CLINICAL CHALLENGE: CASE 1

This feature will challenge your diagnostic acumen with a glimpse of x-rays, electrocardiograms, and photographs of conditions that real urgent care patients have presented with.

If you would like to submit a case for consideration, please e-mail the relevant materials and presenting information to *editor@jucm.com*.

Chronic Cough and Shortness of Breath

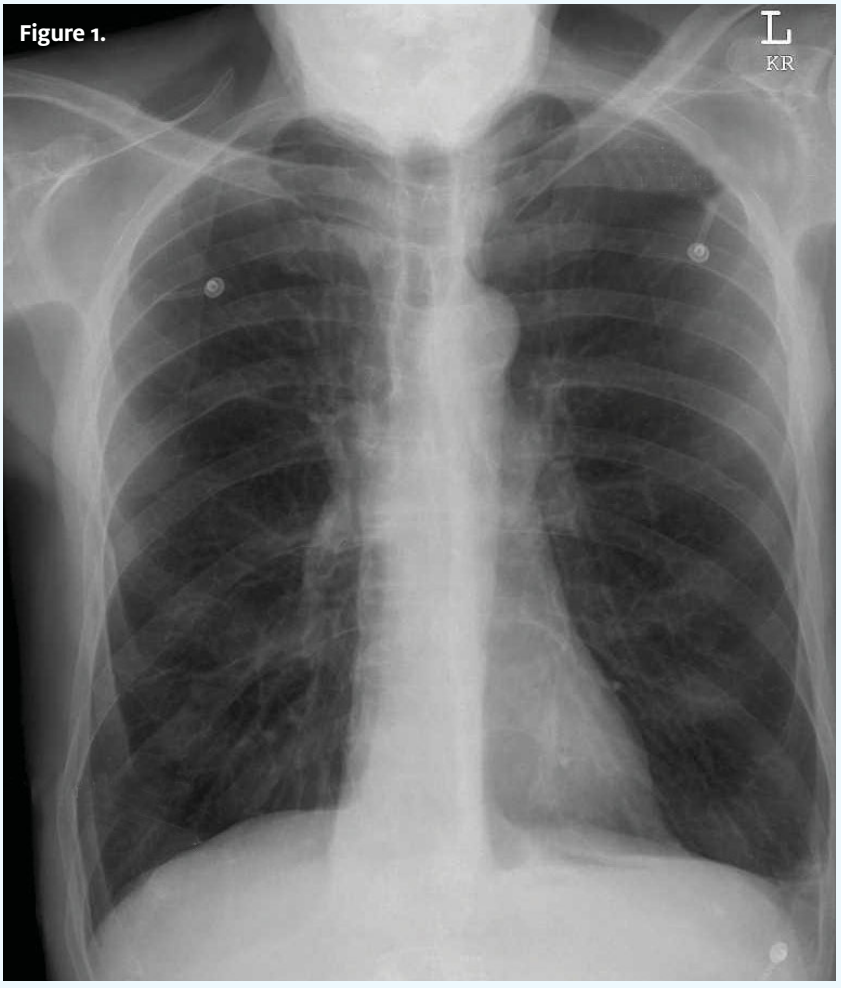


Figure 1.

Case

A 74-year-old man without a significant past medical history presents to an urgent care center reporting 3 days of coughing productive of green sputum, shortness of breath that worsens with exertion, and chills. He says he has a chronic morning cough but states that the sputum has changed color and that his dyspnea has increased. He says he has not had any fever, chest pain, or lower extremity pain or swelling.

View the image taken (**Figure 1**) and consider what your diagnosis would be.

Differential Diagnoses

- Pneumonia
- Pneumothorax
- Heart failure
- Pulmonary embolism
- Lung cancer

Physical Examination

On examination, the patient was found to be afebrile, and he had a pulse rate of 98 beats/min, a respiration rate of 24 breaths/min, and a blood pressure of 142/88 mm Hg. He was alert and oriented. The physician noticed tachypnea when the patient walked from the waiting room to the examination room.

The patient had decreased breath sounds bilaterally with minimal bilateral symmetric wheezing. He had a regular heart rate and rhythm without murmur, rub, or gallop. His abdomen was soft and nontender without rigidity, rebound, or guarding. He had no pain or swelling of the lower extremities.

