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Questions and Answers

1. A 68-Year-old man with history of constipation comes to the office for follow-up. Other than his bowel habits, which suggest that he moves his bowels once a week with hard stools for the last 10 years, he has no complaint. He has no past medical history to note. He often takes over-the-counter Metamucil for his constipation. He never smokes or uses recreational drugs, drinks sips of wine over the weekend, jogs every other morning, and eats plenty of fruits and vegetables. He is still working full-time as a professor in a community college, and lives with his wife and spends his weekends hiking and rafting at the local state parks.

Patient had his 10-yearly colonoscopy 6 years ago and was reported as normal. His blood pressure is 128/64 mmHg, pulse rate 66/min, regular. The rest of his physical examination is not remarkable. His free T4 last year was 1.5 ng/dL (normal: 0.9–2.4 ng/dL) and TSH was 2.0 mU/mL (0.5–5.0 mU/mL). His serum calcium was 9.5 mg/dL (normal: 9–10.5 mg/dL). Radio-opaque marker test shows retention of 18 markers on day 6.

What is the most appropriate management regarding this patient's constipation?

- A. Encourage patient to increase fiber intake in his diet
- B. Order balloon expulsion test
- C. Repeat colonoscopy
- D. Biofeedback
- E. Add psyllium

Answer: B.

Radio-opaque marker test with retention of at least 20% of markers (more than six markers) on day 6 (120 h) is considered abnormal and is indicative of slow-transit constipation. The patient is likely to have idiopathic slow colonic transit. Idiopathic slow-transit constipation is a clinical syndrome characterized by intractable constipation and delayed colonic transit. The diagnosis of idiopathic slow colonic transit is made after excluding colonic obstruction, metabolic disorders (hypothyroidism, hypercalcemia), drug-

induced constipation, and pelvic floor dysfunction. Pelvic floor dysfunction needs to be ruled out as 60% patients with pelvic dysfunction have abnormal radio-opaque marker test. This patient is relatively healthy and functional. Therefore, advanced diagnostic tests for constipation should be considered as they will influence management decisions. The balloon expulsion test is a simple test for detecting pelvic floor dysfunction. Increasing fiber intake (A) and adding psyllium (E) are unlikely to help constipation due to slow colonic transit; he is already ingesting fruits and vegetables. Repeat colonoscopy (C) in less than 10 years is not recommended if previous colonoscopy is unremarkable. Biofeedback (D) is an effective treatment for pelvic floor dyssynergia but not for slow-transit constipation.

In summary, a diagnosis of idiopathic slow colonic transit requires exclusion of pelvic floor dysfunction.

2. A 72-year-old woman presents to the ED with vague abdominal pain for 2 days not relieved with acetaminophen. However, she has no complaint of dysuria, fever, chills, change of bowel habit, passage of blood per rectum, anorexia or weight loss.

Other than longstanding constipation for the last 5 years, she has no other medical history; she is not taking any medications or supplements. She never smoked and drinks socially. She is a yoga-instructor, lives with her husband and spends her free-time swimming and attending spinning class. The patient is a vegetarian.

Her blood pressure is 120/64 mmHg, pulse rate is 72/min, regular. The rest of the physical examination is not remarkable. An abdominal X-ray was taken which revealed stool at the ascending and transverse colon.

What is the surrogate marker for slow colonic transit in this patient?

- A. Stool frequency
- B. Positive fecal occult blood
- C. Presence of abdominal pain
- D. Presence of weight loss
- E. Stool form

Answer: E.

Regardless of its cause, constipation may produce vague abdominal pain (C) due to retention of stool. Patients with slow colonic transit usually have bowel content in ascending or transverse colon, without advancing to the rectosigmoid colon. Stool form (E) correlates better than stool frequency (A) with whole-gut transit time. Therefore, evaluation of stool form with Bristol stool chart is frequently used as surrogate marker of intestinal and colonic transit. Bristol stool form value <3 predicts delayed whole-gut transit. Positive fecal occult blood (B) and the presence of weight loss (D) are alarm symptoms, which are not related to colonic transit time.

3. A 65-year-old man presents to your office as he is concerned about his bowel habits and his chances of getting colon cancer. He has bowel movements twice a week since his youth. In order to achieve complete stool evacuation, he never had to spend excessive time on the toilet. Patient missed a colonoscopy appointment 2 years ago. He denies loss of appetite, loss of weight, and bleeding per rectum. He has a 64-year-old cousin passed away 2 months ago after battling colon cancer. Patient's BMI is 25. What is the appropriate next step?
- Colonoscopy
 - Computed Tomography (CT) scan of abdomen with contrast
 - Sonogram
 - Computed Tomography (CT) enterography
 - Magnetic Resonance Imaging defecography

Answer: A.

