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# “Why does my stomach hurt?”

## Exploring irritable bowel syndrome



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### Case

A 45-year-old female is referred to your office with recurrent abdominal pain, bloating and diarrhea. As a teenager she recalls having had constipation once every three to four days. She used several laxatives, including herbal teas and, at times, phosphate soda enemas. Occasionally, she had rectal bleeding with straining.

Two years prior to her referral, she went to the Dominican Republic where she developed an episode of bloody diarrhea, which was treated by a physician with a three-day course of ciprofloxacin. Since that time, she suffered from abdominal bloating, usually after eating or drinking minimal amounts of fluid. Associated with her bouts of bloating were intermittent episodes of small loose to watery stools, which she calls diarrhea. Occasionally, she notices mucous, but no blood. Her symptoms are worse whenever she is under stress and during her period. She has gone up to three days without a bowel movement. She suffers frequent episodes of nausea and indigestion, but does not vomit.

The patient's appetite has remained relatively normal and she has not lost any weight. She has frequent insomnia and sometimes complains of aching throughout her body.

Her mother had similar problems and died of a stroke. Her father is alive and there was no family history of colon cancer or inflammatory bowel disease. She has three healthy children and is a part-time physician. The patient does not smoke and drinks minimal amounts of alcohol. She takes some vitamins.

Aside from some left lower quadrant discomfort, her physical examination is entirely normal. Her blood work was normal, including complete blood count, erythrocyte sedimentation rate and albumin/globulin ratio. Her stool cultures were negative, with no white blood cells seen on microscopy. A colonoscopy one year ago was normal, including a biopsy of her colon and terminal ileum.

### In this article:

1. What is IBS?
2. How do I approach IBS?
3. How do I manage IBS?

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# Irritable Bowel Syndrome

Irritable bowel syndrome (IBS) is a global condition affecting up to 20% of the population. In industrialized countries, the majority of patients seeking medical care for IBS are women. The condition was perhaps best described by Cummings in 1849: “The bowels are at one time constipated, at another time lax, in the same person. How the disease has two such different symptoms, I do not profess to explain.”<sup>1</sup>

In medical circles, IBS is defined as a functional disorder of the gut in which the symptoms cannot be explained because of an organic cause. The diagnosis, therefore, is made in the absence of any biochemical or structural abnormality. Abdominal pain seems to be the predominant manifestation. Classically, the pain is alleviated by defecation. The patient may complain of constipation and/or diarrhea.

The most recent definition of IBS was dictated by a group of gastroenterologists at a meeting in Rome in 1998, known as the Rome II criteria (Table 1).<sup>2</sup> The symptoms have to be present for 12 weeks over one year, but those weeks do not have to occur consecutively. The symptoms are those of abdominal discomfort or pain associated with two of the following: alleviation by bowel movement, association with a change in stool frequency and change in stool form.

## What is IBS?

Visceral hypersensitivity (altered visceral sensitivity to a distending stimulus) and abnormal gastrointestinal motility were thought to be the underlying pathophysiology of IBS. Recently, the hypothesis of dysfunction between the

central nervous system and the enteric nervous system (the brain-gut axis) has gained attention for explaining the sensory motor abnormality, the motor dysfunction and the psychologic factor affecting these patients.<sup>3</sup>

Serotonin receptors, which are distributed throughout the intestine, appear to modulate diverse motor sensory and secretory functions in the gut. Two of the most studied receptors belong to the 5-HT<sub>3</sub> and 5-HT<sub>4</sub> subtypes. Serotonin (5-hydroxytryptamine, known as 5-HT) is synthesized primarily from the amino acid trypto-



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Table 1

## Rome II diagnostic criteria for IBS

**Abdominal discomfort or pain for at least 12 weeks a year, not necessarily occurring consecutively. It is associated with two of the three following symptoms:**

1. Alleviation with bowel movement;
2. Onset associated with change in frequency of stool; and
3. Onset associated with change in stool form.