THE RESOLUTION

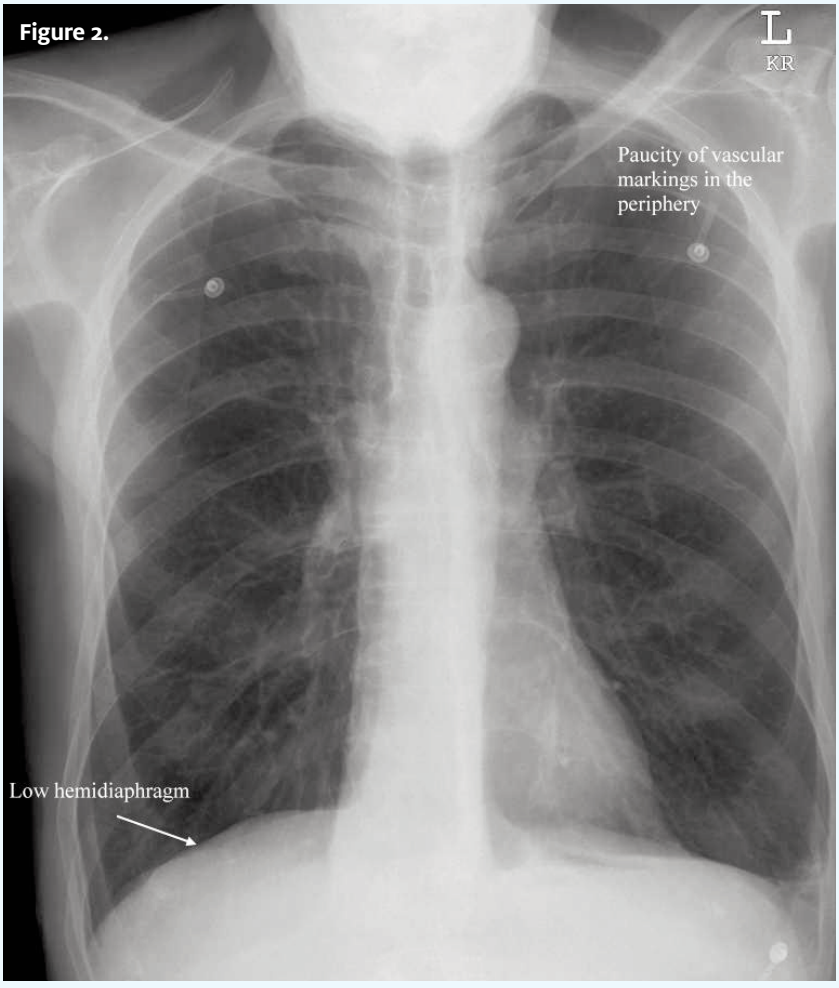


Figure 2.

His peripheral pulses were 2+ on a scale of 0 to 4 and were equal in all four extremities. The patient's chest x-ray had the typical appearance of chronic obstructive pulmonary disease (COPD): large, dark lungs; flattened thoracoabdominal diaphragm; and a small, vertically oriented heart (**Figure 2**).

Diagnosis

The diagnosis was COPD.

Learnings

COPD affects 30 million Americans and is the fourth leading cause of death in the United States. Airway obstruction is present in 14% of white male smokers, compared with 3% of nonsmokers. COPD classically encompasses several diffuse pulmonary diseases, including chronic asthma, bronchiectasis, chronic bronchitis, cystic fibrosis, and emphysema.

The American Thoracic Society defines COPD as the progressive development of airflow limitation that is not fully reversible.

Most patients with COPD have components of both chronic bronchitis and emphysema. Chronic bronchitis is characterized by a recurrent and productive cough on most days for ≥3 months in 2 consecutive years without another explanation. It is caused by obstruction of small airways. Emphysema results from the destruction of interalveolar septa characterized as having abnormal, permanent enlargement or air spaces distal to the terminal bronchiole without obvious fibrosis. It is caused by enlargement of air spaces and destruction of lung parenchyma, loss of lung elasticity, and closure of small airways.

The medical history should record consideration of fever, cough, dyspnea, chest pain, peripheral edema, and a change from baseline (chronic) symptoms. Inquire about the use of home oxygen and about current or past use of cigarettes.

The physical examination often reveals acute decompensation that is evident when the patient first enters the room, and there is often evidence of tachypnea, diaphoresis, or altered consciousness. Other findings such as the use of home oxygen, pursed-lip breathing, use of accessory muscles, and periorbital cyanosis may indicate impending respiratory failure. The lung examination typically reveals decreased lung sounds with a prolonged expiratory phase, and symmetric wheezing. The extremities should be evaluated for edema and the presence of symmetric pulses.

COPD exacerbations can be safely treated on an outpatient basis with a combination of antibiotics, steroids (inhaled or systemic), and β_2-agonist inhalers. Antibiotics decrease the risk of clinical failure.

