

CASE REPORT

GASTRO - PLEURAL FISTULA

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HOW TO CITE THIS ARTICLE:

V. L. Ratnakumari, Vinoo Jacob, Adithya Das, Shani. J. "Gastro - Pleural Fistula". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 13, March 31; Page: 3435-3439, DOI: 10.14260/jemds/2014/2302

ABSTRACT: A 70 year old woman developed gastropleural fistula following gastric perforation after consumption of formic acid. The diagnosis required multiple imaging studies including chest radiographs barium studies of upper gastrointestinal tract. The patient was not willing for surgical excision of the fistulous track and is currently under follow up for significant developments.

KEYWORDS: Gastropleural fistula, barium swallow, chest X ray, ultrasound, thoracic computed tomography (CT), formic acid poisoning, toxic pneumonitis.

INTRODUCTION: Gastropleural fistula is a rare condition characterized by a communication between the stomach and the pleural space.¹⁻⁵ It is an uncommon complication of a number of conditions such as major pulmonary and esophageal resections⁶ and gastric lymphoma.^{2,3} Also, a gastro-pleural fistula has been peptic ulceration^{5, 7} and perforation of an esophageal hiatal hernia.⁸

The diagnosis of gastric-pleural fistula is usually made by upper endoscopy, radiographic contrast examination, or at surgery.⁹ We describe a case of a solitary diverticulum of the posterior wall of the gastric antrum complicated by the onset of an abscess of the right hepatic lobe and subsequently by a pleural fistula with pleural effusion. We describe a case of a gastropleural fistula developing following corrosive gastric perforation after formic acid poisoning.

CASE REPORT: A 70 year old lady with a history of consumption of 30 ml of formic acid, presented in our critical care with corrosive burns in the oral region and hematuria.

On examination, she was conscious but irritable. She had charred lips and oral mucosa with blood stained oral secretions. Her vitals were stable. Per abdomen examination revealed epigastric tenderness without guarding. Bowel sounds heard normally. Other system examinations showed no abnormal findings. Initial erect radiograph of abdomen was normal. Blood investigations revealed normal parameters. Urine routine examination showed numerous RBCs.

She was admitted for supportive treatment. Hematuria resolved in two days- time.

On day 3, she complained of cough without expectoration.

Chest radiograph was taken suspecting toxic pneumonitis, which showed left lower lobe consolidation with pleural effusion and the normal fundal gas (Figure 1).

Fine needle pleural tapping was done which showed clear, pale yellow serous fluid, sterile on microscopy with a neutrophil dominant differential count.

With persisting symptoms, repeat chest radiographs were taken, which showed increasing shadowing of left lower zone, pleural effusion and cavities with fluid levels (Figure 2).

Ultrasound study of thorax was done and showed moderate left sided loculated pleural collections with air pockets.

On Day 20, while on treatment for lung abscesses, she complained of dysphagia to solid foods. Suspecting the complication of corrosive stricture, the patient underwent a barium meal examination.

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The study revealed free flow of barium posteriorly into the thoracic cavity from the fundus of stomach, via a narrow opening in the diaphragm, reaching up to the apex of the left lung and folding anteriorly. (Figure 3) A Computed tomographic study of thorax with oral contrast confirmed the free fistulous communication and the thick walled contrast filled intrapleural cavity (Figure 4).

A diagnosis of Gastropleural fistula following gastric perforation from corrosive poisoning was given and she was advised surgical excision of fistulous track. The patient not willing for the same was discharged against medical advice. She is now under follow up without any significant developments.

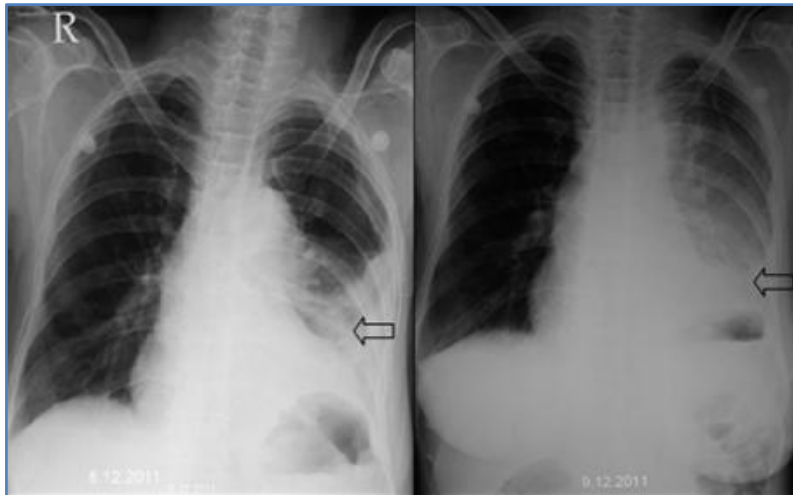


Figure 1

Figure 1: Chest radiograph taken initially showing left lower lobe consolidation (arrows) with pleural effusion with the normal fundal gas.



Figure 2

Figure 2: Repeat chest radiographs taken a few days later showing increasing shadowing of left lower zone, pleural effusion and cavities with fluid levels (arrows).

