Diagnosing the Patient with Abdominal Pain and Altered Bowel Habits: Is It Irritable Bowel Syndrome?

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Diagnosing a patient who presents with abdominal pain and altered bowel habits can be challenging. Although serious organic illnesses can cause these symptoms, irritable bowel syndrome is commonly responsible. It can be difficult to properly evaluate these patients without overusing diagnostic tests and consultation. A practical approach for diagnosing irritable bowel syndrome is suggested, using the Rome II criteria and the presence of alarm symptoms such as weight loss, gastrointestinal bleeding, anemia, fever, or frequent nocturnal symptoms as starting points. If there are no alarm symptoms and the Rome II criteria are not met, it is acceptable to reevaluate the patient at a later date. If there are no alarm symptoms and the Rome II criteria are met, the patient should be categorized on the basis of age: patients 50 years or younger can be evaluated on the basis of predominant symptoms—constipation, diarrhea, or abdominal pain. Patients older than 50 years should be fully evaluated and considered for gastroenterology referral. If alarm symptoms are present, a full evaluation should be performed (and gastroenterology referral considered), regardless of the patient's age. (Am Fam Physician 2003; 67:2157-62. Copyright© 2003 American Academy of Family Physicians)

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See page 2050 for definitions of strength-of-evidence levels.

Family physicians frequently see patients who have abdominal pain and altered bowel habits. It is a challenge to properly evaluate these patients and differentiate between irritable bowel syndrome (IBS) and life-threatening illnesses of the gastrointestinal tract.

IBS is one of the most common chronic gastrointestinal illnesses. IBS traditionally has been a diagnosis of exclusion, based on history, physical examination, and a negative battery of diagnostic studies. There are no structural or chemical markers for IBS.[1] Diagnostic tests are frequently overused because physicians are concerned about missing a life-threatening illness.[2]

Epidemiology

Americans spend $8 billion each year on medical costs related to IBS,[3] and absenteeism resulting from IBS significantly affects the work force. Studies have shown that IBS affects 3 to 22 percent of persons worldwide.[4] Symptoms are reported by 12 percent of Americans and are the cause of 20 to 50 percent of referrals to gastroenterology clinics.[5,6] Most people with IBS do not seek medical care. One half of patients develop symptoms before 35 years of age, and 40 percent of patients develop symptoms between 35 and 50 years of age. Onset in elderly persons is rare.

IBS is recognized in children, and many patients can trace their symptoms to childhood. One study found that 26 percent of children with recurrent abdominal pain were diagnosed with IBS, making it a common reason for school absenteeism.[7] Seventy percent of patients with IBS are women; 48 to 79 percent of patients with chronic pelvic pain, dyspareunia, dysmenorrhea, or a history of numerous abdominal surgeries also have IBS.[8] Women who have had a hysterectomy for chronic pelvic pain are twice as likely to have IBS.[2]

Signs and Symptoms

The most common symptoms of IBS include a change in the appearance or frequency of stools, and abdominal pain that is relieved by defecation. Other associated symptoms include bloating, distention, mucus in

Anxiety, major depression, panic disorder, social phobia, somatization disorder, and dysthymia have been identified in more than 50 percent of patients with IBS.

the stool, urgency, and a feeling of incomplete evacuation.

Based on stool-habit alteration, three subgroups of IBS have been described: constipation-predominant IBS, diarrhea-predominant IBS, and IBS with alternating bowel habits (also known as pain-predominant).[9] Although these groupings are useful for research purposes, symptom patterns may vary.

Factors Associated with IBS

A structural or biochemical mechanism for IBS has not been identified. However, dietary, bowel-motility, enteric nervous system, psychiatric, and other factors have been associated with IBS *(Table 1)*.

DIETARY FACTORS

Allergy. Despite the fact that food intolerance is reported in 50 percent of patients with IBS, there is no proven causal association with foods.[10] Only a small number of patients—usually those with previously identified lactase deficiency or atopy—have a genuine food allergy or intolerance.[11]

Fiber Intake. Lack of dietary fiber has been implicated in IBS. This disorder is rare in eastern Africa, where a high-fiber diet is common. However, fiber supplementation helps only a small percentage of patients.[6]

BOWEL-MOTILITY FACTORS

Patients with IBS have small-bowel motor abnormalities.[12] After a standardized meal, patients in one study experienced increased random motility of the jejunum.[13] [Evidence level C, consensus/expert guidelines] Small-bowel motor dysfunction with concomitant gastroparesis occurs more frequently in patients with IBS.[14]