Immediate referral to an emergency department is necessary if any of the following are present:

- Respiratory distress
- An oxygen saturation of <90%
- Hemodynamic instability
- The possibility of an alternative diagnosis such as pulmonary embolism, pneumonia, pneumothorax, or myocardial infarction ■

Ankle Injury Sustained During an Amateur Football Game

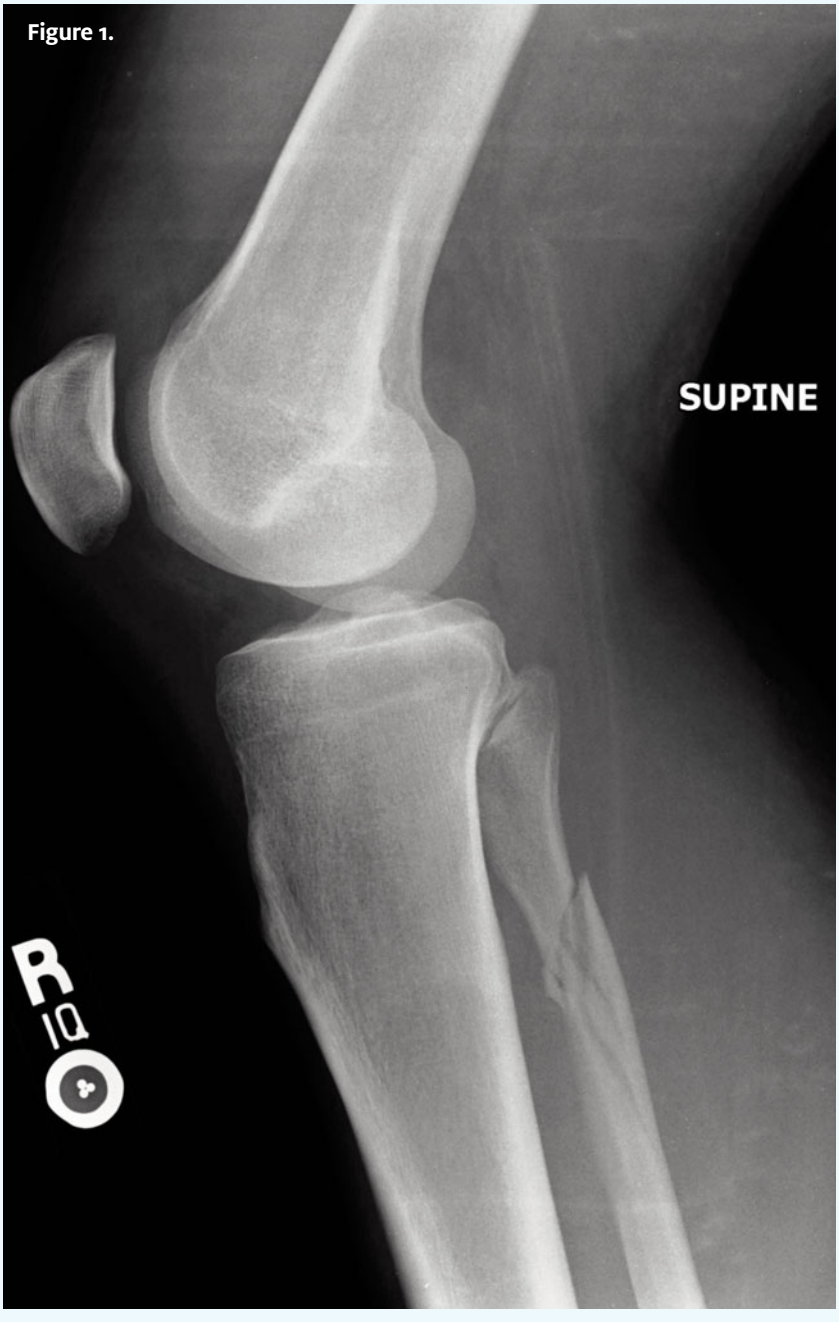


Figure 1.

Case

A 25-year-old man presents to the urgent care center after a backyard game of football in which he twisted his ankle. Because of alcohol intoxication, he cannot remember the mechanism of injury. He reports isolated right ankle pain and is unable to bear weight. On physical examination, he has pain with palpation of the ankle, but there are no gross signs of deformity. An ankle x-ray has already been done by the time you see the patient, and your findings for that x-ray are negative. As you continue the physical examination, however, you palpate the proximal fibula, and he feels pain, so you order a new x-ray.

View the image taken (**Figure 1**) and consider what your diagnosis would be.

