ABSTRACT

An estimated 15% of the US population is affected by chronic constipation and irritable bowel syndrome (IBS), a prevalence that exceeds chronic conditions, such as asthma and diabetes. Chronic constipation and IBS have somewhat overlapping symptoms that suggest some commonality in pathophysiology. Diagnosis often is complicated by the disconnect between physician and patient definitions of constipation. From a formal perspective, the American College of Gastroenterology (ACG) has set forth arguably the simplest, most straightforward criteria for defining constipation. Diagnosis of constipation is based primarily on the medical history and physical examination. The ACG has found no published evidence to support the routine use of any specific diagnostic test. For patients with chronic constipation but no alarm symptoms, empiric therapy is recommended by the ACG. Several criteria have been set forth to define IBS, and the most appropriate definition remains open to discussion. The basic diagnostic approach consists of symptom assessment, a check for red flags, and a limited screen for organic disease, as indicated by the history and examination. Patients with alarm features or red flags, such as anemia, persistent diarrhea, or rectal bleeding, require further evaluation.

However, when the hardness of the stool was evaluated objectively, it did not differ between patients who reported the symptom and those who did not report the symptom. The disconnect suggests that stool hardness, from the patient perspective, may reflect a sensory problem rather than an actual difference in hardness or consistency. Patients may report dyschezia, or difficulty with evacuation, and define their constipation in terms of symptoms suggestive of outlet dysfunction (which may or may not be present objectively). Notably, the same symptomatic presentation can occur through potentially different mechanistic abnormalities. For example, straining could indicate abnormal movement or evacuation from the anorectal region. Alternatively, straining could reflect inappropriate contraction of the anal sphincter during straining, which could block defecation. These are 2 entirely different mechanisms that produce the same symptom.

Physicians typically define constipation as infrequent stools; in reality, that symptom uncommonly applies to patients. Sometimes physicians define constipation in terms of slow transit, which can manifest as abnormal stool form. Transit affects stool form, which does offer an objective means of assessing “stool normality.” The Bristol Stool Form Scale (BSF-Scale) has 7 grades of stool appearance and has demonstrated ability to differentiate health from abnormal conditions in terms of change over time. The grades range from Type 1 (essentially small hard pellets) to Type 7 (entirely liquid). The BSF-Scale provides a practical means of describing stool form and is employed frequently in clinical trials.

The frequent disconnect between physician and patient definitions leaves unanswered the question of what is normal bowel function. With respect to frequency, there are good data; “normal” is defined as the frequency that includes 95% of the general population, from as many as 2 bowel movements a day to as few as 3 per week. However, frequency depends in part on diet, which exhibits dramatic geographic variation worldwide. People who consume diets that contain large quantities of fiber tend to have more frequent stools, whereas a low-fiber diet is associated with less frequent bowel movements. What is a normal bowel habit for some people will be abnormal for others.

Constipation is not a diagnosis but a symptom complex; the symptoms can be caused by several diseases or conditions. Constipation can reflect a serious structural disease, such as colon cancer. Patients with painful anorectal conditions can become constipated. In rare instances, constipation is secondary to metabolic, connective tissue, or neurologic disease. Pregnancy and many medications also can cause constipation. However, in the majority of cases, constipation is idiopathic or unexplained. Many such patients will currently be labeled as having functional constipation, which is associated with little or no abdominal pain. Another common category is constipation-predominant IBS (IBS-C); here abdominal pain is clearly associated with disturbed bowel function. Some of these patients (mainly young women) will have markedly slow colonic transit, if assessed objectively. The frequency of functional outlet obstruction based on anorectal manometry and rectal balloon expulsion testing is unclear, but clinically overlaps with functional constipation and IBS.

The American College of Gastroenterology (ACG) has defined constipation more simply as a symptom-based disorder, characterized by infrequent stools, difficult stool passage, or both. Difficult stool passage is further clarified as encompassing straining, a sense of difficulty passing stool, incomplete evacuation, hard/lumpy stools, prolonged time to stool, or the need for manual maneuvers, such as manipulation by a finger, to pass stool.

