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Gastrointestinal Infection Increases Odds of Inflammatory Bowel Disease in a Nationwide Case–Control Study

Jordan E. Axelrad, MD, MPH, Ola Olén, MD, PhD, Johan Askling, MD, Ph, Benjamin Lebwohl, MD, MS, Hamed Khalili, MD, MPH, Michael C. Sachs, PhD, Jonas F. Ludvigsson, MD, PhD

Abstract

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Background & Aims

Gastrointestinal infections have been associated with later development of inflammatory bowel diseases (IBD). However, studies have produced conflicting results. We performed a nationwide case–control study in Sweden to determine whether gastroenteritis is associated with the development of Crohn's disease (CD) or ulcerative colitis (UC).

Methods

Using the Swedish National Patient Register, we identified 44,214 patients with IBD (26,450 with UC; 13,387 with CD; and 4,377 with IBD-unclassified) from 2002 to 2014 and matched them with 436,507 individuals in the general population (controls). We then identified patients and controls with reported episodes of gastroenteritis (from 1964 to 2014) and type of pathogen associated. We collected medical and demographic data and used logistic regression to estimate odds ratios (ORs) for IBD associated with enteric infection.

Results

Of the patients with IBD, 3105 (7.0%) (1672 with UC, 1050 with CD, and 383 with IBD-unclassified) had a record of previous gastroenteritis compared with 17,685 controls (4.1%). IBD cases had higher odds for an antecedent episode of gastrointestinal infection (aOR, 1.64; 1.57–1.71), bacterial gastrointestinal infection (aOR, 2.02; 1.82–2.24), parasitic gastrointestinal infection (aOR, 1.55; 1.03–2.33), and viral gastrointestinal infection (aOR, 1.55; 1.34–1.79). Patients with UC had higher odds of previous infection with Salmonella, *Escherichia coli*, Campylobacter, or *Clostridium difficile* compared to controls. Patients with CD had higher odds of previous infection with Salmonella, Campylobacter, Yersinia enterocolitica, *Clostridium difficile*, amoeba, or norovirus compared to controls. Increasing numbers of gastroenteritis episodes were associated with increased odds of IBD, and a previous episode of gastroenteritis was significant associated with odds for IBD more than 10 years later (aOR, 1.26; 1.19–1.33).

Conclusion

In an analysis of the Swedish National Patient Register, we found previous episodes of gastroenteritis to increase odds of later development of IBD. Although we cannot formally exclude misclassification bias, enteric infections might induce microbial dysbiosis that contributes to the development of IBD in susceptible individuals.

Key words:
epidemiology, risk factor, microbiome, immune response

Conflicts of interest: The authors disclose no relevant conflicts of interest.

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