Differential Diagnoses

- Patella dislocation
- Tibial plateau fracture
- Comminuted fracture of the tibial shaft
- Osteolytic lesion of the proximal fibula
- Spiral fracture pathognomonic of physical abuse

THE RESOLUTION

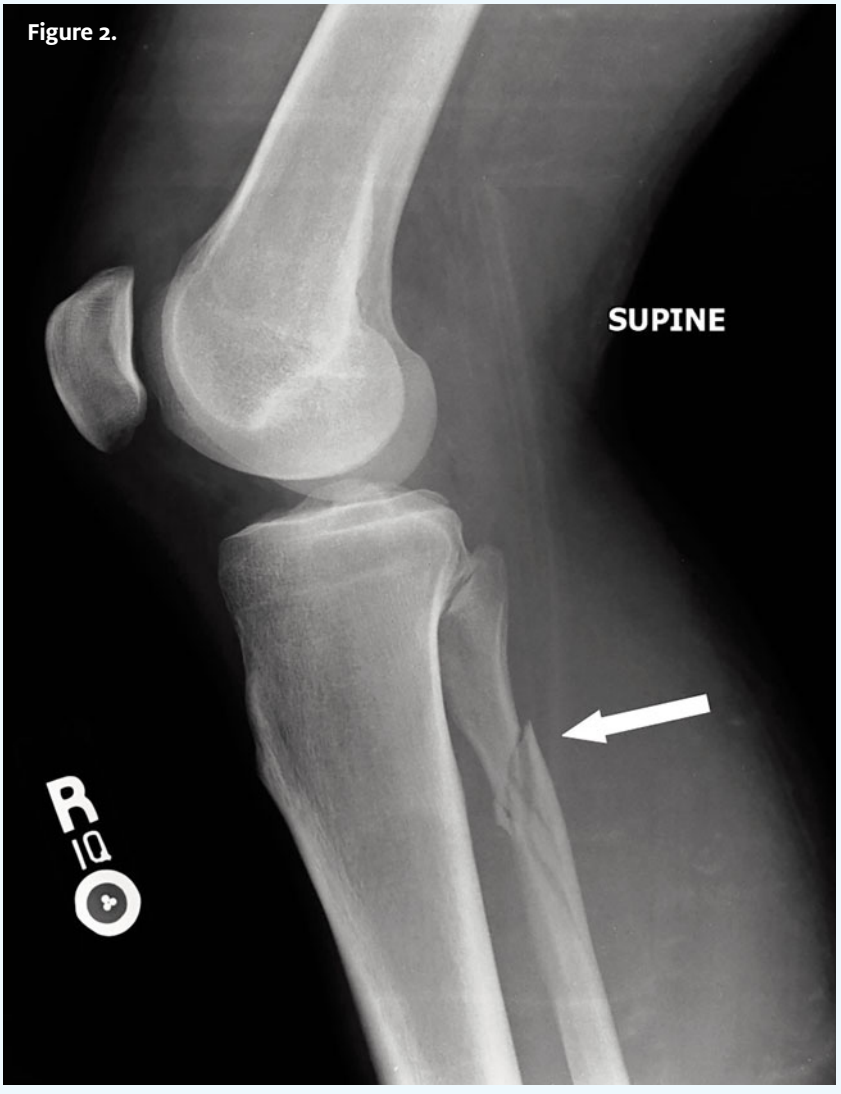


Figure 2.

Diagnosis

Spiral fracture of the proximal fibula (Maisonneuve fracture; **Figure 2**).

Learnings

The proximal tibia and fibula are held together by a strong interosseous membrane. When there is a significant ankle injury, typically an internal rotation of the leg on a planted foot (causing *external* rotation of the foot), this membrane can be torn, with resultant spiral fracture of the proximal fibula, called a Maisonneuve fracture. It may be present even without an ankle fracture.

The mechanism is typically a sports-related injury, but these fractures can also occur from slipping on the ice, running, walking, a motor vehicle accident, or a fall from a height. These fractures are often overlooked because patients typically report pain at the ankle but not at the proximal fibula. If this area is not palpated, a Maisonneuve fracture may be missed. When there is pain with palpation at the proximal fibula, obtain a fibula x-ray to look for a Maisonneuve fracture. This is an unstable fracture and typically requires surgical repair.

Treatment in an urgent care center involves immobilization, use of crutches and avoidance of weight-bearing, and referral to an emergency department (ED) or an orthopedist. Pain medication should be administered.