### **Supportive Symptoms:**

1. Fewer than three bowel movements a week;
2. More than three bowel movements a day;
3. Abnormal stool form (hard or lumpy/loose or watery);
4. Feeling of incomplete evacuation/urgency;
5. Mucousy discharge; and
6. Feeling of abdominal distention.

phan, is predominantly located in the gastrointestinal tract (95%) and is released from the enterochromaffin cells. In experimental models, serotonin has been shown to exhibit a number of well-documented motor effects on the gastrointestinal tract and can produce hyperalgesia in experimental models. Antagonists of the 5-HT<sub>3</sub> receptors slow down the transit time and may improve the diarrhea symptoms in IBS. Alosetron was also a drug in this category, but certain patients developed ischemic colitis, resulting in drug withdrawal. Meanwhile, 5-HT<sub>4</sub>-receptor stimulation results in accelerated colonic transit. Tegaserod, a selective 5-HT<sub>4</sub> partial agonist, appears to be effective in reducing the symptoms of abdominal pain, bloating and constipation.<sup>4</sup>

## How do I approach IBS?

The major reason for investigating is to rule out serious conditions. The approach to this condition should take into account the patient's age and family history (Table 2). It is important that patients are not overinvestigated, since this may reinforce that there is something wrong. The investigation should be individualized for every patient. A family history of colonic carcinoma or inflammatory bowel disease will

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**Table 2**

## **Approach to IBS**

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### **Age under 50 years old**

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Complete blood cell count

Erythrocyte sedimentation rate

Electrolytes

Thyroid-stimulating hormone

Stool analysis, checking for occult blood, culture, ova and parasites, including fecal leukocytes

Flexible sigmoidoscopy

### **Age over 50 years old**

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Full colonoscopy

require more extensive investigation as compared to those with no family history or those who have alarm signs (Table 3).

Blood tests should include a complete blood count (CBC), an erythrocyte sedimentation rate (ESR), thyroid-stimulating hormone (TSH) and albumin/globulin ratio. Stool analysis should involve checking for bacteria, ova and parasites. During this check, it is important to see whether there are any white blood cells, as the presence of these cells indicates pathology. For patients over 50, a sigmoidoscopic examination with an air contrast barium enema, or a full colonoscopic examination, is recommended.

## How do I manage IBS?

The goal of IBS therapy is to alleviate symptoms, reassure the patient and improve his/her quality of life. The treatment should be individually tailored according to the patient's predominant symptoms (Table 4).

First, it is important to develop a rapport with the patient, while educating and reassuring him/her of the benign nature of the condition. Emphasize that it will not progress to a more serious condition, such as carcinoma or inflammatory bowel disease. It is also important to identify aggravating factors, such as physical or mental stress, or certain foods, such as raw vegetables. The possi-

bility of lactose intolerance should be ruled out.

The pharmacologic approach should be individualized and geared toward the patient's major symptoms. For instance, abdominal pain and cramps can be treated with gastrointestinal calcium antagonists, anticholinergics or antispasmodics. These drugs include hyoscyamines, dicyclomine and trimebutine maleate. Meanwhile, diarrhea-predominant symptoms can be treated with loperamide, as needed.

It is important to avoid any opioids, which can lead to dependency and the development of narcotic bowel syndrome. Bulk agents, such as psyllium husk, can be tried in certain patients, although they may also aggravate the symptoms.

Constipation-predominant symptoms may improve with a change in diet; for example, by increasing fibre intake, increasing fluid intake and using psyllium husk. If a change of diet proves ineffective, osmotic laxatives, such as magnesium-containing salts or lactulose, can be used. Stimulant laxatives, especially senna-containing compounds, should be avoided. With our understanding of the serotonin receptor in the guts, a newer 5-HT<sub>4</sub> partial receptor agonist called tegaserod can be tried in these patients. It can be given at a dose of 6 mg twice

**Table 3**

### Warning signs of IBS

Onset after the age of 50
Fever
Nocturnal symptoms
Weight loss
Rectal bleeding
Anemia
Family history of gastrointestinal malignancies (i.e., colonic carcinoma)

**Table 4**

### Management of IBS

Dietary fibres up to 30 g daily for constipation.

Serotonergics (serotonin receptor agonists): tegaserod 6 mg twice daily.

Anticholinergics: buscopan 20 mg, every eight hours for pain.

Antispasmodics: dicyclomine hydrochloride 20 mg four times daily, trimebutine maleate 200 mg three times daily.


Antidiarrheals: loperamide 2 mg to 6 mg daily, as needed. Morning dose is helpful, but avoid codeine containing compounds, which can be addictive.

Tricyclic antidepressants: amitriptyline 10 mg at bed time and up to three times daily.

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daily. Used appropriately, some patients may experience reduced constipation-related abdominal pain and bloating.<sup>5</sup>

## Conclusion

With our understanding of the enteric nervous system and its interplay with the central nervous system (the brain-gut axis), we are beginning to understand the pathophysiology of IBS. The role of serotonin and the gut serotonin receptors appears to offer the clinician a modality by which to manage this entity. Although IBS is classified as a functional disorder, there may be an underlying mechanism resulting in this entity. Whether we will develop a cure remains to be seen. 

### References

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