LETTER TO THE EDITOR

The effect of dietary chemicals on gut bacteria and IBD demands further study

Dear Sir,

It is well known that inflammatory bowel disease (IBD), including both ulcerative colitis (UC) and Crohn’s disease (CD), emerged and dramatically increased in the last century.1 This rapid temporal change strongly suggests that some environmental factor(s) would have played a pivotal role in the development of IBD. Despite extensive research, the exact cause for IBD remains largely unknown. IBD is higher in the developed countries, in people with higher social, economical, educational and occupational status, and places with improved hygiene condition. Right now, this phenomenon is explained by the "hygiene hypothesis", which suggests that a reduction in microbes of the gut has contributed to the development of IBD.1 This theory is supported by the finding in multiple studies that the use of antibiotics increased the risk of IBD.1 The strongest evidence would be the paper recently published in Gut by Hviid et al.,2 which has been the first national-wide prospective study on the role of antibiotics in IBD that has included all the 577,627 children born from 1995 to 2003 in Denmark. The result showed a clear dose–response between the use of antibiotics and risk to develop IBD, especially Crohn’s disease, with a rate ratio (RR) as high as 7.32 among children with ≥7 courses of antibiotic use.

However, we should realize that gut bacteria can not only be inhibited by antibiotics, but also by some dietary chemicals. For instance, saccharin has been used for more than a century as sweetener at tabletop, or in baked goods, jams, chewing gum, canned fruit, candy, dessert toppings, salad dressings, cosmetic products, toothpaste, and pharmaceuticals, etc.3 On the other hand, saccharin can also strongly inhibit the growth of bacteria and has actually been used as an antiseptic and food preservative shortly after its commercial production in the later 1880s.4 Nevertheless, the consumption of saccharin was well correlated with the appearance, the age and geographical distribution, the temporal change, the ups and downs, and many other epidemiological features of IBD,5 suggesting saccharin could possibly be the causative or one of the most important risk factor for IBD. It would not be surprising that dietary chemicals like saccharin could have a much greater impact on the general population than antibiotics due to its wide, daily use. In addition to saccharin, many other chemicals are used as food additives in modern society. Some of them may also be capable of inhibiting gut bacteria. Therefore, the role of dietary chemicals on gut bacteria and IBD would be worthy of further study.

References


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24 January 2011