A 75-year-old woman presented to the emergency department with a 1-year history of worsening loose stools and abdominal discomfort. Over the course of the year, the patient had experienced regular cycles of liquid stool followed by constipation for the next few days. She had recently started taking loperamide on the days she had diarrhea as recommended by her primary care provider. She denied hematochezia, melena, nocturnal stooling, weight loss, or recent travel. She had a normal screening colonoscopy 4 years prior. Past medical history was notable for Alzheimer dementia, type 2 diabetes mellitus, hypertension, hyperlipidemia, and osteoarthritis. Medications included metformin, lisinopril, atorvastatin, and acetaminophen. There were no recent medication changes. She is a resident of a long-term care facility.

Physical examination revealed a frail elderly woman with body mass index of 17.4 kg/m². The patient was afebrile and hemodynamically stable with a blood pressure of 122/68 mm Hg, heart rate of 84 beats/min, and oxygen saturation of 99% on ambient air. Mucus membranes were dry and she had poor skin turgor. Cardiopulmonary examination was unremarkable. Abdominal exam revealed a mildly distended abdomen with a palpable mass in the right lower quadrant that was firm and tender to palpation. There was no rebound or guarding. Bowel sounds were hypoactive.

Initial laboratory evaluation revealed the following (reference ranges provided parenthetically): hemoglobin, 13.6 g/dL (12 to 15.5 g/dL) with a mean corpuscular volume of 94.5 fl (80 to 100 fl); leukocytes, 5.4×10⁹/L (3.4 to 9.6×10⁹/L) with a normal differential; platelet count, 248×10⁹/L (157 to 371×10⁹/L); sodium, 147 mmol/L (135 to 145 mmol/L); potassium, 3.6 mmol/L (3.6 to 5.2 mmol/L); alkaline phosphatase, 100 U/L (40 to 129 U/L); aspartate aminotransferase, 32 U/L (8 to 48 U/L); alanine aminotransferase, 30 U/L (7 to 55 U/L); total bilirubin, 0.4 mg/dL (≤1.2 mg/dL); direct bilirubin, 0.2 mg/dL (≤0.3 mg/dL); creatinine, 1.2 mg/dL (0.59 to 1.04 mg/dL); blood urea nitrogen, 23 mg/dL (6 to 24 mg/dL); lactate, 1.6 mmol/L (0.5 to 1 mmol/L); and lipase, 49 U/L (13 to 60 U/L).

1. Based on the patient’s clinical history, which one of the following is the most likely explanation for the patient’s symptoms?
   a. Fecal impaction with overflow diarrhea
   b. Colorectal cancer
   c. Metformin side effect
   d. Inflammatory bowel disease (IBD)
   e. Clostridioides difficile enterocolitis

This patient’s altered bowel habits of chronic constipation intermixed with diarrhea and fecal incontinence are suspicious for a fecal impaction with overflow diarrhea. In elderly patients with dementia, paradoxical diarrhea and incontinence may be among the most common presenting symptoms in patients with fecal impaction.1

Although the patient presents with a persistent change in her bowel habits, she does not have rectal bleeding, anemia, or unexplained weight loss that would be suspicious for colorectal cancer. In addition, the patient had a normal colonoscopy 4 years prior. Given these findings, the likelihood of colorectal cancer in this patient is low.

Diarrhea is a very common side effect associated with the initiation or uptitration of metformin. The patient has been on metformin for a long time without any recent
dose adjustments that would explain her diarrhea. In addition, this does not explain her underlying severe constipation with palpable right lower quadrant mass.

Inflammatory bowel disease is a chronic inflammatory condition of the gut that includes ulcerative colitis and Crohn disease. Patient's with IBD generally present with persistent diarrhea, usually with blood and mucus. Additional symptoms include abdominal discomfort, fecal urgency, tenesmus, weight loss, fever, and anemia. Symptoms vary depending on the extent and severity of disease. Constipation is less likely to be a presenting symptom of IBD. Although the patient does have abdominal discomfort with loose stools, she does not present with additional features of the disease. Furthermore, the patient's screening colonoscopy 4 years prior was without findings suggestive of IBD.

Clostridioides difficile enterocolitis commonly presents as loose stools with associated abdominal cramping and tenderness. It can cause very severe dehydration and require hospitalization. It is common in elderly patients and patients in long-term care facilities and generally occurs after use of antibiotics. Clostridioides difficile does not explain the underlying constipation in this patient.

The patient's physical exam and mild hypernatremia suggested she was dehydrated. She was started on intravenous fluids.

2. Which one of the following is the greatest risk factor for the patient's underlying condition?
   a. Alzheimer dementia
   b. Resident of a long-term care facility
   c. Polypharmacy
   d. Diabetes
   e. Age

There are many factors associated with the occurrence of severe, chronic constipation. The risk of constipation is increased in patients with dementia and patients in long-term care facilities. Among patients with dementia, neglecting the urge to defecate contributes to worsening constipation. This problem is amplified when natural daily routines become disturbed, as is often the case in institutions. Among residents of long-term care facilities, more than half are afflicted with constipation.

