. Sta Lucia, MD[1], Marie S. Thearle, MD, MHSc[1], Rhonda K. Trousdale, MD[3,4]

1 Department of Medicine, NYC Health + Hospitals/Harlem, New York, NY, USA
2 Division of Gastroenterology, Department of Medicine, NYC Health + Hospitals/Harlem, New York, NY, USA
3 Department of Medicine, Vagelos College of Physicians & Surgeons, Columbia University, New York, NY, USA
4 Division of Endocrinology, Department of Medicine, NYC Health + Hospitals/Harlem, New York, NY, USA

INTRODUCTION

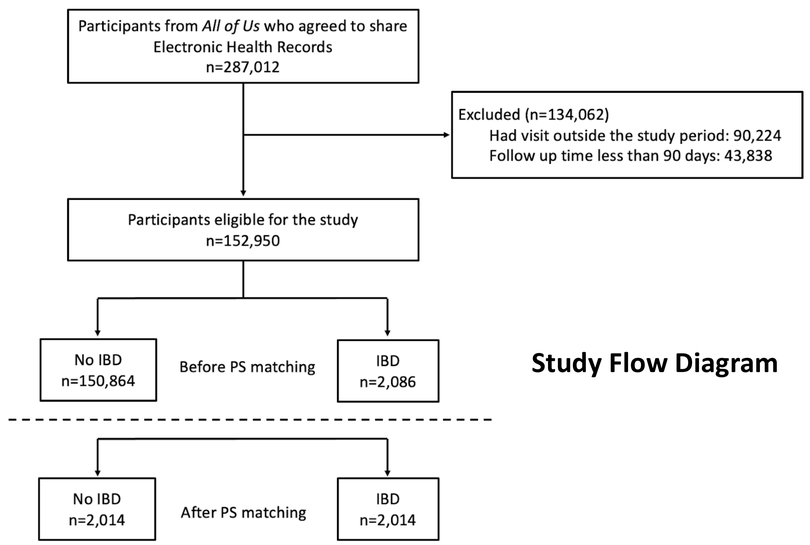
- The risk of invasive pneumococcal infections increases after a diagnosis of inflammatory bowel disease (IBD).
- Most studies investigating infection risks in IBD patients have focused exclusively on IBD cohorts.
- One study showed an increased risk of pneumonia in IBD patients compared to matched non-IBD patients; however, this study did not account for differences in immunosuppressive use.

METHODS

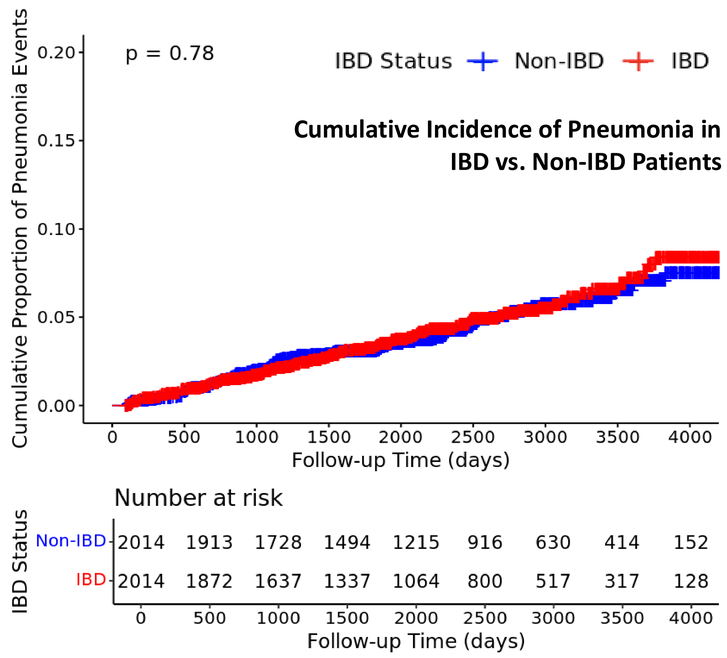
- **IBD**: Defined as having ≥2 visits (at least 1 outpatient) with IBD-related ICD-9/10 codes.
- **Bacterial pneumonia**: Defined as any hospitalization with bacterial pneumonia-related ICD-9/10 codes.
- **Matching cohorts**: Two matched cohorts (IBD vs. non-IBD) were created using 1:1 propensity score matching without replacement and with a caliper of 0.2.
- **Matching variables**: age, sex, race/ethnicity, education, comorbidities (18 diseases in Charlson Comorbidity Index [CCI]), immunosuppressive medications (systemic steroids, anti-TNF inhibitors, calcineurin inhibitors, immunomodulators)
- **Risk comparison**: Cox proportional hazards models were used to compare the risk of bacterial pneumonia in IBD vs. non-IBD.
- **Nested case-control study**: Within the IBD cohort, univariable and multivariable logistic regression analyses were performed to assess the association between each variable and bacterial pneumonia.

OBJECTIVES

- **Objective 1**: To assess the risk of bacterial pneumonia in IBD patients compared to a propensity score-matched control group.
- **Objective 2**: To identify factors that influence pneumonia risk within the IBD cohort.



Study Flow Diagram



RESULTS

- The overall incidence rate of bacterial pneumonia events: IBD group: 72.4 per 10,000 patient-years; Non-IBD group: 69.5 per 10,000 patient-years.
- There was no significant change in the risk of bacterial pneumonia in IBD patients compared to non-IBD patients: HR: 1.04 (95% CI, 0.78-1.40, p=0.776).
- Duration of IBD disease was significantly associated with the risk of pneumonia: OR per 10 years: 5.80 (95% CI, 3.44-9.89, p<0.001).
- Higher income was protective against the risk of pneumonia. Higher comorbidity score was significantly associated with pneumonia risk: OR: 4.56 (95% CI, 2.86-7.24, p<0.001) for CCI ≥10 compared to CCI ≤4.
- Systemic steroids use was associated with an increased risk of pneumonia: OR: 1.81 (95% CI, 1.20-2.81, p=0.006).
- Anti-TNF inhibitors, calcineurin inhibitors, and immunomodulators were not associated with an increased risk of pneumonia. Neither current smoking nor pneumococcal vaccination was significantly associated with an increased risk of pneumonia.

DISCUSSION

- This finding suggests that IBD alone may not independently increase the risk of bacterial pneumonia when other factors (especially comorbidities and medication use) are controlled for.
- Clinicians should use steroid judiciously in managing IBD patients.

CONCLUSION

Does inflammatory bowel disease itself increase the risk of pneumonia? Our answer is, 'not likely.'