A 16-year-old boy was admitted to the hospital because of abdominal pain and a mediastinal mass.

The patient had been well until 4 days before admission, when he began to feel vaguely ill. The next day, non-blood emesis occurred. Two days before admission, epigastric pain, nausea, decreased appetite, and constipation developed. On the morning of admission, he took laxatives and acetaminophen, without relief. He saw his pediatrician; a tentative diagnosis of pancreatitis was made, and the patient was sent to the emergency department. On arrival, he rated the pain at 10 on a scale of 0 to 10 (with 10 indicating the most severe pain). He had not had fever or additional episodes of vomiting, or diarrhea. On examination, the weight was 305 lbs., the temperature 98°F, blood pressure 155/75 mm Hg, the pulse 88 beats per minute, the respiratory rate 36 breaths per minute, and the oxygen saturation 100% while he was breathing room air. The abdomen was soft, with moderate tenderness in the epigastrium and right upper quadrant; the remainder of the examination was normal.

Hemoglobin and platelets were normal; WBC was elevated at 13,900 per mm³ (ref 4,500-13,000) with a normal differential. Electrolytes, albumin, alkaline phosphatase, amylase, lipase, calcium, creatine kinase isoenzymes, and troponin I were normal, as were tests of renal function. His glucose was increased at 172 mg/dl (ref 70-110). Aspartate aminotransferase (AST) was 53 U/l (ref 10-40) and alanine aminotransferase (ALT) 95 U/l (ref 10-55). An electrocardiogram was normal.

CT of the abdomen after the administration of intravenous contrast material revealed a cystic mass, 12.4 cm by 6.1 cm by 6.2 cm, in the posterior mediastinum above the gastroesophageal junction, which displaced the inferior vena cava, the heart, and the distal esophagus; hepatic steatosis and trace bilateral pleural effusions were also present. Morphine was administered intravenously with transient improvement (the patient rated the pain at 3 out of 10) within 4 minutes; ranitidine and normal saline were also given. He was admitted to the hospital.

On admission, the patient described the pain as sharp; radiating to his back; worsening with movement, deep inspirations, and swallowing; and improving slightly with sitting upright. He reported having the sensation of food sticking in his throat and having a mild cough and sore throat for 2 to 3 days. Blood-pressure recordings and serum levels of glycated hemoglobin and insulin had reportedly been elevated in the recent past. He had no known allergies. He lived with his mother, a sibling, and two dogs, and he attended high school. His father had had type 2 diabetes and hypertension and died at 50 years of age after a stroke; his mother had had gestational diabetes and cholestatic pancreatitis and had hypertension.

On examination, the patient was obese, alert, and in distress because of pain. The blood pressure was 159/67 mm Hg, the pulse 95 beats per minute, and the respiratory rate 20 breaths per minute; the temperature and oxygen saturation while he was breathing ambient air were normal. Respirations appeared slightly labored from pain, and lung fields were clear. Bowel sounds were normal; there was epigastric tenderness to palpation, with guarding; there was no rebound, palpable mass, or ecchymoses. The spine was tender to palpation in the midlumbar region, and there was hyperpigmentation of the axillae consistent with acanthosis nigricans. The remainder of the examination was normal. A chest radiograph showed retrocardiac opacity. CT of the chest (Figure 1 & 2 below – see images for description) confirmed the presence of a posterior mediastinal cystic mass. Bilateral pleural effusions were greater than those in the study performed less than 24 hours earlier. Morphine was administered intravenously, and oral intake was withheld.

During the first day, the temperature rose to 102.2°F. Ultrasound-guided thoracentesis was performed. Clear, serous pleural fluid was aspirated, which was not bloody, purulent, or chyloous. The fluid had a
WBC count of 10,875 with 75% polys and 25% monocytes. Protein was 4.2, lactate dehydrogenase (LDH) was 453 U/l (ref for serum 10-210), pH 7.4. Serum levels of human chorionic gonadotropin, and alpha-fetoprotein were normal. A barium-swallow examination revealed a smooth extrinsic impression of the distal esophagus, without extraluminal leakage of contrast material. During the next 2 days, the temperature rose to 103.3°F. Cultures of the blood and pleural fluid were sterile. A limited Magnetic resonance imaging (MRI) of the chest showed that the mass is predominantly cystic with some internal septations.

On the third day, a diagnostic procedure was performed.

**WHAT DIAGNOSTIC PROCEDURE DO YOU THINK WAS PERFORMED?**

**WHAT DO YOU THINK IS THE DIAGNOSIS? DISCUSS YOUR DIFFERENTIAL DIAGNOSIS.**

**FIGURE 1**

There is a large cystic mass (white arrow) in the posterior mediastinum, abutting the esophagus). The contents were consistent with fluid with some proteinaceous component. The mass contained an area of high density along its posterior margin (black arrow) that was mobile on images obtained while the patient was in the supine and prone positions. Because the patient had received oral contrast material for the abdominal CT that was performed earlier, it was unclear whether the area of high density represented internal calcifications within the mass or retained contrast material from the esophagus.

**FIGURE 2**

Bilateral pleural effusions were present at the lung bases (arrows). These had increased in size since the study performed 24 hours earlier. This suggested that the cystic lesion either had eroded into the pleural space or was causing irritation of the pleura from mass effect or associated inflammation.