**Epidemiology**

Surveys based on self-reported constipation have

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<th>Table 1. Rome II Diagnostic Criteria for Functional Constipation</th>
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<tr>
<td>• At least 12 weeks, which need not be consecutive, in the preceding 12 months of 2 or more of:</td>
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<tr>
<td>– Straining in &gt;1 in 4 defecations</td>
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<td>– Lumpy or hard stools in &gt;1 in 4 defecations</td>
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<td>– Sensation of incomplete evacuation in &gt;1 in 4 defecations</td>
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<td>– Sensation of anorectal obstruction/blockade in &gt;1 in 4 defecations</td>
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<tr>
<td>– Manual maneuvers to facilitate &gt;1 in 4 defecations (eg, digital evacuation, support of the pelvic floor)</td>
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<td>– &lt;3 defecations/week</td>
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<tr>
<td>• Loose stools are not present and insufficient criteria for irritable bowel syndrome</td>
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The frequent disconnect between physician and patient definitions leaves unanswered the question of what is normal bowel function. With respect to frequency, there are good data; “normal” is defined as the frequency that includes 95% of the general population, from as many as 2 bowel movements a day to as few as 3 per week. However, frequency depends in part on diet, which exhibits dramatic geographic variation worldwide. People who consume diets that contain large quantities of fiber tend to have more frequent stools, whereas a low-fiber diet is associated with less frequent bowel movements. What is a normal bowel habit for some people will be abnormal for others.

Constipation is not a diagnosis but a symptom complex; the symptoms can be caused by several diseases or conditions. Constipation can reflect a serious structural disease, such as colon cancer. Patients with
resulted in a wide range of prevalence estimates. The lowest estimates place the prevalence at 5% or less, whereas the highest estimates approach 30%. If defined by Rome I or II diagnostic criteria, prevalence estimates for North America still vary considerably, from less than 5% to as high as 20% of the population. Prevalence estimates based on Rome II diagnostic criteria have been lower than estimates based on self-report. The ACG Task Force on Constipation reported that the prevalence of chronic constipation in the United States is about 15%.

The demography of chronic constipation also varies, depending upon the variable evaluated. Although physicians consider constipation a female-predominant condition, the statistics are inconsistent, with female-to-male ratios varying between 1.01 and 3.77. For reasons that are unclear, constipation appears to be more common in nonwhites, and the highest rates are found in lower socioeconomic strata. In general, constipation is more common in elderly patients (ie, >65-years-old), but the data are not uniformly consistent. Several potential explanations may account for the epidemiologic inconsistency in studies of chronic constipation. Studies have not always precisely defined constipation. The variation also may reflect differences in the wording of questions in various questionnaires. The symptoms of constipation have not always been fully evaluated. Finally, IBS-C and functional constipation often have not been clearly differentiated from each other.

**DIAGNOSIS**

The ACG could find no evidence in the published literature to support the routine use of specific diagnostic tests for chronic constipation, including blood tests, radiography, and endoscopy. However, the absence of evidence does not mean these tests have no role. In patients with constipation with no alarm symptoms, the ACG could not find literature to support the routine use of flexible sigmoidoscopy, colonoscopy, barium enema, thyroid function tests, serum calcium, or other diagnostic tests. However, based on expert opinion the ACG task force suggested that diagnostic tests are indicated for patients who have constipation accompanied by alarm symptoms, such as hematochezia, weight loss of 10 pounds or more, family history of colon cancer or inflammatory bowel disease, anemia, positive fecal occult blood tests, or acute onset of constipation in elderly patients. The ACG recommended a careful medical history and physical examination to identify organic disorders that may be associated with chronic constipation symptoms, such as hypothyroidism. Specific diagnostic tests, such as thyroid function tests, may be considered for selected patients with signs or symptoms of an organic disorder. The ACG also recommended routine use of colon cancer screening tools for all patients older than 50 years. For patients who do not respond to initial management, certain tests may be useful for identifying physiologic abnormalities in some patients, including colonic transit, anorectal manometry, and balloon expulsion tests, although again their utility is remarkably poorly defined.

For the patient with chronic constipation but no alarm symptoms, the ACG recommended empiric treatment without diagnostic testing, again based on expert opinion. Available evidence indicates that self-reported constipation is associated with decreased quality of life (QOL), and therefore, treatment may be indicated when symptoms diminish QOL.

**IRRITABLE BOWEL SYNDROME**

**DEFINITION, EPIDEMIOLOGY, AND CLASSIFICATION**

Prevalence estimates of IBS in the United States range between 5% and 15%. Similar rates have been found in Canada, Australia, and much of Europe. Higher rates, on the order of 25% to 30%, have been observed in some parts of Asia and Africa. For reasons that remain unclear, the prevalence of IBS appears to decrease with increasing age. In general, the prevalence of IBS in women exceeds that of men, although prevalence tends to decline with age in both sexes. The gender difference appears to be more pronounced for IBS-C as opposed to diarrhea-predominant IBS (IBS-D) or IBS with alternating symptoms of diarrhea and constipation (IBS-A).