There are numerous medications that contribute to constipation and medication reconciliation should always be performed in patients presenting with chronic constipation. The patient is on several medications which could increase her risk of constipation, most notably, loperamide. However, loperamide is a recent addition to the patient's medication regimen and the patient has longstanding constipation making polypharmacy less likely to be the predominant risk factor.

Constipation is considered a common problem in patients with diabetes secondary to autonomic neuropathy leading to increased colonic transit time and the absence of the gastrocolonic reflex. Studies have suggested only a weak association between diabetes and constipation in the general population.

The patient's age is the most critical risk factor associated with the development of significant constipation. In patients older than the age of 75 years, constipation is twice as frequent as in those younger than the age of 75 years. This population is at increased risk of constipation because they are more likely to have low-fiber diets, poor fluid intake, poor dentition leading to mastication difficulties and subsequent poor oral intake, immobility, and constipation-inducing medications.

Thorough medication reconciliation was performed to identify any additional agents that could contribute to constipation, but no additional medications were identified. Further workup was initiated.

3. What is the next best diagnostic tool based on the patient’s clinical history, exam, and laboratory findings?
   a. Digital rectal examination (DRE)
   b. Abdominal plain radiogram
   c. Computed tomography of the abdomen and pelvis (CT A/P) with intravenous and oral contrast
d. Colonoscopy
e. Right upper quadrant ultrasound

A DRE is critical to confirm the diagnosis of fecal impaction. A gentle rectal examination is generally well tolerated, safe, and provides the ability to detect most fecal impactions. Astute clinicians should remember that the absence of palpable stool on DRE does not rule out the diagnosis of a fecal impaction. Given that fecal impactions can occur anywhere in the colon, a more proximal impaction must be considered if no stool is palpated on DRE. Additionally, alternative diagnoses such as colonic strictures or volvulus should also be considered.

If fecal impaction is suspected, but the DRE is negative, plain abdominal radiography to evaluate for masses of stool or signs of obstruction is indicated. Plain abdominal radiography may reveal fecal overloading of the colon with colonic distension in the segment proximal to the location of the fecal impaction. The most informative radiologic study for evaluation of fecal impaction is a CT A/P. Computerized tomography allows for quick assessment of potential complications of impaction and allows for visualization of extracolonic structures that may contribute to constipation.

Endoscopic examination of the colon to evaluate for neoplasm is generally indicated at least once, notably if the patient presents with weight loss, anemia, or fecal occult blood. This patient had a normal colonoscopy 4 years prior and does not have any additional red flag symptoms that would necessitate colonoscopy in the acute setting.

A right upper quadrant ultrasound is of low diagnostic yield in the patient who presents with constipation, diffuse abdominal pain, and without liver enzyme abnormalities.

The patient underwent DRE that revealed the presence of hard stool in the rectal vault with surrounding liquid fecal matter. Following the rectal examination, she also underwent CT A/P with oral and intravenous contrast which revealed significant stool burden extending from the rectal vault through the distal colon. There were no findings suggestive of bowel perforation.

4. What is the best initial treatment option to be considered at this point?
   a. Loperamide
   b. Polyethylene glycol
   c. Magnesium citrate
   d. Manual disimpaction
   e. Enema

Fecal impactions generally occur in the rectum and may result in the overflow of liquid stool around the impacted fecal mass. Because of the paradoxical diarrhea, fecal impactions are often initially misdiagnosed and providers mistakenly recommend the use of an antidiarrheal medication as in this case. In patients with a fecal impaction, antidiarrheal medications such as loperamide not only are ineffective but conversely worsen the impaction.

Efforts to remove a fecal impaction from above are ineffective and can worsen the abdominal pain and contribute to complications if complete obstruction is identified. However, for fecal impactions with partial obstruction and proximal impactions unable to be reached by digital palpation, laxatives can be used when conditions like volvulus and small bowel obstruction have been ruled out. The ideal laxative of choice is generally polyethylene glycol followed by magnesium citrate.

Manual disimpaction is the best first treatment step if stool can be palpated on rectal exam. The procedure is best performed with ample lubrication with progressive anal dilation with first one and then two fingers. A scissoring motion should be attempted to fragment the fecal mass. An anoscope with suction can be used to assist with disimpaction. Patients will often find immediate relief following disimpaction. Once fragmentation and partial expulsion of the fecal mass has occurred, enemas and suppositories may be used. A tap-water enema is acceptable, but in elderly patients the volume should be small and directed to the site of obstruction.
The patient underwent manual disimpaction with significant improvement in her abdominal distension and pain. The patient did well and was able to be discharged to her long-term care facility.