TABLE 1
Factors Associated with Irritable Bowel Syndrome

Dietary
Food allergy
Low-fiber diet
Bowel motility
Increased bowel motor response to stimuli
Small-bowel motor dysfunction
Enteric nervous system
Lowered threshold for pain
Psychiatric
Anxiety
Stress
Social phobia
Somatization disorder
Depression (including dysthymia)
Panic disorder
Sexual and physical abuse
Substance abuse
Other
Fibromyalgia
Chronic fatigue syndrome
Temporomandibular joint syndrome

ENTERIC NERVOUS SYSTEM FACTORS

Patients with IBS have a tendency to overreact to stimuli that increase intestinal motor activity. Altered gut perception and a lowered threshold for pain and rectal pressure are more common in patients with IBS.[6,15] Symptoms can be reproduced during endoscopy.

PSYCHIATRIC FACTORS

Although psychiatric illness often coexists with IBS, a clear causal relationship has not been shown.[16] IBS might be a precursor to psychiatric illness; anxiety, major depression, panic disorder, social phobia, somatization disorder, and dysthymia have been identified in more than 50 percent of patients with IBS.[17] IBS is more common in patients who abuse alcohol and in patients who have experienced physical or sexual abuse. Many patients with IBS had stressful life events, such as divorce or a death in the family, before they developed symptoms.

OTHER FACTORS

Rates of IBS among patients with chronic fatigue syndrome, fibromyalgia, and temporomandibular joint syndrome are high (92, 77, and 64 percent, respectively).[18]

TABLE 2
Differential Diagnosis of Irritable Bowel Syndrome

- Inflammatory bowel disease
  - Crohn's disease or ulcerative colitis
- Medications
  - Laxatives
  - Constipating medications
- Infections
  - Parasitic, bacterial, viral, and opportunistic
- Malabsorption syndromes
  - Celiac disease
  - Pancreatic insufficiency
- Endocrine disorders
  - Hypothyroidism
  - Hyperthyroidism
  - Diabetes
  - Addison's disease
- Endocrine tumors (very uncommon)
  - Gastrinoma
  - Carcinoid
- Colorectal carcinoma
  - Adenocarcinoma
  - Villous adenoma
- Intestinal pseudo-obstruction
  - Diabetes
  - Scleroderma
- Lactose intolerance
- Psychiatric disorders
  - Depression
  - Anxiety
  - Somatization disorder

Adapted from Dalton CB, Drossman DA. Diagnosis and treatment of irritable bowel syndrome. Am Fam Physician 1997;55:877.

Differential Diagnosis

Many illnesses share some of the same symptoms as IBS.[19,20] Some of these illnesses are serious and require aggressive evaluation and treatment. A differential diagnosis for patients who present with abdominal pain and altered bowel habits is summarized in *Table 2*.[19]

Diagnostic Tools

To date, no gold standard or marker for IBS exists. A cost-effective diagnostic approach that uses the fewest tests and invasive studies is most desirable.[21]

As in all illnesses, the most valuable initial tools are a detailed history and physical examination. If alarm symptoms that suggest an underlying organic disease are uncovered, further testing usually is considered. Scoring methods, subgroup classifications, laboratory studies, endoscopy, and psychiatric assessment are available to help guide the diagnosis in patients who present with abdominal pain *(Table 3)*.

SCORING SYSTEMS

Several scoring systems for diagnosing IBS have been proposed.[1,22] No system is 100 percent sensitive or specific for IBS.[2] These scoring systems, which still are being validated, are useful for research and can help guide the diagnostic evaluation.

The Manning criteria have the greatest number of validation studies. An expert panel recently took the most validated elements of the Manning criteria and broadened them to

TABLE 3
Diagnostic Aspects of Irritable Bowel Syndrome

- Scoring systems
  - Manning
  - Kruis
  - Rome I
  - Rome II
- Subgroup classification
  - Constipation-predominant
  - Diarrhea-predominant
  - Alternating bowel habits (pain-predominant)
- Laboratory testing
  - Complete blood count
  - Erythrocyte sedimentation rate
  - Electrolyte levels
  - Thyroid studies
  - Fecal-occult blood
  - Stool for ova and parasites
  - Lactose-malabsorption studies (in patients with diarrhea-predominant symptoms)
- Endoscopy
  - Sigmoidoscopy
  - Colonoscopy
- Abdominal ultrasound—no value
- Psychiatric/ psychological evaluation (psychosocial assessment may be helpful in some cases)

create the Rome II criteria, which are summarized in *Table 4*.[23]

SUBGROUP CLASSIFICATION

Patient subgroups (constipation-predominant, diarrhea-predominant, and pain-predominant) can be clinically useful.[1,9] [Reference 1—Evidence level C, consensus/expert guidelines] These subgroups will be discussed later in this article, where a diagnostic approach for patients with abdominal pain and altered bowel habits is outlined.

