



Diagnosis and management of irritable bowel syndrome

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Irritable bowel syndrome (IBS) is one of the most common gastrointestinal disorders encountered by family physicians, often as a direct result of significant stressors. Many conditions can present in similar fashion to IBS. Standard criteria using the Rome definition of IBS can assist in making the correct diagnosis. IBS is a disorder characterized by abdominal pain, bloating, and severe bowel irregularity and is commonly encountered by family physicians treating patients on a daily basis. It is a relatively benign functional bowel disorder, but is often severely debilitating. The pathophysiology of IBS is poorly understood, in part because of a lack of anatomic signs specific to IBS. This review article presents current therapies targeting the predominant symptoms of diarrhea, constipation, abdominal pain, or any combination of these in the presenting patient. Overall, providing effective treatment and reassurance is paramount to the psychosocial well-being of the patient.

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Irritable bowel syndrome (IBS) is a relatively benign functional bowel disorder commonly encountered by family physicians on a daily basis. It is a compilation of several physiologic disturbances in the immune, neurologic, psychologic, and somatovisceral systems in the absence of a pathologic cause. The key characteristic symptoms of the condition include abdominal pain, bloating, and an alteration in the normal bowel pattern—either diarrhea or constipation, or a combination of both.¹ Although considered benign, the condition can cause strife for the patient and can interfere with employment and other activities and can produce significant psychosocial distress with decreased quality of life.

Epidemiology

IBS is an extremely common disorder, especially in North American and European populations. Estimates of its prevalence indicate that around 10% to 25% of people in the United

States are affected by IBS.²⁻⁶ IBS accounts for approximately 20% to 25% of all visits to primary care physician offices. However, the reported percentage of the population affected by IBS is most likely underestimated, because it is believed that only one quarter of those suffering from IBS actually seek medical care. Despite this, IBS constitutes the most common diagnosis seen by gastroenterologists.⁷ It predominately affects women, with a female:male ratio of 2:1.^{8,9} In addition, the average age of the presenting patient is 30 to 50 years old, with a significant decline in prevalence beyond age 60.^{6,10} From an ethnical perspective, the incidence of IBS in the United States is equally distributed among Caucasians and African Americans and is lowest in the Hispanic population.^{11,12} IBS prevalence on a global scale has significant fluctuation, in part because of the variance in definitions used by reporting countries for IBS (i.e., Manning vs Rome definitions). Despite these variances, the United States still has one of the highest reported incidences of IBS in the adult population (Table 1).¹³

Pathophysiology

The exact pathophysiological process of IBS is not well understood. It is clear that those processes responsible for

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Table 1 Worldwide prevalence of irritable bowel syndrome

Country	Prevalence
Nigeria	26.1%
United Kingdom	12-22%
United States	20%
Hong Kong	6.6-17%
Norway	5.1-16%
Mexico	16%
Norway	5.1-16.2%
Canada	13.5%
Nicaragua	13.2%
Spain	7.3-10.3%
India	7.5%
Japan	5.1%
Beijing, China	7.3%

Adapted from The World Gastroenterology Organisation Global Guideline: irritable bowel syndrome: a global perspective. April 20, 2009.¹³

altered bowel habits can occur in both healthy patients with IBS. Common etiologies seen as a culprit for altered gut functioning in IBS include inflammation, colon distention, types of meals (especially increased fat intake), and stress.¹⁴⁻¹⁶ In addition, infectious processes often cause colonic muscle hyperreactivity and alterations of the colon and small bowel. Some of the most common etiologies are listed in Table 2.

Recent research has focused on evaluating the role of serotonin in IBS. Serotonin is a key neurotransmitter involved in the secretory, sensory, and motor functions of the gut. There is evidence that abnormalities in brain-gut signaling and serotonin metabolism play a role in IBS.¹⁷ Further research is needed to determine the exact etiology of this process, however.