Frequency of defecation less than three times per week is generally considered as constipation. However, the frequency of bowel movement in this case may be considered normal if this does not represent a change from the usual frequency of baseline defecation events and is not associated with discomfort. Furthermore, the presence of hard stools, infrequent stools, the need for excessive straining, a sense of incomplete evacuation, and/or an excessive amount of time spent on the toilet or unsuccessful evacuation are considered as symptoms consistent with constipation. Rome III criteria, which include the above symptoms, were developed to standardize the definition of constipation. Therefore, by definition, this patient does not have constipation. As he is over 50 years old, he needs to undergo screening for colorectal cancer which includes colonoscopy. CT scan (B) and abdominal sonogram (C) are used if space occupying lesions due to constipation are suspected. CT enterography (D) is usually used to evaluate small bowel mucosa. Defecography or pelvic magnetic resonance imaging (E) is indicated if the results of anal manometry or balloon expulsion tests

are equivocal, or if there is a clinical suspicion of a structural rectal abnormality that hinders defecation.

In summary, frequency of defecation, less than three times per week, is not always consistent with constipation.

4. An 88-Year-old nursing home resident suffered multi-infarct dementia and has been bed-bound for the last 3 months; she is brought in to ED by a new home attendant for persistent watery stools noted on the diapers. Her past medical history includes hypertension, currently well-controlled on hydrochlorothiazide. Her blood pressure was 130/84 mmHg, pulse rate 88/min, and regular. The patient looked well-hydrated, and not in distress; she is unable to have verbal or nonverbal communication. Her cardiovascular and pulmonary examinations are normal. Gastrostomy tube is in place. Her rectal examination reveals hard stool in the rectum. What is the appropriate next step in management for this patient?
- Polyethylene glycol
 - Oral mineral oil
 - Radio-opaque marker test
 - Balloon propulsion study
 - Manual fragmentation and extraction of stool

Answer: E.

The presence of loose or watery stool in patient with hard stool in the rectum is likely from spurious diarrhea. Impacted stool in rectum causes leak of softer fecal contents around its side. The patient has spurious diarrhea due to stool impaction. Manual fragmentation and extraction of the fecal mass are almost always indicated first for fecal impaction. Besides manual disimpaction, enemas play an important role in the management and prevention of fecal impaction. Lactulose or polyethylene glycol (A) should be started after removal of impacted stool with manual disimpaction or enema. Administering mineral oil (B) for bed-bound patient with gastrostomy tube may increase the risk of aspiration and lipoid pneumonitis. Radio-opaque marker test (C) is not the initial management for patient with stool impaction. Radio-opaque marker test and balloon propulsion study (D) are unlikely to change the management of this frail old adult. In addition, patients who undergo balloon propulsion study should be able to follow commands.

In summary, manual fragmentation and extraction of stool is the best initial management in patients with stool impaction.

5. A 74-year-old man comes to office for follow-up posthospital discharge 2 weeks earlier. He was recently hospitalized for non-ST elevation myocardial infarction that was uncomplicated and sent home with new regimen of medications. He was otherwise recuperating with home physical therapy twice a week, but complaining of episodes of

hard stools and incomplete evacuation during defecation, which began while he was still hospitalized. Which of his new regimen of medications is most likely to be the cause of his constipation?

- A. Esomeprazole
- B. Digoxin
- C. Diltiazem
- D. Ticlopidine
- E. Aspirin

Answer: C.

Review of medications is important in managing constipation. Several cardiac medications including beta-adrenergic blockers, diuretics, and calcium channel blockers are associated with colonic hypomotility and constipation. Proton pump inhibitors (A), digoxin (B), ticlopidine (D), and nonsteroidal anti-inflammatory drugs including aspirin commonly induce diarrhea.

6. Which one of the following patients should be referred for more specialized tests of colonic transit or pelvic floor function such as radio-opaque marker test, magnetic resonance imaging defecography or colonic/rectal manometry for further evaluation of constipation?
- A. A 60-Year-old woman is concerned of colon cancer after her cousin was recently diagnosed with colon cancer and claims that her bowel movement has been altered from daily to every other day. Colonoscopy 3 years ago was unremarkable. She recently takes clonidine for uncontrolled hypertension.
 - B. A 74-Year-old male resident in nursing home, bed-bound with history of congestive heart failure, chronic

- kidney disease, and impacted stool. His hemoglobin level has dropped from 12 to 11.5 g/dL over 11 months.
- C. A 66-Year-old man who is active and maintain a high-fiber diet and has been tried with various laxatives for over 12 months period without significant improvement.
- D. A 72-Year-old woman with history of Parkinson's disease and osteoporosis whose medications have just been adjusted and is also taking calcium and vitamin D supplement.
- E. An 88-Year-old woman who is active and maintains healthy diet has bowel movement twice a week since childhood. She never had hard stool, straining during defecation or a feeling of incomplete bowel evacuation.

Answer: C.

More specialized tests of colonic transit or pelvic floor function should only be considered for older patients with severe, intractable constipation who do not have a secondary cause of constipation or in whom an adequate trial of high-fiber diet and laxatives is unsuccessful. Therefore, these tests are not appropriate for a patient without constipation (E). Furthermore, in older patients with symptoms and signs suggestive of a defecation disorder, anorectal manometry and balloon expulsion tests should only be considered if they are going to affect management decisions. Exploring the possibility of medication induced constipation should be done prior to ordering these specialized tests (A, D). Tests for colonic transit or pelvic floor function cannot explain the cause of anemia. Moreover, these tests are unlikely to affect management decision in frail individuals (B).