Consider compartment syndrome when there are signs and symptoms of significant swelling, severe pain (often out of proportion to the pain level expected for the injury), possibly bruising, and paresthesias. Consider other injuries to the joints above and below, as typically is done with orthopedic injuries.

Make copies of the x-rays to send to the ED or orthopedist. If there is suspicion of a significant ankle injury, a stress ankle x-ray can be performed, but if the disposition is to the ED or orthopedics and the patient cannot bear weight, this will be unlikely to change treatment.

Even when there is not a history of pain at the proximal fibula, palpate this location in all ankle injuries to assess for a Maisonneuve fracture. ■

Generalized Abdominal Pain with Nausea

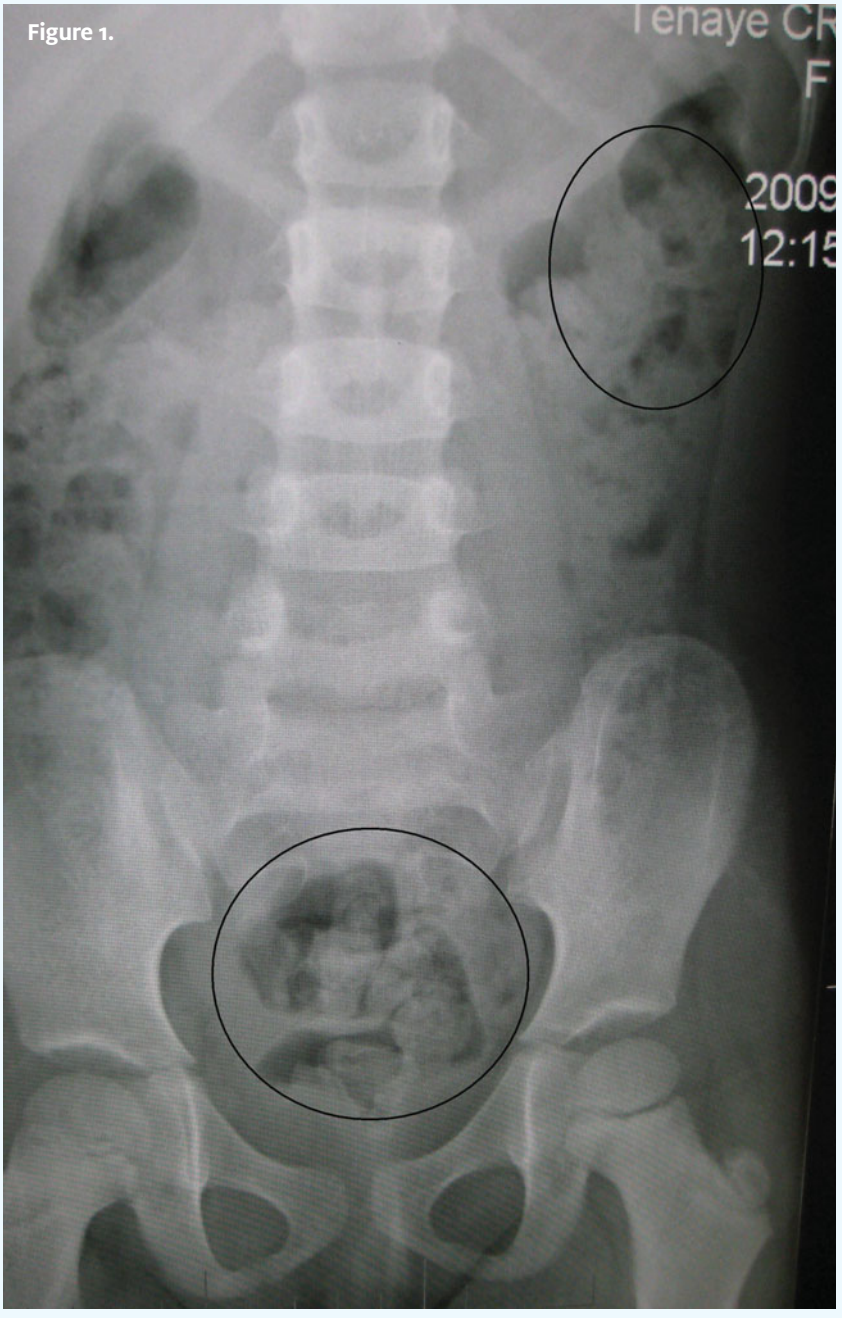


Figure 1.

Case

A 67-year-old man presents, reporting constipation that has lasted 3 days. He has a constant, generalized dull abdominal pain that is intermittently worse, occurring in what he describes as waves. He has nausea and reports that he has vomited once. He reports no blood in the urine or stool, and no weight loss, dysuria or urinary frequency, or dizziness.

