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## Case report

# Mediastinal abscess compressing the left atrium: A case report and literature review



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## ABSTRACT

The left atrium is a thin-walled cardiac chamber with a low intraluminal pressure. It is located in the inferoposterior part of mediastinum, near to structures such as the esophagus and descending aorta. This makes it vulnerable to compression by pathologic changes associated with the gastrointestinal tract, mediastinum, lungs, pericardium and aorta. Depending on the level of the compression the patient may be asymptomatic or develops signs of cardiac insufficiency. We describe a lethal course of left atrial compression due to a chronic mediastinal abscess secondary to a ruptured esophageal ulcer. To our knowledge this is the first such case described, in part because bordered mediastinitis with abscess development is very rare.

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## Case report

An 87 year-old woman was admitted to hospital for chest pain propagating to her back and aggravated by inspiration. The patient did not suffer from shortness of breath, but had been generally immobile for an extended period of time. She also complained of anorexia and weight loss during the previous year. In response to these complaints she had undergone gastroscopy about 6 months prior. Gastroscopy revealed multiple ulcers of the distal esophagus including one deep ulcer with swollen borders. No tumoral cells were found in the biopsy samples. As a result the patient was put on long-term therapy with omeprazole.

She had no fever on admission and had normal blood pressure (110/70 mmHg). She was in sinus tachycardia (105 bpm); however, there were no signs of ischemia on the

electrocardiogram (ECG). Bilaterally weakened breath sounds in the lower lobes of the lungs were found and crackles were noted during the physical examination. Laboratory tests showed only a slight elevation of C-reactive protein (16.1 mg/L; normal level 0.0–12.0 mg/L), leukocytosis ( $12.6 \times 10^9 \text{ l}^{-1}$ ; ref.  $4.0\text{--}10.0 \times 10^9 \text{ l}^{-1}$ ) and thrombocytosis ( $495 \times 10^9 \text{ l}^{-1}$ ; ref.  $135\text{--}400 \times 10^9 \text{ l}^{-1}$ ). Other laboratory results, including hepatic enzymes, renal function, troponin and coagulation, were normal. A chest X-ray revealed a bilateral fluidothorax, left-sided enlargement of the heart and hyperemia of the hilum of the lungs.

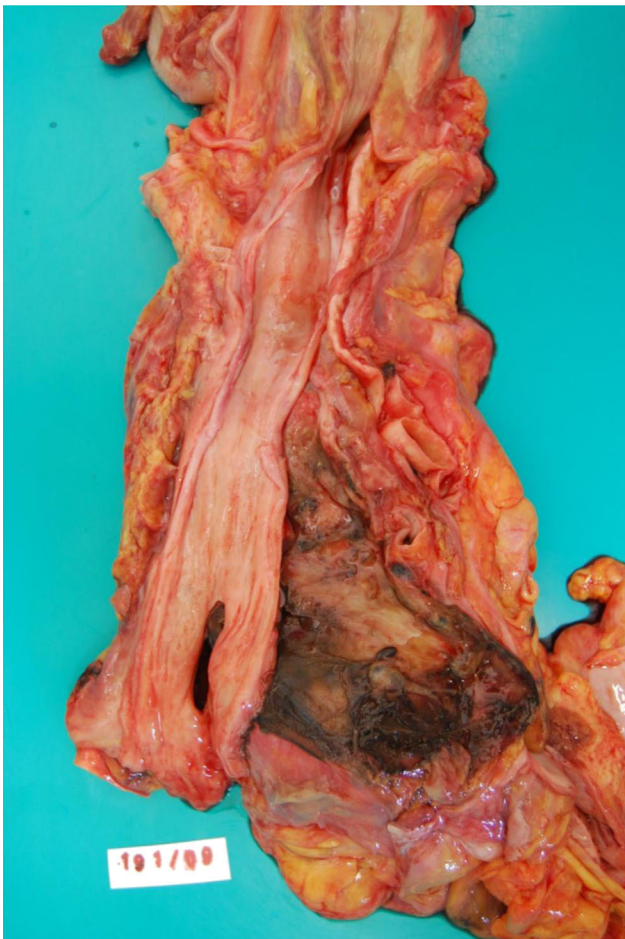
The patient received an intramuscular injection of Dolsin for analgesia. After several hours there was progressive worsening of symptoms, which included dyspnea and progression of cardiac insufficiency. An ECG showed tachycardia (145 bpm), although blood pressure was little changed (115/80 mmHg).

