351 Inflammatory Bowel Disease

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Inflammatory bowel disease (IBD) is an immune-mediated chronic intestinal condition. Ulcerative colitis (UC) and Crohn's disease (CD) are the two major types of IBD.

GLOBAL CONSIDERATIONS: EPIDEMIOLOGY

The incidence and prevalence of IBD are highest in Westernized nations, with UC incidence estimates ranging from 0.6 to 24.3 per 100,000 in Europe, 0 to 19.2 per 100,000 in North America, and 0.1 to 6.3 per 100,000 in the Middle East and Asia and CD estimates ranging from 0.3 to 12.7 per 100,000 in Europe, 0 to 20.2 per 100,000 in North America, and 0.04 to 5.0 per 100,000 in the Middle East and Asia (Table 351-1). For prevalence rates, the UC estimates range from 4.9 to 505 per 100,000 in Europe, 37.5 to 248.6 per 100,000 in North America, and 4.9 to 168.3 per 100,000 in the Middle East and Asia, and the CD estimates range from 0.6 to 322 per 100,000 in Europe, 16.7 to 318.5 per 100,000 in North America, and 0.88 to 67.9 per 100,000 in Asia and the Middle East. The highest reported incidence rates are in Canada (19.2 per 100,000 for UC and 20.2 per 100,000 for CD), with approximately 0.6% of the Canadian population having IBD. Countries in the Pacific, including New Zealand and Australia, which share many possible environmental risk factors and similar genetic background as northwest Europe and North America, have high incidence rates of IBD.

In countries that are becoming more Westernized, including China, South Korea, India, Lebanon, Iran, Thailand, and countries in the French West Indies and North Africa, IBD appears to be emerging, emphasizing the importance of environmental factors in disease pathogenesis. In Japan, the prevalence of CD has risen rapidly from 2.9 cases per 100,000 in 1986 to 13.5 per 100,000 in 1998, whereas in South Korea, the prevalence of UC has quadrupled from 7.6 per 100,000 in 1997 to 30.9 per 100,000 in 2005. In Hong Kong, the prevalence of UC almost tripled from 2.3 in 1997 to 6.3 per 100,000 over a 9-year period. In Singapore, the prevalence of CD increased from 1.3 in 1990 to 7.2 per 100,000 in 2004. In China the number of cases of UC has increased by fourfold between 1981–1990 and 1991–2000.

Increasing immigration to Western societies also has an impact on the incidence and prevalence of IBD. The prevalence of UC among southern Asians who immigrated to the United Kingdom (UK) was higher in comparison to the European UK population (17 cases per 100,000 persons vs 7 per 100,000). Spanish patients who emigrated within Europe, but not those who immigrated to Latin America, developed IBD more frequently than controls. Individuals who have immigrated to Westernized countries and then returned to their country of birth also continue to demonstrate an increased risk of developing IBD.

Peak incidence of UC and CD is in the second to fourth decades, with 78% of CD studies and 51% of UC studies reporting the highest incidence among those age 20–29 years old. A second modest rise in incidence occurs between the seventh and ninth decades of life. The female-to-male ratio ranges from 0.51 to 1.58 for UC studies and 0.34 to 1.65 for CD studies, suggesting that the diagnosis of IBD is not gender specific. The greatest incidence of IBD is among white and Jewish people, but the incidence of IBD in Hispanic and Asian people is increasing, as noted above. Urban areas have a higher prevalence of IBD than rural areas, and high socioeconomic classes have a higher prevalence than lower socioeconomic classes.

Epidemiologic studies have identified a number of potential environmental factors that are associated with disease risk (Fig. 351-1). In Caucasian populations, smoking is an important risk factor in IBD with opposite effects on UC (odds ratio [OR] 0.58) and CD (OR 1.76), whereas in other ethnic groups with different genetic susceptibility, smoking may play a lesser role. There is a protective effect of previous appendectomy with confirmed appendicitis (reduction of 13–26%), particularly at a young age, on the development of UC across different geographical regions and populations. There is a modest association with the development of CD. Oral contraceptive use is associated with the risk of CD (OR 1.4). The association between oral contraceptive use and UC is limited to women with a history of smoking. There is an association between antibiotic use and the development of childhood IBD with children who received one or more dispensations of antibiotics during the first year of life having a 2.9-fold increase in the risk of developing IBD during childhood. Breastfeeding may also protect against the development of IBD. These factors are consistent with the rapid increase in IBD incidence recently noted during the first decade of life. Infectious gastroenteritis with pathogens (e.g., *Salmonella*, *Shigella*, *Campylobacter* spp., *Clostridium difficile*) increases IBD risk by two- to threefold. Diets high in animal protein, sugars, sweets, oils, fish and shellfish, and dietary fat, especially ω-6 fatty acids, and low in ω-3 fatty acids have been implicated in increasing the risk of IBD.

IBD is a familial disease in 5–10% of patients (Fig. 351-2). Some of these patients may exhibit early-onset disease during the first decade of life and, in CD, a concordance of anatomic site and clinical type within families. In the remainder of patients, IBD is observed in the absence of a family history (i.e., sporadic disease). If a patient has IBD, the lifetime risk that a first-degree relative will be affected is ~10%. If two parents have IBD, each child has a 36% chance of being affected. In twin studies, 38–58% of monozygotic twins are concordant for CD and 6–18% are concordant for UC, whereas 4% of dizygotic twins are concordant for CD and 0–2% are concordant for UC in Swedish and Danish cohorts. The risks of developing IBD are higher in first-degree relatives of Jewish versus non-Jewish patients: 7.8% versus 5.2% for CD and 4.5% versus 1.6% for UC.

TABLE 351-1 EPIDEMIOLOGY OF IBD

	Ulcerative Colitis	Crohn's Disease
Incidence (North America) per person-years	0–19.2 per 100,000	0–20.2 per 100,000
Age of onset	Second to fourth decades and seventh to ninth decades	Second to fourth decades and seventh to ninth decades
Ethnicity	Jewish > non-Jewish white > African American > Hispanic > Asian	
Female/male ratio	0.51–1.58	0.34–1.65
Smoking	May prevent disease (odds ratio 0.58)	May cause disease (odds ratio 1.76)
Oral contraceptives	No increased risk	Odds ratio 1.4
Appendectomy	Protective (risk reduction of 13–26%)	Not protective
Monozygotic twins	6–18% concordance	38–58% concordance
Dizygotic twins	0–2% concordance	4% concordance
Antibiotic use in the first year of life	2.9× the risk of developing childhood IBD	

Abbreviation: IBD, inflammatory bowel disease.

GLOBAL CONSIDERATIONS: IBD PHENOTYPES

There are racial differences in IBD location and behavior that may reflect underlying genetic variations and have important implications for diagnosis and management of disease. For example, African-American patients are more likely than non-Hispanic whites to develop esophagogastroduodenal CD, colorectal disease, and perianal disease and are less likely to have ileal involvement. They are also at higher risk for uveitis and sacroiliitis. Hispanics have a higher prevalence of perianal CD and erythema nodosum and a more proximal extent of disease. Fistulizing CD has been reported in nearly one-third of Hispanic patients, up to one-quarter of African-American patients, and up to one-half of Asian patients. Both African-American