View the image taken (**Figure 1**) and consider what your diagnosis would be.

Differential Diagnoses

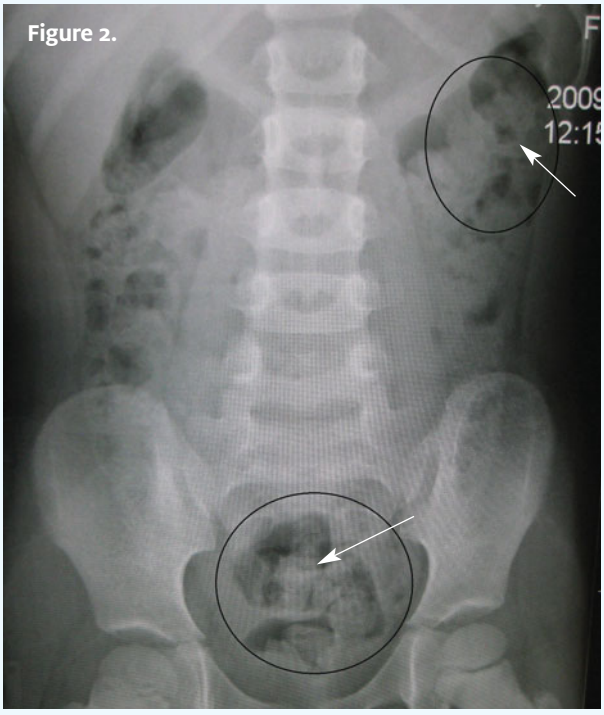
- Small bowel obstruction
- Osteolytic lesion
- Gastric malignancy
- Pulmonary infiltrate
- Calcified aortic abdominal aneurysm

Physical Examination

The patient's medical history reveals hypertension and that he underwent an appendectomy and tonsillectomy in the past. The patient is a nonsmoker and customarily drinks 2 glasses of wine per night. His temperature is 99.2°F (37.3°C), and he has a pulse rate of 104 beats/min, respirations of 16 breaths/min, a blood pressure of 112/78 mm Hg, and an oxygen saturation of 98%. He is alert and oriented, is in no acute distress, and is breathing normally.

The patient's lungs are clear to auscultation bilaterally. He has a regular heart rate and rhythm without murmur, rub, gallop. He has a well-healed midline abdominal scar, and his abdomen is not distended. He does have mild general-

THE RESOLUTION



ized abdominal discomfort with palpation, but there is no rigidity, rebound, or guarding.

Medical History

In patients with apparent constipation, inquire about the initial episode versus chronic constipation, frequency of stools, stool consistency, any need to strain, and pain with defecation. Patients with intermittent constipation and diarrhea may have irritable bowel syndrome. If there is pain associated with the complaint of constipation, ask about the location of pain, its onset (acute vs. gradual), its character (constant vs. intermittent), and any medications used for the pain and whether they have been used in the past

Concerning associated symptoms include weight loss, fever, blood in the stool or urine, and dizziness. A history of malignancy, radiotherapy, or abdominal surgeries may indicate a diagnosis of cancer or small bowel obstruction.

Testing

An acute abdominal series is performed. The urgent care provider interprets the findings as "within normal limits but full of stool."

Diagnosis

The patient has constipation (**Figure 2**).

Learnings

Constipation includes primary motor (neurologic) disorders, defecation disorders, and adverse effects of medications. Constipation is defined by the American Gastroenterological Association as difficult or infrequent passage of stool, hard stool, or a feeling of incomplete evacuation. Prevalence in adults ranges between 2% and 27%, with up to 74% of nursing-home residents using daily laxatives. Constipation-predominant irritable bowel syndrome is abdominal discomfort with two of these three symptoms: relief of pain after defecation, hard stools, or less-frequent stools.

