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Editorial

Post-infectious Irritable bowel syndrome

J.K. Triantafillidis[1], G. Peros[2]

Irritable bowel syndrome (IBS) is a heterogeneous syndrome characterized by abdominal pain and erratic bowel habits. Its prevalence rate worldwide ranges from 10 to 20% and is higher for women than for men. IBS imposes a substantial financial burden on both patients and employers because of increased medical costs and decreased work productivity.

Although current definitions of IBS specify that there are no structural or biochemical abnormalities to account for the symptoms, there is growing evidence that -in at least a subset of IBS patients- there is low-grade inflammation, characterized by increased T lymphocytes and mast cells.

Many animal and human studies have shown the presence of increased infiltration of inflammatory cells and hyperplasia of enterochromaffin cells in the intestinal mucosa after acute gastroenteritis. The relationship between infectious enteritis and the development of IBS has been suspected clinically for many years. However, it was not until the late 1990s that epidemiologic studies provided evidence for this relationship. The first studies supporting this link had considerable weaknesses and therefore showed variable results. Even today knowledge about the incidence and prevalence of post-infectious IBS in the general population is limited. Some of the published epidemiological studies lack an appropriate control population, and were limited by a short follow-up symptom assessment post-infection.

Department of Gastroenterology Saint Panteleimon General State Hospital, Nicea, Greece[1], 4th Surgical Unit, "Attikon" Hospital, University of Athens, Athens, Greece[2]

Author for correspondence:

Professor John K. Triantafillidis
Iera Odos 354, Haidari, 12461, Athens, Greece
Tel: (Greece)-210-5819481, Fax: (Greece)-210-5810970
e-mail: jkt@vodafone.net.gr

Data from all studies performed so far are summarized in two recently published meta-analyses. The first[1] included 8 studies and showed a median prevalence of IBS in the post-infectious groups of 9.8% *vs* 1.2% in control groups. They reported a 7-fold increase in the risk estimate of developing IBS following infectious gastroenteritis. Another meta-analysis[2] included 9 published prospective studies and described a 6-fold increase in the risk estimate of developing IBS after acute gastrointestinal infection.

Organisms commonly associated with post-infectious IBS include the food borne pathogens Campylobacter, Escherichia coli, Salmonella, and Shigella. The pathologic changes associated with post-infectious IBS are likely due to inflammatory reactions induced by the infecting organisms.[3] Concerning symptoms it was found that fever during acute gastroenteritis was the only identifiable risk factor for developing post-infectious IBS.[4] An interesting report claimed that Salmonella gastroenteritis is a significant risk factor not only for IBS but also for dyspepsia. The authors found that after 1 year of follow-up, 1 in 7 and 1 in 10 subjects developed dyspepsia or IBS, respectively.[5]

Recent data suggest the increasing importance of bacteria in the pathophysiology of IBS. These pathogenic organisms may contribute to long-term gut dysfunction. A growing body of evidence links IBS to the presence of excessive bacteria in the small bowel (small bowel bacterial overgrowth). Although the means by which this is determined have been indirect, studies demonstrating the benefit of unabsorbed antibiotics suggest that reduction in gut flora is important. Further work has demonstrated that the fermentation of methane in the gut is associated with and can result in the slowing of intestinal transit, resulting in constipation.[6]

A number of risk factors have been associated with the development of post-infectious IBS, including the virulence of the pathogen, younger age, female sex, the long duration of the initial illness and the presence of psychological disturbances. In one study independent risk fac-

tors for post-infectious IBS included young age, female sex, bloody stools, abdominal cramps, weight loss, and prolonged diarrhea[7]. Post-infectious IBS is common after gastroenteritis from water contamination and is often diarrhea-predominant.[7] Small intestinal permeability is frequently abnormal in diarrhea-predominant IBS.[8] Those without a history of infectious onset appear to have a more severe defect.

Transient inflammation is known to alter visceral sensory function and frequently precede the onset of symptoms in a subgroup of patients with IBS. Visceral hyperalgesia occurs after a transient colitis. However, even a mild acute but asymptomatic colitis can induce long-lasting visceral hyperalgesia in the presence of additional stimuli.[9]

Alteration in gastrointestinal motility occurs in a variety of clinical settings which include acute enteritis, inflammatory bowel disease, intestinal pseudo-obstruction and IBS. Activation of immune cells may lead to changes in motor-sensory function in the gut resulting in the development of an efficient defence force which assists in the eviction of the noxious agent from the intestinal lumen.[10] The infection-induced T helper 2-type immune response is critical in producing the alterations of infection-induced intestinal muscle function in this infection and this immune-mediated alteration in muscle function is associated with host defence mechanisms.

Finally, imbalances in the genetically controlled pro- and anti-inflammatory cytokine production may promote ongoing low-grade inflammation after acute gastroenteritis, and subsequently, post-infectious IBS. The emerging hypothesis is that genetically determined immune activity plays a role in the pathophysiology of IBS.[11]

Probiotics have been claimed to be of some benefit in IBS, but the majority of studies have been performed in non-specific IBS rather than in post-infectious IBS and a number of issues still remain to be elucidated.[12] The potential value of probiotic bacteria in restoring normal gut function has been demonstrated by animal models of post-infectious IBS. In humans, post-infectious IBS can be prevented utilizing probiotics to reduce the duration of acute gastroenteritis, despite the variable efficacy shown in randomized control trials evaluating unspecified IBS.[13]

In conclusion, the current epidemiologic data provide supporting evidence that post-infectious IBS can be a sequela of acute infectious gastroenteritis and that bacterial gastroenteritis is a major independent risk factor for IBS. Whether this is cause or effect is uncertain, as there is also clear evidence of bidirectional communication between the immune and nervous systems, and at least some of the mucosal changes could be secondary to psychological stress. A small percentage (6%-17%) of patients develops IBS symptoms for the first time after an acute episode of infective gastroenteritis, which appears to be directly responsible for low-grade immune activation. However, even in this group, preexisting psychological factors are as important as mucosal ones. Specific anti-inflammatory treatments have not been systematically evaluated, but there is no evidence of benefit currently.[14]

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