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GASTRIC VOLVULUS THROUGH MORGAGNI HERNIA: AN EASILY OVERLOOKED EMERGENCY

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□ **Abstract—Background: Intractable vomiting in an elderly patient is an emergency condition requiring prompt diagnosis and intervention. Acute gastric outlet obstruction due to gastric volvulus through Morgagni-type diaphragmatic hernia is an exceedingly rare cause of this nonspecific complaint. Objective: Our aim was to highlight that Morgagni hernia, although rare in adults, should be suspected in the appropriate clinical setting, and that a clue toward diagnosis often comes from routine chest and abdominal x-ray studies. In addition, we emphasize the atypical radiological findings and importance of emergency surgical intervention in such a case. Case Report: We describe the case of a 78-year-old woman who presented to the Emergency Department with a 4-day history of intractable vomiting, and with no definitive clue to the diagnosis on examination. Her routine chest and abdomen x-ray studies suggested abnormal air-fluid level at right hemithorax, which prompted a computed tomography (CT) scan of the abdomen and an upper gastrointestinal contrast study. Gastric volvulus through a foramen of Morgagni was diagnosed and transthoracic reduction of the contents was performed, along with repair of the defect. Conclusions: A symptomatic Morgagni hernia in adults, although rare, can present with a variety of symptoms ranging from nonspecific complaints of bloating and indigestion to the more severe complaint of intestinal obstruction. Gastric volvulus and obstructive features are less frequently reported as acute complications of these hernias, which need early identification and intervention.** © **2013 Elsevier Inc.**

□ **Keywords—diaphragmatic hernia; Morgagni hernia; gastric volvulus; computed tomography; transthoracic reduction**

INTRODUCTION

Herniation of abdominal contents into the thoracic cavity through an anteromedial defect of the diaphragm, the so-called foramen of Morgagni, is a rare clinical condition in adults, accounting for only 3% of all treated diaphragmatic hernias (1). Association of diaphragmatic hernias with gastric volvulus is less frequently encountered, as the stomach is not a usual content for these hernias. We report a case of gastric volvulus through Morgagni-type diaphragmatic hernia in a 78-year-old woman who presented with sudden onset intractable vomiting. The diagnosis was first suspected from the chest and abdominal x-ray studies in the Emergency Department (ED), but a more appropriate anatomical preoperative diagnosis was established by doing a computed tomography (CT)

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scan of the thorax and abdomen, as well as a barium study of the upper gastrointestinal tract. A hernia of Morgagni usually presents with recurrent chest infections in children. Rarely, it can present as acute respiratory distress syndrome in the neonatal period (2). In adults, the majority of cases are diagnosed incidentally on routine chest x-ray study for an unrelated problem. The most common presenting symptoms include pulmonary complaints, chest pain or pressure, and gastrointestinal obstruction, but patients can present with life-threatening conditions such as bowel incarceration or peritonitis, the incidence of which is 10%–15% (3). This article reviews the varied presentation, diagnostic modalities, and therapeutic approach in cases of Morgagni hernia (MH) in adults, with atypical radiological findings being highlighted.

CASE REPORT

A 78-year-old woman presented to the ED with a 4-day history of recurrent nonbilious vomiting and nausea. There was no history of hematemesis, melena, abdominal pain or distension, constipation, heartburn, dysphagia, chronic cough, or chest pain. She denied any history of recent trauma or abdominal surgery. The patient had a background of peptic ulcer disease, for which she was treated with proton pump inhibitors. The patient denied any history of a similar episode in the past. On physical examination, she was alert, oriented but ill looking. Her vital signs in the ED were as follows: blood pressure 100/70 mm Hg, pulse 102 beats/min, low volume, respiratory rate 22 breaths/min, and body temperature 36.6°C (98°F). She had a dry tongue, sunken eyes, and reduced skin turgor, suggesting dehydration. On examination, the abdomen was soft, nontender, with normal bowel sounds. There was no evidence of abdominal distension or guarding, but epigastric fullness was noted. Rectal examination was normal. Breath sounds were diminished over the lower zone of the right lung and some gurgling sound was audible from the right fourth intercostal space downward.