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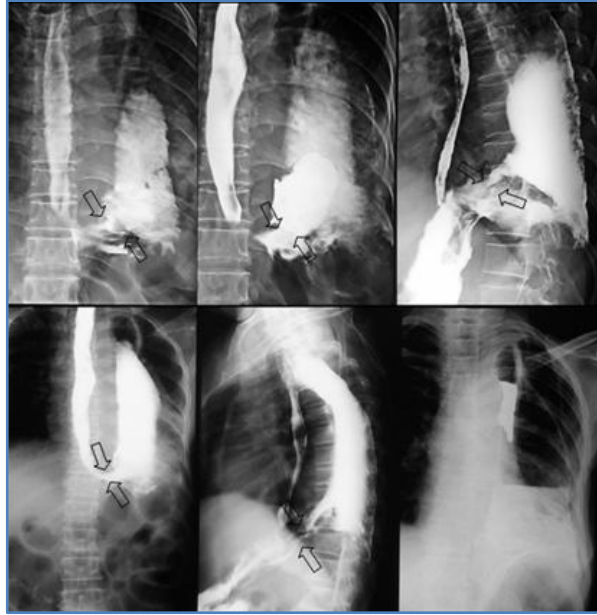


Figure 3

Figure 3: Upper gastrointestinal barium study showing free flow of barium posteriorly into the thoracic cavity from the fundus of stomach, via a narrow opening in the diaphragm (arrows), reaching upto the apex of the left lung and folding anteriorly.

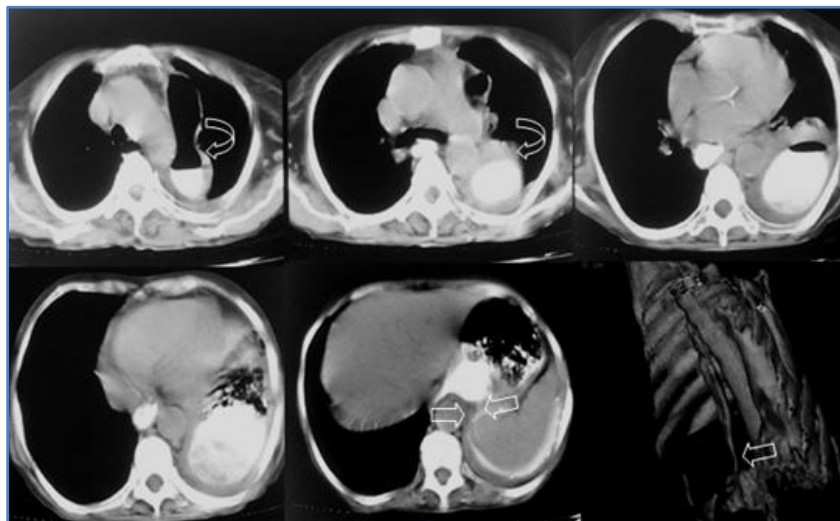


Figure 4

Figure 4: Computed tomography of the chest showing free fistulous communication (open arrows) and the thick walled contrast filled intrapleural cavity (curved arrows)

DISCUSSION: Kerala, a state in south-western India, is well known for its rubber plantations. Formic acid, the diluted form of which is used in coagulation of rubber latex hence becomes easily available to the plantation worker's household, making it a commonly used agent for deliberate self-harm in the region. Complications of ingestion of formic acid include oral cavity burns, metabolic acidosis,

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septicemia, dysphagia, esophageal stricture, gastro-intestinal perforation, aspiration pneumonia, ARDS, acute renal failure, chemical pneumonitis and shock. Rare complications include tracheo-esophageal fistula, pneumomediastinum and chemical injury to the cornea.

The case presented here is of this rare diagnosis. Initially presenting with features of toxic pneumonitis common in volatile poisoning which further progressed to consolidation and cavitation on serial chest X rays eluded us into a diagnosis of lung abscesses with pleural effusion. An unsuspecting fistulous track was detected following evaluation of dysphagia probably due to stricture esophagus, an expected but rare complication of corrosive poisoning.

Gastropleural fistula (GPF) is a rare complication of a number of disease processes.^{6, 11- 14}

Markowitz and Herter first described three situations that result in GPF formation.

- 1) When the intrathoracic portion of the stomach is perforated in the setting of esophageal hiatal hernia.
- 2) As a direct result of trauma, or after diaphragmatic hernia formation; and
- 3) When the stomach in normal intraabdominal position is perforated, and a resultant subphrenic abscess erodes and eventually perforates the diaphragm.¹⁰

GPF formation also occurs in association with intractable postoperative nausea and vomiting, esophageal surgery, congenital diaphragmatic hernia; gastric operation for obesity, and pulmonary resection.^{12, 14, 15} Diaphragm is an effective barrier to the spread of infection. Trans diaphragmatic spread of infection occurs by means of spontaneous diaphragmatic perforation. The diagnosis is usually made with contrast radiology, upper GI endoscopy and by testing of pleural fluid.^{4, 7}

For surgical approaches, both laparotomy and thoracotomy have been described depending on factors such as etiology and site of fistula. However a conservative approach with regular follow up for spontaneous regression has also been described.^{15,4}

CONCLUSION: The case reported here emphasizes the difficulties of establishing the diagnosis, which often requires radiological procedures including barium studies. With such a rare condition, the prognosis in such patients relates to early diagnosis and treatment. Thus, the clinicians should consider the presence of a gastropleural fistula in a patient presenting with recurrent and nonresponsive chest symptoms in patients with corrosive poisoning.

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Date of Submission: 12/02/2014.
Date of Peer Review: 13/02/2014.
Date of Acceptance: 01/03/2014.
Date of Publishing: 28/03/2014.