Treatment

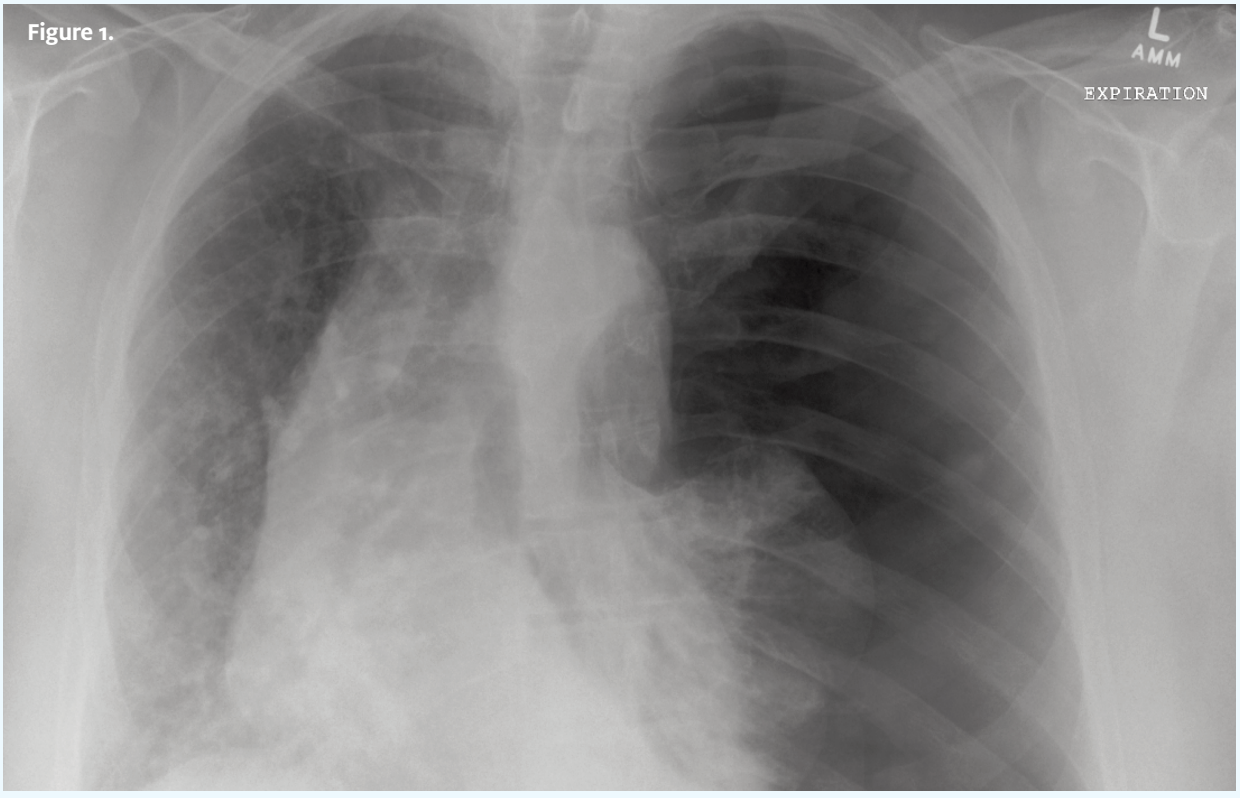
- Exclude secondary causes of constipation.
- Hydrate the patient.
- Instruct the patient to increase intake of dietary fiber.
- Consider the following medications for the patient:
  - Polyethylene glycol (MiraLAX)—osmotic
  - Docusate (Colace)—stool softener
  - Psyllium (Metamucil)—fiber
  - Magnesium hydroxide (milk of magnesia)—saline cathartic
  - Mineral oil—lubricant
  - Lactulose—osmotic
  - Bisacodyl (Dulcolax)—stimulant cathartic

Indications for Transfer to an Emergency Department

- Uncertain diagnosis
- Intractable pain
- Unstable vital signs
- Concurrent abdominal pain in elderly patients
- Presence of red flag symptoms such as the following:
  - Blood in the stool
  - Vomiting
  - Weight loss
  - History of previous surgeries
  - A medical history of malignancy ■

Sudden-Onset Left-Sided Chest Pain

Figure 1.



Case

A 32-year-old man with a history of pneumothorax presents to the urgent care after a sudden onset of left-sided chest pain that started 30 minutes earlier when he was inhaling while smoking a cigarette. He reports shortness of breath, dizziness, and diaphoresis.

View the image taken (**Figure 1**) and consider what your diagnosis would be.

Physical Examination

On examination, the patient had a temperature of 99.7°F (37.6°C), a pulse rate of 138 beats/min, a respiration rate of 40 breaths/min, and a blood pressure of 72/43 mm Hg. He was alert and oriented, sweaty, panicky, and tachypneic. On examination of his lungs, he had decreased lung sounds on the left and clear on the right. He had tachycardia, and his heart had a regular rhythm, without murmur, rub, or gallop. His abdomen was slightly distended, soft, and nontender, without rigidity, rebound, or guarding. He was profusely diaphoretic. He had no swelling or pain in his extremities and no calf muscle pain, and his peripheral pulses were weak and thready.

