IBD

Risk of IBD increases after *Salmonella* or *Campylobacter* gastroenteritis

The pathogenesis of IBD involves many genetic and environmental factors, including enteric bacteria that may trigger or exacerbate the disease. Few human studies of IBD have focused on pathogenic bacteria that cause gastroenteritis other than *Mycobacterium paratuberculosis* and adherent-invasive *Escherichia coli*, even though adhesion of bacteria and increased permeability of the intestinal mucosa in this illness is important in the pathogenesis of IBD. A population-based cohort long-term follow-up study now shows that gastroenteritis caused by infection with nontyphoid *Salmonella* or thermophilic *Campylobacter* increases the risk of developing IBD. “The potential consequences of foodborne bacterial infections may not be as trivial as many people think”, comments corresponding author, Henrik Nielsen.

A total of 13,324 Danish residents with a first-time detection of *Salmonella* or *Campylobacter* in stool specimens were included in the study cohort, and were matched with 26,648 unexposed individuals on the specimen receipt date, according to age, gender and county of residence. 176 exposed individuals and their 352 unexposed matched individuals were excluded because they had IBD before gastroenteritis, as were 80 unexposed individuals who had IBD before the specimen receipt date. The study cohort was linked to the Danish National Patient Registry to identify all diagnoses of ulcerative colitis and Crohn’s disease. “Our study is very strong from an epidemiological point of view, as we included all cases in a well-defined population, thanks to complete registration of all health contacts in Denmark, and we were able to follow the patients for up to 15 years”, says Nielsen. “Moreover, diagnosis of IBD is centralized to departments of gastroenterology and all cases are registered in a national database.”

Wikipedia

A first-time diagnosis of IBD was reported in 107 exposed (1.2%) and 73 unexposed individuals (0.5%); 14 of these had both ulcerative colitis and Crohn’s disease. When adjusted for age, gender and comorbidities, the hazard ratio (HR) for IBD was 2.9 (CI 2.2–3.9). During the first year after infection, the incidence of IBD increased steeply in exposed individuals but remained close to zero in unexposed individuals. *Salmonella* or *Campylobacter* gastroenteritis was probably not the trigger of IBD diagnosed within a few months of infection, because patients usually report symptoms of ulcerative colitis and Crohn’s disease months or years before their first admission to hospital. For that reason, the authors also calculated the HR excluding the first year after the specimen receipt date—this HR was 1.9 (CI 1.4–2.6).

Among all exposed patients, 28.3% were hospitalized for their gastroenteritis, whereas 44.9% of the patients with IBD were hospitalized for their IBD. At 15 years 1.2% of exposed individuals and 0.5% of unexposed individuals had been diagnosed as having IBD. The distribution of mild and moderate or severe cases of IBD, as determined by proxy by the number of visits to hospital, did not differ between exposed or unexposed individuals, but the risk of developing IBD was higher in hospitalized than in

nonhospitalized patients. The increased risk was similar for a *Salmonella* or a *Campylobacter* infection, and for a first-time diagnosis of ulcerative colitis or Crohn’s disease.

To check for possible surveillance bias, such as whether individuals with a *Salmonella* or *Campylobacter* infection developed gastroenteritis because of the presence of undiagnosed IBD, the authors evaluated the number of cultured stool specimens of 20.2% of the exposed and unexposed individuals in the study cohort. Although patients with IBD had more specimens cultured than patients without IBD, the bacteria were generally detected in the first specimen taken, thus making surveillance bias unlikely.

“Focused studies involving new cases with mucosal biopsy samples, to assess immunological factors and inflammation, and genetic marker assessment in cases versus controls, would be useful,” concludes Nielsen. Clinicians should be aware of the higher risk of IBD in patients with *Salmonella* or *Campylobacter* gastroenteritis.

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