For a given population, the prevalence of IBS appears to remain stable over time. Some patients may cease to fulfill diagnostic criteria for IBS, but others will enter the IBS diagnostic realm, thus the overall prevalence remains largely unchanged.

Abdominal pain or discomfort is a cardinal feature of IBS. The pain occurs in association with altered bowel function, which includes a change in the frequency or consistency of the stool.

More than 1 set of diagnostic criteria has been suggested to identify IBS. The Manning criteria were derived from a study done in the United Kingdom.
based on interviews of outpatients with and without IBS. The patients were asked about their symptoms, and follow-up was performed to confirm the diagnosis and rule out organic disease. The process yielded 6 symptoms that had diagnostic utility for IBS (Table 2). Subsequently, the presence of 2, 3, or 4 of these symptoms plus or minus abdominal pain has been used to identify IBS in various studies.

The Rome I diagnostic criteria for IBS incorporated many of the Manning criteria but added constipation symptoms based on expert consensus. The newer Rome II diagnostic criteria for IBS simplified the diagnostic features by specifying 3 essential characteristics of IBS: pain that is relieved by defecation; pain onset associated with change in stool frequency; or pain onset associated with a change in stool form (appearance). Both diagnostic criteria are shown in Table 3.

Use of the diagnostic criteria is complicated by the fact that some patients present with abdominal pain or discomfort and bowel dysfunction that fails to fulfill the Rome diagnostic criteria but may fulfill the Manning criteria. The diagnostic yield clearly varies according to which criteria are used, Rome or Manning. In one study that compared the criteria, adherence to Manning resulted in an IBS prevalence of about 15%, whereas application of Rome I or II diagnostic criteria resulted in a prevalence of 5% to 7%. Moreover, some patients met Rome I diagnostic criteria but not Rome II, or vice versa.

In another population-based study, only 33% of patients who had IBS by Rome I diagnostic criteria also had IBS by Rome II diagnostic criteria.

How best to define IBS subgroups remains a matter of controversy. Comparison of patient self-reports and Rome II diagnostic criteria has revealed a degree of disconnect; some patients whose self-reported symptoms classify them as having IBS-C, IBS-D, or IBS-A fall into different categories if evaluated by Rome diagnostic criteria. The disparity suggests a need to take a closer look at the criteria used to identify IBS subgroups.

**DIAGNOSIS**

The basic diagnostic workup for IBS based on expert opinion comprises 3 key principles: 1) symptom assessment; 2) check for red flags; and 3) if indicated, a limited screen for organic disease. Red flags suggest the possibility of an alternative diagnosis or a coexisting diagnosis. These patients require additional diagnostic screening although the yield is unclear. Examples of red flags include anemia, fever, persistent diarrhea, rectal bleeding, severe constipation, and weight loss. Additional screening also is generally considered warranted for patients who have nocturnal symptoms of pain and abnormal bowel function; a family history of GI cancer, inflammatory bowel disease, or celiac disease; or new onset of symptoms in patients who are aged 50 years or older.

An American Gastroenterological Association task force recommended use of diagnostic tests on the basis of patient age and presence or absence of alarm features. If a patient has typical features of IBS and no alarm features, no tests are required for patients younger than 50 years. Older patients with IBS and no

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**Table 2. The Manning Criteria for IBS (1978)**

- Four symptoms significantly more common in IBS than in organic disease:
  - Pain relieved by defecation
  - More frequent stools at the onset of pain
  - Looser stools at the onset of pain
  - Visible abdominal distension
- A trend for the following:
  - Passage of mucus
  - Sensation of incomplete bowel emptying

**Table 3. Rome I and Rome II Diagnostic Criteria for IBS**

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<tr>
<th>Rome I Diagnostic Criteria</th>
<th>Rome II Diagnostic Criteria</th>
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<tr>
<td>At least 3 months of continuous or recurrent symptoms of abdominal pain or discomfort that is:</td>
<td>At least 12 weeks, which need not be consecutive, in the past 12 months of abdominal discomfort or pain that has 2 of 3 features:</td>
</tr>
<tr>
<td>– Relieved by defecation; and/or</td>
<td>– Relieved by defecation; and/or</td>
</tr>
<tr>
<td>– Associated with a change in frequency of stool; and/or</td>
<td>– Onset associated with a change in frequency of stool; and/or</td>
</tr>
<tr>
<td>– Associated with a change in consistency of stool</td>
<td>– Onset associated with a change in form (appearance) of stool</td>
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IBS = irritable bowel syndrome.