Initial laboratory results were as follows: hemoglobin 12 gm%, white blood cell count 8,600/μL with 51% segmented neutrophils, blood urea nitrogen 20 mg/dL, creatinine 0.5 mg/dL, amylase 48 IU/L, lipase 10 IU/L, random capillary blood glucose 110 mg/dL, and C-reactive protein 0.83 mg/L. Routine investigation revealed hypokalemia (3.1 mEq/dL) with hypochloremia (98 mEq/dL). The arterial blood gas analysis showed the following values: pH 7.52, $PaCO_2$ 46 mm Hg, and HCO_3 30 mEq/L, suggesting metabolic alkalosis. A plain x-ray study of the abdomen done in the ED revealed an unusual air-fluid level at the right lower lung field and absence of normal fundic gas shadow on the left, with the liver being in the normal position (Figure 1A). A posteroanterior chest x-ray study demonstrated an elevated air-fluid filled mass at the right lower hemithorax, with a thick wall that at first look was regarded as an eventration of the diaphragm with the presence of a fluid-filled stomach or bowel loop below the right hemidiaphragm (Figure 1B). The air-fluid level extended up to the anterior chest wall on the lateral chest x-ray study (Figure 1C).

The patient's immediate medical management in the ED included establishment of an intravenous line with fluid replacement, nasogastric tube decompression, monitoring of urine output, and vital parameters. Gastric aspiration through a nasogastric tube resulted in aspiration of about 2,000 mL brown liquid. To get a better idea of the anatomical aberration, a CT scan of the chest and

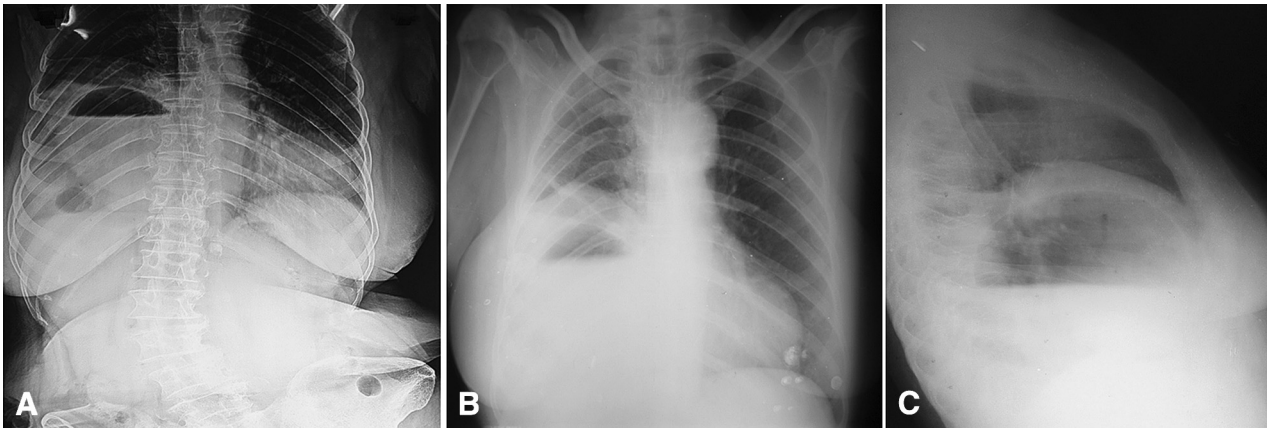

Figure 1. Upright abdominal plain film (A), posteroanterior (B), and lateral (C) chest x-ray studies obtained in the Emergency Department. An aberrant air-fluid level is visible at right lower hemithorax with the liver in a normal position (A, B). There is a thick radiolucent fat density encircling the air-fluid mass (B). Anterior projection of a fluid-filled gastric pouch can be seen on lateral film (C).