5. In the outpatient setting, which one of the following is the most appropriate next step to prevent recurrent fecal impaction?
   a. Continuation of antidiarrheal (eg, loperamide)
   b. Discontinuation of metformin
   c. Lifestyle modifications and bowel regimen
   d. Linaclotide
   e. Surgical resection

Unfortunately, recurrent fecal impaction is very common in the elderly and institutionalized patients. There are numerous medications that can contribute to fecal impaction and the importance of such cannot be overemphasized. The most notable medications that have been implicated in the development of fecal impaction include opiates; antidepressants (ie, tricyclic antidepressants); antihypertensives that have alpha-adrenergic, beta-adrenergic, or calcium-channel-blocking properties; diuretics; nonsteroidal anti-inflammatory drugs; and iron supplements. The patient should avoid antidiarrheal medications, such as loperamide, which would further worsen the constipation. Diarrhea, not constipation, is a known common side effect of metformin and the patient’s risk of recurrent fecal impaction would not be minimized by discontinuation of this medication.

A bowel regimen should be initiated for patients at high risk of constipation. Patients should be encouraged to have adequate fluid intake, supplemental fiber, and stool softeners. Lifestyle modifications to retrain the bowel, such as increased exercise and scheduled time after meals for defecation are also recommended. These patients should then be monitored with ideally one bowel movement every 1 to 2 days. This patient would benefit most from initiation of a bowel regimen as well as lifestyle modifications as the best step to prevent recurrent severe constipation complicated by fecal impaction.

Linaclotide is approved in the treatment of constipation-predominant irritable bowel syndrome and chronic idiopathic constipation. Many patients can achieve relief of constipation with lifestyle modifications and an over-the-counter bowel regimen. These measures should be implemented before consideration of linaclotide for the treatment of constipation.

In very rare circumstances of fecal impaction complicated by perforation leading to peritonitis, surgical resection of the involved colon or rectum is indicated. This patient does not have evidence of bowel perforation and surgery should not be pursued at this time.

The patient was started on a high-fiber diet with adequate fluid intake. At the patient’s 1-month follow-up appointment, she reported every other day bowel movements. She denied difficulty passing stools or straining with defecation.

DISCUSSION
Constipation is a common problem in the Western world with an average of 2.5 million physician visits per year. Constipation is generally defined as two or fewer bowel movements in 1 week, straining with defecation, hard stools, or the feeling of incomplete evacuation. The prevalence is greater in the elderly, women, and non-whites. The incidence is increased in patients in nursing homes and extended-care facilities. Given the high prevalence in these patient populations, there is a significant cost burden to the health care system in the prevention, diagnosis, and treatment of constipation. Early initiation of therapy is critical in preventing increased morbidity and mortality from complications.

A thorough history and physical examination are necessary to assist in a differential diagnosis and aid additional workup and therapies needed. The causes of constipation are considered in two categories: primary and secondary. A number of primary causes are particularly common among the elderly
including inadequate fiber and fluid intake, immobility, poor dentition and mastication worsening already poor oral intake, and poor abdominal musculature making it difficult for the patient to increase intra-abdominal pressure to sufficiently perform Valsalva maneuver. Secondary etiologies of constipation may require specific treatment and signify more serious underlying pathology. In the elderly, common secondary etiologies include intrinsic bowel lesions (eg, carcinoma or diverticular disease), drugs, and neurologic diseases such as Parkinson disease, depression, and hypothyroidism. Once the initial evaluation has been completed and there are no obvious metabolic, neurologic, or mechanical/obstructive etiologies, physiologic tests should be considered. These studies should be directed toward patients with rectal outlet delay or infrequent defecation. Even after significant testing, the etiology will often remain unknown, at which point the etiology of the constipation is considered idiopathic.

There are many complications associated with constipation ranging from benign to life threatening, including hemorrhoids, anal fissures, fecal impaction, intestinal obstruction, and excessive defecatory strain leading to circulatory problems. Treatment should be initiated before the development of complications. Initial management is conservative with the addition of dietary fiber (25 to 30 g per day), adequate hydration, mobilization, toilet training, and limiting use of constipating drugs. If lifestyle modifications do not produce sufficient results, osmotic laxatives, such as polyethylene glycol or magnesium citrate should next be considered, followed by a stool softener, such as docusate sodium, and then stimulant laxatives. Suppositories and enemas can also be considered in the management of chronic constipation. If symptoms do not improve, a trial of linaclotide or lubiprostone may be appropriate.

In summary, constipation and its complications occur frequently, particularly in the elderly population. A careful evaluation may detect the etiology, but often the cause will be idiopathic. Because of the increased morbidity and reduced quality of life, therapy is needed to provide symptomatic relief and prevent complications.

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REFERENCES

CORRECT ANSWERS: 1. a. 2. e. 3. a. 4. d. 5. c.