

Irritable bowel syndrome: a microbiome-gut-brain axis disorder?

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Abstract

Irritable bowel syndrome (IBS) is an extremely prevalent but poorly understood gastrointestinal disorder. Consequently, there are no clear diagnostic markers to help diagnose the disorder and treatment options are limited to management of the symptoms. The concept of a dysregulated gut-brain axis has been adopted as a suitable model for the disorder. The gut microbiome may play an important role in the onset and exacerbation of symptoms in the disorder and has been extensively studied in this context. Although a causal role cannot yet be inferred from the clinical studies which have attempted to characterise the gut microbiota in IBS, they do confirm alterations in both community stability and diversity. Moreover, it has been reliably demonstrated that manipulation of the microbiota can influence the key symptoms, including abdominal pain and bowel habit, and other prominent features of IBS. A variety of strategies have been taken to study these interactions, including probiotics, antibiotics, faecal transplantations and the use of germ-free animals. There are clear mechanisms through which the microbiota can produce these effects, both humoral and neural. Taken together, these findings firmly establish the microbiota as a critical node in the gut-brain axis and one which is amenable to therapeutic interventions.

KEYWORDS: Abdominal pain; Anxiety; Cognition; Gastrointestinal motility; Irritable bowel syndrome; Microbiome; Tryptophan