LABORATORY TESTING

Blood studies can point to organic causes for pain and altered bowel habits (e.g., inflammatory bowel disease, colorectal carcinoma, metabolic causes). Most authors suggest that all symptomatic patients have a complete blood cell count. Determination of the erythrocyte sedimentation rate, thyroid-stimulating hormone (TSH) level, and electrolyte levels is useful in patients with constipation-predominant and diarrhea-predominant symptoms. Fecal occult blood testing and the testing of stool for ova and parasites are useful in patients with diarrhea.[1,2,19,21] Lactose-malabsorption studies have limited value except in patients with diarrhea-predominant symptoms.

ENDOSCOPY

Patients with IBS have a structurally normal colon. Flexible sigmoidoscopy adequately screens most patients who present with abdominal pain and altered bowel habits.[1,19,21] Complete colonoscopy should be considered for use in patients older than 50 years and those with alarm symptoms.

TABLE 4
Rome II Diagnostic Criteria for Irritable Bowel Syndrome

At least 12 weeks (not necessarily consecutive) of at least two of the following three symptoms:
Abdominal pain or discomfort that is:
Relieved with defecation
Associated with a change in frequency of stools
Associated with a change in appearance of stools
Supportive symptoms (from the Rome I criteria)
Fewer than three bowel movements per week
More than three bowel movements per day
Hard or lumpy stools
Loose (mushy) or watery stools
Straining during a bowel movement
Urgency (having to rush to the bathroom to have a bowel movement)
Feeling of incomplete evacuation
Passing mucus (white material) during a bowel movement
Abdominal fullness, bloating, or swelling

Adapted with permission from Thompson WG, Longstreth GF, Drossman DA, Heaton KW, Irvine EJ, Muller-Lissner SA. Functional bowel disorders and functional abdominal pain. Gut 1999;45:44.

ULTRASONOGRAPHY

Abdominal ultrasonography is not needed in patients with IBS because it can lead to overaggressive diagnosis and treatment of minor findings.[24]

PSYCHIATRIC/PSYCHOLOGIC EVALUATION

No psychometric screening tools have high enough specificity or sensitivity to warrant their use for diagnostic purposes. In some cases, a psychosocial evaluation is recommended.[1]

Diagnostic Approach

A practical and cost-effective evaluation of the patient with abdominal pain and altered bowel habits is possible.[1,12,25,26] The following approach to evaluation and consultation is suggested, with the presence of alarm symptoms (weight loss, gastrointestinal bleeding, anemia, fever, or frequent nocturnal symp-

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toms) and the Rome II criteria serving as starting points *(Figure 1)*.[1]

If there are no alarm symptoms and the Rome II criteria are not met, it is acceptable to reevaluate the patient for persistent symptoms at a later date.

If there are no alarm symptoms and the Rome II criteria are met, the patient can be evaluated based on age at presentation. Patients aged 50 years or younger can be evaluated based on predominant symptoms: constipation, diarrhea, or abdominal pain. Patients with constipation-predominant symptoms should have a complete blood cell count, determination of TSH and electrolyte levels, and examination with flexible sigmoidoscopy. Patients with diarrhea-predominant symptoms should have a complete blood cell count; determination of erythrocyte sedimentation rate and TSH and electrolyte levels; and examination with flexible sigmoidoscopy. Patients with abdominal pain–predominant symptoms should have only a complete blood cell count.

Patients older than 50 should be fully evaluated and considered for gastroenterology referral.

If alarm symptoms are present, a full evaluation should be performed (and gastroenterology referral considered), regardless of the patient's age or presence of Rome II criteria.

Once again, the diagnostic choices can be guided by symptoms. Higher-risk patients with constipation-predominant symptoms are more likely to have colon-inertia problems or rectal-outlet obstructions. Patients with diarrhea-predominant symptoms are more likely to have inflammatory bowel disease, gastrointestinal bleeding, neoplasms, infections, malabsorption, or metabolic disturbances. Patients with pain-predominant symptoms are more likely to have obstructions.

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Figure 1.

If alarm symptoms (weight loss, gastrointestinal bleeding, anemia, fever, or frequent nocturnal symptoms) are present, a full evaluation should be performed, regardless of the patient's age.

