Pathophysiology of Irritable Bowel Syndrome

Sarah Buck Davis
Otterbein University, buck.138@osu.edu

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There are no structural abnormalities within the gastrointestinal system to explain the discomfort associated with IBS. Recent research shows the pathophysiology of IBS is multifaceted and evidence suggests several factors such as: inflammatory, genetic, immune, psychological, and dietary components can contribute to the development of IBS (Snyder, 2018, "Definition").

Inflammatory: Intestinal biopsies and measurements of cytokines have shown that chronic low-level inflammation occurs in a significant number of IBS cases (Romero, 2013, p. 209). In some IBS patients, GI symptoms appear following an infection. "Post-infection IBS has been reported after oral, bacterial, protozoan and nematode infections" (SIFGD, 2015, "Inflammation"). Following infection, the initial inflammatory response results in an increase in lysosomes and macrophages. The inflammatory response typically decreases, however, in IBS sufferers there is persistent GI symptoms consistent with low-grade systemic inflammation (SIFGD, 2015, "Inflammation").

Dysbiosis, which is a disruption in the normal balance of the gut microorganisms, is now being recognized as a major contributing factor in the development of IBS (Diluzio, 2013, p. 289).

Genetic: In one study, up to 33% of patients with IBS had a family history of IBS compared to 2% of those without IBS (Dlugosz, A., Zakikhany, K., Acevedo, N., D'Amato, M., & Lindberg, B. Ø, 2018, "Facts About IBS"). There is a significant association between having a first-degree family member with reported GI symptoms and the development of IBS (Dlugosz, 2015, a genetic involvement (SIFGD, 2015, "Heritability and Genetics").

Immune: DiLuzio et al. found significantly upregulated expression of toll-like receptors (TLR) 4, 5, and 9 in small bowel mucosa of patients with IBS. This increase in the number of toll-like receptors suggests an impairment of the immune system response to normal flora in the small bowel mucosa of IBS patients (DiLuzio et al., 2017, p. 4).

Psychological: Concerning psychological issues are believed to mediate changes in gut permeability, contributing to the development of IBS symptoms. This brain-gut theory of IBS proposes that “an abnormal stress response, in combination with psychological distress (e.g., anxiety, depression, traumatic events), and/or infections or inflammatory processes may potentially stimulate and initiate a cascade of events (e.g., infiltration of inflammatory cells, localized edema, and release of cytokines or chemokines) that result in the development of IBS symptoms” (Ford, Lacy, & Talley, 2017, p. 268).

Diagnosis of IBS by predominant stool pattern using the Rome IV staging: IBS with constipation (IBS-C) has hard or lumpy stools for ≥25% of bowel movements and loose (mushy) or watery stools for ≤25% of bowel movements, IBS with diarrhea (IBS-D) has loose (mushy) or watery stools for ≥25% of bowel movements and hard or lumpy stool for ≤25% of bowel movements, IBS with alternating bowel habits (IBS-M) has hard or lumpy stools for ≥25% of bowel movements and loose (mushy) or watery stools for ≤25% of bowel movements, IBS unspecified (IBS-U) has hard or lumpy stools for ≥25% of bowel movements and loose (mushy) or watery stools for ≤25% of bowel movements.

Conclusion
IBS can severely impact a patient’s quality of life, and it is crucial that health care providers feel comfortable caring for patients with IBS. The pathophysiology of IBS is multifactorial and IBS can result in maintaining the highest level of quality of life for patients. Providing education involving other specialists and utilizing a multidisciplinary approach when possible is considered a crucial foundation that can lead to the development of treatment plans for IBS. IBS can lead to mood disorders such as anxiety and depression which can contribute to other serious co-morbidities.