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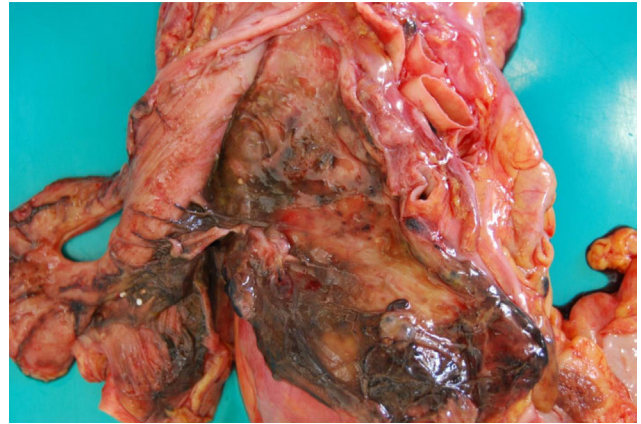
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Bed-side echocardiography revealed a structure of unknown origin compressing the left atrium with a residual channel of 10 mm at its maximal diameter. Left ventricular filling was depressed and there were signs of hyperkinetic circulation and low cardiac output (CO; indexed CO 1.7 L/min). There was no way to reverse the worsening status and patient died 14 h after admission to the hospital.

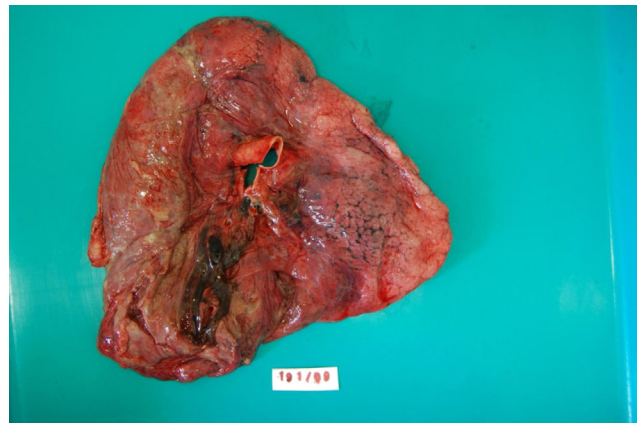
An autopsy discovered a perforated ulceration of the distal esophagus (Fig. 1) connected with a voluminous irregular abscess in mediastinum, filled with a green-brown mixture of chyme and inflammatory exudates. The abscess was on the posterior side of the left atrium and caused the compression observed on the echocardiogram (Fig. 2). The abscess had a diameter of 12 cm and reached the hilum of the right lung (Fig. 3). The inflamed area was bordered by adhesions that extended into both pleural spaces, but mostly on the right side. The exudate was similar to that associated with the abscess. This caused a secondary collapse of lower lobes of the lungs. A microscopic examination confirmed a benign perforating ulceration of the distal esophagus secondary to



**Fig. 1 – Extensively perforated ulcer found on the distal esophagus with an adjacent open and evacuated mediastinal abscess. The brown area represents the inner part of a voluminous abscess cavity of irregular shape and a diameter of 12 cm. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)**



**Fig. 2 – Detail view of the inner surface of the abscess cavity after removal of the esophagus (left). The abscess lies on the posterior wall of left atrium. In the upper right corner are the pulmonary veins (cut) entering the left atrium.**



**Fig. 3 – The abscess reaching the hilum of the right lung (brown dyed surface in distal part of the hilum). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)**

Barrett's disease, with a subsequent, large, nonspecific chronic abscess of the mediastinum.

## Discussion

Of the four heart chambers, the left atrium has the most intimate contact with the posterior mediastinum. The left atrium is relatively thin-walled and has a low intraluminal pressure. These features make it vulnerable to pathological compression by extracardiac structures. Clinical presentations can range from asymptomatic to cardiac insufficiency and even death. Left atrial compression leads to reduced left ventricle filling and reduced CO, as well as increased pressures in the pulmonary veins. The main diagnostic method is transthoracic echocardiography (TTE), assuming a good sonographic window is present. In other cases it may be better to use transesophageal echocardiography (TEE), although, e.g. hiatal hernias are typically difficult to examine using TEE. Use of an oral contrast, sparkling drink, may be useful, for rapid verification of a pathologic connection with the gastrointestinal tract.

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