Data from Thompson et al. and Thompson et al.
alarm features warrant evaluation with complete blood count, erythrocyte sedimentation rate, electrolytes, liver function tests, and colonoscopy or air-contrast barium enema with sigmoidoscopy.43

The combination of alarm features and Rome diagnostic criteria has been shown to have diagnostic value. Specifically, if a patient meets Rome diagnostic criteria and has no alarm features, that combination of findings had a 100% specificity and positive predictive value.44 On the basis of such findings, one could reasonably argue that diagnostic testing probably is not necessary in the absence of alarm symptoms.

In a recent review, Cash and Chey concluded that a confident diagnosis of IBS obviates the need for diagnostic testing.45 The one possible exception is evaluation for celiac disease, which may be more prevalent in patients with IBS,46 although that association requires validation in appropriate clinical studies in the United States.

CONCLUSIONS

Chronic constipation and IBS are common conditions that overlap, which challenges the current conceptual paradigm that views them as separate and distinct entities. The overlap between the conditions poses a diagnostic challenge to physicians. Application of currently available diagnostic criteria can lead to a confident diagnosis, although the criteria used can influence the diagnosis. A thorough history and physical examination form the basis for the diagnostic workup. Patients with symptoms of chronic constipation or IBS but no alarm features generally do not warrant routine evaluation with diagnostic tests. Patients older than 50 years should receive appropriate screening for colon cancer, and a limited laboratory assessment is reasonable.

DISCUSSION

Dr Kalloo: Is it really important for us to distinguish between functional constipation and IBS-C?

Dr Talley: Currently the dogma remains that these are separate conditions, and in terms of a diagnostic workup, you might argue that you would work them up a little bit differently. For example, in the patient with chronic constipation, who doesn’t have IBS and fails to respond to fiber and laxative therapy, you may want to consider a pelvic floor workup. Currently, many physicians would not consider that necessary in IBS but I’m not sure that’s true, to be honest. In fact, there were data presented by us at Digestive Disease Week suggesting there is a subgroup of these people with IBS-C who clearly have pelvic floor dysfunction and, of course, they have classic IBS-C criteria, but so what? The question then is, will treatment, such as biofeedback, work for that group of patients, and we just don’t know.

Dr Chang: My feeling is that IBS-C is becoming much more of a sensory disorder rather than a pure motility disorder. This is based on my own clinical criteria; it’s not really based on data, but like you were saying, it’s difficult to differentiate functional constipation from IBS-C. I think it’s a spectrum, and you will even see patients who won’t have much pain when they are younger, but as they get older they will start developing pain. Patients with constipation symptoms say that they will evacuate, but they still feel discomfort and pain. To me this signifies that it’s not just about evacuating stool and emptying their colon. It’s really much more of a visceral hypersensitivity, which I think is more linked to IBS pathophysiology rather than, for example, slow-transit constipation or pelvic floor dysfunction in a pure sense.

Dr Lembo: In some ways I like to distinguish those patients that I have difficulty treating because I wouldn’t use a tricyclic antidepressant (TCA) in a patient with pure functional constipation, whereas I would use a TCA in a patient with IBS-C who had failed other routine therapies. So, in my mind, I do sort of distinguish them, although I appreciate the fact that there is a continuum between the 2 disorders.

Dr Kalloo: If a patient is having 2 bowel movements a week, or once a week, and it’s not uncomfortable, would you call that constipation?

Dr Talley: I think there has to be a sense of discomfort with the defecatory pattern. If it’s infrequent and normal otherwise, from the patient’s personal perspective, I don’t call that constipation.

Dr Kalloo: Is there a definite diagnostic yield from alarm symptoms?

Dr Talley: I don’t think there have been any studies.

Dr Kalloo: Is there any one of the alarm symptoms that tends to give a higher yield or predictive finding of an abnormality?

Dr Talley: I believe that’s unknown.

Dr Kalloo: At what point do we say, “We need to do some tests?”
Dr Lembo: I guess I would think of it in 2 parts. One would be diagnostic tests for a secondary cause of constipation, and the other would be diagnostic tests directed towards a function of the colon or the anorectal region. There really isn't an algorithm that I could give you, thus at some point if a patient fails fiber or an osmotic, I would start to run through tests. Every patient will present differently.

Dr Fox-Orenstein: I think the dogma is changing. Historically, we may have done more testing in individuals who have altered bowel habits, although they may have had examinations within recent years to evaluate the same problem. No one wants to miss something serious, and we recognize that repeated testing is not likely to pick up anything new. We need to get comfortable with the idea that you can make a positive diagnosis of constipation. You can make a positive diagnosis of IBS.

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