

# IRRITABLE BOWEL SYNDROME THE BRAIN GUT AXIS

By Zahida Chaudhary, MD



"It's all in your head"  
"You're not sick—you don't look sick."

Maybe I am not sick?

BUT...

'I've a pain in my head'  
Said the suffering Beckford;  
To her Doctor so dread.  
'Oh! What shall I take for't?'

Said this Doctor so dread  
whose name it was Newnham.  
'For this pain in your head  
Ah! What can you do Ma'am?'

Said Miss Beckford, 'Suppose  
If you think there's no risk,  
I take a good Dose  
Of calomel brisk.'--

'What a praise worthy Notion.'  
Replied Mr. Newnham  
'You shall have such a potion  
And so will I too Ma'am.'  
(Jane Austen)



Irritable bowel syndrome is a disorder characterized most commonly by cramping, abdominal pain, bloating, constipation, and diarrhea. IBS is not the same as inflammatory bowel disease (IBD), which includes Crohn's disease and Ulcerative Colitis. In IBS, the structure of the bowel is not abnormal, although it causes a great deal of discomfort and distress, but it does not permanently harm the intestines and does not lead to a serious disease, such as cancer.

Most people can control their symptoms with diet, stress management, and prescribed medications. For some people, however, IBS can be disabling. They may be unable to work, attend social events, or even travel short distances.

Irritable bowel syndrome or IBS affects up to 55 million Americans, mostly women. IBS causes are unknown. IBS is generally diagnosed on the basis of a complete medical history that includes a careful description of symptoms and a physical examination. No specific test for IBS exists, although diagnostic tests may be performed to rule out other problems.

The Brain Gut Axis Modern IBS research has focused on the importance of the relationship between events that affect the function of the central nervous system (brain) and the influence these factors ultimately have on the function of the intestines via the specialized enteric nervous system of the intestine (The Brain Gut Axis). The modern strategies or treatments that have been developed for IBS reflect researchers understanding of the important role that the brain gut axis plays in causing symptoms. You really cannot separate the brain and the body. Everything that takes place in the brain is chemical or electrical. You can't have the one without the other.



Consequently, in considering treatment of the different variants of IBS, a concept of centrally and end organ targeted treatment has been developed. Such centrally targeted treatments could include a variety of therapies to counter the influence of psychological factors of stress, anxiety and depression and psychological stress on 'end organ' function.

- These treatments might include:
- physiological explanation of symptom generation
  - various forms of counseling
  - simple relaxation therapy
  - gut-focused hypnotherapy
  - cognitive behavioral therapy
  - use of antidepressants

A large academic study has demonstrated structural changes in specific brain regions in female patients with irritable bowel syndrome (IBS), a condition that causes pain and discomfort in the abdomen, along with diarrhea, constipation or both. A collaborative effort between UCLA and Canada's McGill University, the study appears in the July issue of the journal Gastroenterology

Mayer, David A. Seminowicz, PhD, and colleagues at UCLA and Canada's McGill University used sophisticated scans to compare the brain anatomy of 55 women with moderate IBS to 48 age-matched healthy women. Investigators found both increases and decreases of brain grey matter in specific cortical brain regions.

Even after accounting for additional factors such as anxiety and depression, researchers still discovered differences between IBS patients and control subjects in areas of the brain involved in cognitive and evaluative functions, including the prefrontal and posterior parietal cortices, and in the posterior insula, which represents the



primary viscerosensory cortex receiving sensory information from the gastrointestinal tract.

The grey-matter changes in the posterior insula are particularly interesting since they may play a role in central pain amplification for IBS patients

Discovering structural changes in the brain ... demonstrates an 'organic' component to IBS and supports the concept of a brain-gut disorder and places IBS in the category of other pain disorders

Dr. Mayer says in a news release, "The finding removes the idea once and for all that IBS symptoms are not real and are 'only psychological.' The findings will give us more insight into better understanding IBS."

Mayer added that the next steps in the research will include exploring whether genes can be identified that are related to these structural brain changes. In addition, there is a need to increase the study sample size to address male-female differences and to determine if these brain changes are a cause or consequence of having IBS. The study was funded by the National Institutes of Health.

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