Diagnosis

Obtaining a comprehensive medical history from and conducting a thorough physical examination on the patient are necessary to rule out the presence of underlying conditions or etiologies other than IBS. Symptoms that should prompt

Table 2 Common causes of gastrointestinal tract hypersensitivity

Meals: increased fat consumption
Inflammation
Travel
Bacterial/Viral infection
Psychosocial stress
Abuse history
Alcohol use
Heavy physical activity

Table 3 Red flags that may suggest an alternate diagnosis¹⁸

Heme-positive stools
Weight loss
Antibiotic use
Family history of colon cancer or inflammatory bowel disease
Symptom onset after 50 years old
Nocturnal gastrointestinal symptoms
Fever
Abdominal/rectal masses
Low-density childhood living conditions (<1 person per room) ¹⁸

evaluation for alternate etiologies include family history of inflammatory bowel disease, heme-positive stools, weight loss, or new onset of IBS in patients older than age 50.^{18,19} A complete list is presented in Table 3.

In people who meet the IBS diagnostic criteria, the following tests should be considered to exclude other diagnoses: complete blood count, erythrocyte sedimentation rate, C-reactive protein, endomysial antibodies (for celiac disease), stool microscopy and culture (for infectious conditions), liver function tests, ultrasound (to exclude cholelithiasis or other biliary tract disease), and endoscopy with biopsies (to exclude peptic ulcer disease, celiac disease, inflammatory bowel disease, and malignancies).

Once the presence of significant etiologies has been ruled out, other simplified criteria can be used to diagnose IBS. Manning et al. published the first set of criteria in 1976, used for the diagnosis of IBS. In 1988, in an attempt to standardize definitions, an international working team published a consensus definition called the Rome criteria, which were later revised in 1992 (Rome II) and in 2005 (Rome III), which better defined specific criteria for the diagnosis of IBS. The Rome criteria have become the standard definition used in the diagnosis of IBS. The Rome III criteria are summarized in Table 4.²⁰ In addition to the standard definition in the Rome criteria, there are several ancillary symptoms commonly found in IBS patients:

Table 4 Rome III criteria for the diagnosis of IBS

Recurrent abdominal pain or discomfort† at least 3 days/month in the last 3 months associated with <i>two or more</i> of the following:
1. Improvement with defecation
2. Onset associated with a change in frequency of stool
3. Onset associated with a change in form (appearance) of stool

In pathophysiology research and clinical trials, a pain/discomfort frequency of at least 2 days/week during screening evaluation is recommended for subject eligibility.

†“Discomfort” means an uncomfortable sensation not described as pain.

- abnormal stool frequency (≤ 3 bowel movements per week or > 3 bowel movements per day)
- abnormal stool form (lumpy/hard or loose/watery)
- defecation straining, urgency, or a feeling of incomplete bowel movement
- passing mucus
- bloating

Treatment

Effective treatment of IBS should revolve around the predominant symptom experienced and the severity of the condition. Before initiating any treatment protocol, however, the physician must establish a good rapport with the patient to maximize the treatment effect. Numerous studies have shown that effective reassurance on behalf of the physician leads to increased trust by the patient and decreased office visits for IBS.²¹

For patients with only mildly severe symptoms, conservative therapy is usually effective. Evaluating the patient's diet for precipitating factors (such as lactose intolerance, excessive caffeine, or the use of stimulant medications) may assist in revealing the underlying cause. Educating the patient on these factors and eliminating them from the patient's diet can provide an immediate and simple resolution to the symptoms and improve clinical outcome.

IBS that is constipation-predominant and accompanied by moderate or severe discomfort can be effectively treated with increased fiber intake, either as a supplement or with a normal diet. Fiber increases the water content and increases the overall bulk of the stool.²² In addition, antispasmodic agents such as dicyclomine (Bentyl, Aptalis Pharmaceutical, Birmingham, AL) and Hyoscyamine (Levsin, Alaven Pharmaceuticals, Marietta, GA) have been found to bring short-term relief, but have not been proved to be useful long term.²³ Tegaserod (Zelnorm, Novartis, Basel, Switzerland), a medication approved for use in constipation-predominant IBS in 2000, was voluntarily removed by the manufacturer in 2007 because of the increased risk for heart attacks and strokes.