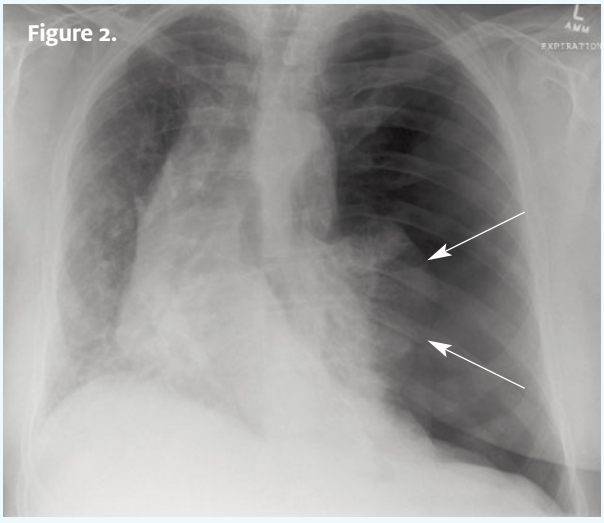
Differential Diagnoses

- Pneumonia
- Hemothorax
- Lung cancer
- Cardiac tamponade
- Free air under the diaphragm

Tests

Testing for uncomplicated cases involves a chest x-ray performed during inspiration. The conventional wisdom is that an x-ray during forced expiration may show the pneumothorax, but one study found equal rates of visualization for inspiratory

THE RESOLUTION



films and for expiratory films. Patients with chronic obstructive pulmonary disease (COPD) and bullous changes may mistakenly be diagnosed with pneumothorax. Careful review of the chest x-ray and comparison with previous x-rays is important to prevent unnecessary transfer to an emergency department (ED) or placement of a tube thoracostomy, which might worsen the patient's condition.

A chest x-ray (**Figure 2**) was performed, which revealed a tension pneumothorax. Note the compressed left lung, the lack of lung markings on the left, deviation of the trachea to the opposite (right) side, and deep sulcus (costophrenic angle) on the left.

Diagnosis

The patient has tension pneumothorax, which is a medical emergency.

Learnings

A pneumothorax can occur from trauma or spontaneously. A primary spontaneous pneumothorax occurs in patients without lung disease, whereas a secondary spontaneous pneumothorax occurs in patients with a history of known lung disease such as COPD or a history of previous pneumothorax.

The visceral pleura (outer lining of the lung) approximates against the parietal pleura (the inner lining of the thoracic cavity). When air enters the space between the visceral and parietal pleura, it will be evident on chest x-ray as a dark, air-filled cavity; that is a pneumothorax. The most common underlying causes of spontaneous pneumothorax are COPD and tuberculosis. A proposed mechanism of spontaneous pneumothorax is rupture of subpleural bullae into the pleural space (the space between the visceral and parietal pleura).

Patients with pneumothorax usually report chest pain, shortness of breath, or both. The acuity of onset in nontraumatic pneumothorax may be rapid, during an episode of negative pressure within the intrathoracic cavity, as can occur with inhalation of a cigarette or when inhaling from other types of smoking devices, or it may be gradual with a smaller pneumothorax. Patients typically localize the site of pain to the affected side.

Treatment

- For patients with spontaneous pneumothorax who are hemodynamically stable, observation with a repeat chest x-ray the next day is an appropriate therapy. This should be coordinated with a thoracic surgeon or pulmonologist.
- For patients with a large pneumothorax or one causing symptoms of shortness of breath or hemodynamic instability, the patient should be transferred to an ED for decompression, either with a valve or chest tube.
- If there is evidence of tension, emergency medical services (EMS) should be promptly activated.
- If the patient is hemodynamically unstable and the wait for EMS will be prolonged, needle decompression should be performed in the second intercostal space, midclavicular line, with an 18-gauge catheter placed *over* the rib. When a rush of air is obtained, remove the needle and leave the catheter in place.

Indications for Transfer to an Emergency Department

- With a small, nonacute pneumothorax in the presence of hemodynamic stability, the patient can be transferred by a private vehicle.
- If the patient is hemodynamically unstable, as evidenced by significant tachycardia, tachypnea, and hypotension, then transfer should be done by EMS.
- With signs of tension pneumothorax, the patient should be decompressed before transfer. ■

Figure 1 from Brims F. Tension pneumothorax—an alternative view [2014 August 22]. *Life in the Fast Lane* [blog]. Available from: http://lifeinthefastlane.com/tension-pneumothorax-an-alternative-view/. Figure 2 is a modified version of Figure 1. (Used with permission under a Attribution-NonCommercial-ShareAlike 4.0 International license: http://creativecommons.org/licenses/by-nc-sa/4.0/.)