REFERENCES

1. Fass R, Longstreth GF, Pimentel M, Fullerton S, Russak SM, Chiou CF, et al. Evidence- and consensus-based practice guidelines for the diagnosis of irritable bowel syndrome. Arch Intern Med 2001; 161:2081-8.
2. Longstreth GF. Irritable bowel syndrome: diagnosis in the managed care era. Dig Dis Sci 1997;42: 1105-11.
3. Talley NJ, Gabriel SE, Harmsen WS, Zinsmeister AR, Evans RW. Medical costs in community subjects with irritable bowel syndrome. Gastroenterology 1995;109:1736-41.
4. Locke GR 3d, Zinsmeister AR, Talley NJ, Fett SL, Melton LJ. Risk factors for irritable bowel syndrome: role of analgesics and food sensitivities. Am J Gastroenterol 2000;95:157-65.
5. Locke GR 3d. The epidemiology of functional gastrointestinal disorders in North America. Gastroenterol Clin North Am 1996;25:1-19.
6. Maxwell PR, Mendall MA, Kumar D. Irritable bowel syndrome. Lancet 1997;350:1691-5.
7. Croffie JM, Fitzgerald JF, Chong SK. Recurrent abdominal pain in children: a retrospective study of outcome in a group referred to a pediatric gastroenterology practice. Clin Pediatr (Phila) 2000;39: 267-74.
8. Smith RP. Lower gastrointestinal disease in women. Obstet Gynecol Clin North Am 2001;28:351-61, viii.
9. Whitehead WE. Patient subgroups in irritable bowel syndrome that can be defined by symptom evaluation and physical examination. Am J Med 1999;107:33S-40S.
10. Dainese R, Galliani EA, De Lazzari F, Di Leo V, Naccarato R. Discrepancies between reported food intolerance and sensitization test findings in irritable bowel syndrome patients. Am J Gastroenterol 1999;94:1892-7.
11. Lee JG, Ellis K, Melynk C. Gastroenterologic disorders presenting as food intolerance. Immunol Allergy Clin North Am 1996;16:177-86.
12. Horwitz BJ, Fisher RS. The irritable bowel syndrome. N Engl J Med 2001;344:1846-50.
13. Wackerbauer R, Schmidt T, Widmer R, Pfeiffer A, Morfill G, Kaess H. Discrimination of irritable bowel syndrome by non-linear analysis of 24-h jejunal motility. Neurogastroenterol Motil 1998;10:331-7.
14. Evans PR, Bak YT, Shuter B, Hoschl R, Kellow JE. Gastroparesis and small bowel dysmotility in irritable bowel syndrome. Dig Dis Sci 1997;42:2087-93.
15. Mertz H, Naliboff B, Munakata J, Niazi N, Mayer EA. Altered rectal perception is a biological marker of patients with irritable bowel syndrome. Gastroenterology 1995;109:40-52.
16. Olden KW, Drossman DA. Psychologic and psychiatric aspects of gastrointestinal disease. Med Clin North Am 2000;84:1313-27.
17. Goldberg J, Davidson P. A biopsychosocial understanding of the irritable bowel syndrome: a review. Can J Psychiatry 1997;42:835-40.
18. Aaron LA, Burke MM, Buchwald D. Overlapping conditions among patients with chronic fatigue syndrome, fibromyalgia, and temporomandibular disorder. Arch Intern Med 2000;160:221-7.
19. Dalton CB, Drossman DA. Diagnosis and treatment of irritable bowel syndrome. Am Fam Physician 1997;55:875-80, 883-5.
20. Sanders DS, Carter MJ, Hurlstone DP, Pearce A, Ward AM, McAlindon ME, et al. Association of adult coeliac disease with irritable bowel syndrome: a case-control study in patients fulfilling ROME II criteria referred to secondary care. Lancet 2001;358:1504-8.
21. Bonis PA, Norton RA. The challenge of irritable bowel syndrome. Am Fam Physician 1996;53:1229-36.
22. Hammer J, Talley NJ. Diagnostic criteria for the irritable bowel syndrome. Am J Med 1999;107:5S-11S.
23. Thompson WG, Longstreth GF, Drossman DA, Heaton KW, Irvine EJ, Muller-Lissner SA. Functional bowel disorders and functional abdominal pain. Gut 1999;45 (suppl 2):43-7.
24. Francis CY, Duffy JN, Whorwell PJ, Martin DF. Does routine abdominal ultrasound enhance diagnostic accuracy in irritable bowel syndrome? Am J Gastroenterol 1996;91:1348-50.
25. Harris MS. Irritable bowel syndrome: a cost-effective approach for primary care physicians. Postgrad Med 1997;101:215-6, 219-20, 223-6.
26. Schmulson MW, Chang L. Diagnostic approach to the patient with irritable bowel syndrome. Am J Med 1999;107:20S-26S.