IBS that is diarrhea-predominant and moderate or severe in nature can be treated effectively with antidiarrheal agents such as loperamide (Imodium, McNeil Consumer Healthcare, Fort Washington, PA). Studies have shown that loperamide will not typically reduce pain or bloating but is effective at reducing stool frequency and increasing the solidification of the stool form.²⁴ Alosetron (Lotronex, GlaxoSmithKline, London, UK) is another medication approved for diarrhea-predominant IBS with specific requirements for its use in IBS.²⁵ Alosetron is a selective 5-HT₃ antagonist that selectively blocks 5-HT₃ receptors, which are extensively distributed on enteric motor neurons and in peripheral afferents and central locations such as the vomiting center. It has been approved for the treatment of women with severe diarrhea-predominant IBS who failed to

Table 5 Treatment of IBS

Severity	Predominant irritable bowel symptom		
	Constipation	Diarrhea	Pain
Mild	Physician education	Physician education	Physician education
	Stress reduction	Stress reduction	Stress reduction
Moderate	Reassurance	Reassurance	Reassurance
	Fiber	Antidiarrheal agent	Antispasmodic agent
	Laxatives		TCA
			Reassurance
Severe	Reassurance	Reassurance	Stress reduction
	Stress reduction	Stress reduction	Antispasmodic agent
	Fiber	Antidiarrheal agent	TCA
	Laxatives	TCA	Psychotherapy
	TCA	Psychotherapy	Antispasmodic agent
	Psychotherapy	Antispasmodic agent	
	Antispasmodic agent		

TCA = tricyclic antidepressant.

respond to conventional treatment. Alosetron was reintroduced to the market in June 2002 after being initially withdrawn in November 2000 because of adverse effects including severe constipation and ischemic colitis.

IBS that is primarily pain-predominant and moderate or severe in nature is effectively treated with a tricyclic antidepressant such as amitriptyline (Elavil, Merck, Whitehouse Station, NJ). Tricyclic antidepressant medications facilitate endogenous endorphin release, causing blockade of norepinephrine reuptake, leading to enhancement of descending inhibitory pain pathways, and the blockade of the pain neuromodulator serotonin.²⁶

In addition to the above treatment modalities, several alternative and complementary therapies have been studied. Peppermint has antispasmodic activity and peppermint leaves secrete an oil with mild anesthetic properties, both of which help alleviate diarrhea and abdominal pain in IBS. A meta-analysis of several studies involving peppermint oil showed a statistically significant improvement of symptoms in IBS when compared with placebo.²⁷ However, peppermint can cause significant heartburn and should be taken only if the benefits outweigh the risks. Other nontraditional therapies with unproven benefit in the IBS patient include ginger, fennel seeds, chamomile tea, evening primrose oil, and wormwood oil. A summary of the treatment regimens can be found in [Table 5](#).

Osteopathic considerations

IBS can present as either constipation-predominant, diarrhea-predominant, or both. As such, both the sympathetic and parasympathetic nervous systems can play a key role in

the progression of the condition. In IBS with primarily diarrhea, somatic dysfunctions of the occipitoatlanto and atlantoaxial joints, as well as the C2 vertebrae, are usually present as a result of increased tone of the vagus nerve. Tissue texture changes and tenderpoint at the transverse processes are common. Treatment of these counterstrain tenderpoints can reduce the stimulatory activity of the vagus nerve. Use of muscle energy techniques to facilitate the occipitoatlantal joint release provides significant improvement in the patient's symptoms.²⁸

In IBS with primarily constipation, somatic dysfunctions are typically found in the regions of the lower thoracic and upper lumbar vertebrae, caused by sympathetic stimulation by the celiac, as well as the superior and inferior, mesenteric ganglia. Treatment of tenderpoints on the transverse processes of these vertebra as well as muscle energy or high-velocity, low-amplitude treatments provides improved transit of the gastrointestinal tract.²⁸

A final osteopathic consideration should be to evaluate the pelvis and lower extremities for possible viscerosomatic findings involving Chapman's reflexes. Findings of somatic dysfunctions involving the colon occur along the iliotibial band and can be effectively treated using typical myofascial release techniques.^{28,29} Restoration of homeostasis is the primary goal in any osteopathic treatment modality.

Summary

IBS is a common condition seen in the primary care setting. Although considered to be benign, IBS is a chronic bowel disorder presenting daily challenges and affecting a patient's quality of life. IBS signs and symptoms can vary greatly from patient to patient. Proper diagnosis and treatment using both osteopathic techniques as well as traditional medications aimed specifically at the predominant symptom will lead to overall improved patient satisfaction. Education of the patient in the importance of stress reduction along with a good physician-patient relationship can help the patient manage IBS symptoms and improve the overall psychosocial well-being of the patient.

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