Case report

Pneumopericardium due to intrapericardial perforation of a gastric ulcer

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Abstract

A 88-year-old male patient presented with fever, singultus and retrosternal pain. After 8 days of antibiotic therapy not resulting in clinical improvement, he suddenly developed a pneumopericardium. Contrast swallow and endoscopy showed intrapericardial perforation of a benign gastric ulcer. Excision of the ulcer and suturing of both the stomach and the diaphragm as well as lavage of the pericardium were done over a left thoracotomy. The patient recovered uneventfully.

Keywords: Pneumopericardium; Stomach; Ulcer; Perforation; Diaphragm

1. Introduction

Spontaneous pneumopericardium is a rare occurrence. Though many of its causes are banal, resulting in spontaneous healing, others are connected to severe conditions.

2. Case report

A 88-year-old male patient who was a non-smoker was admitted to a medical department with a tentative diagnosis of myocardial infarction. He complained about retrosternal pain, which had been increasing and relenting during the past 2 days, but had never completely subsided. Furthermore, dry cough and intermittent singultus were present. Apart from endoscopic resection of prostatic hyperplasia, he had no relevant history. In particular, there was no evidence of gastric complaints.

Clinical examination showed a reduced general condition, a poor nutritional status and discrete rales in the left lower lung field. The temperature was continuously elevated to 38–38.5°C. Routine laboratory investigations yielded an elevation of the C-reactive protein as well as leucocytosis and anaemia. Cardiologically, dilatative cardiomyopathy with aortic insufficiency I–II, thickening of the pericardium and pericardial effusion but no evidence of coronary heart disease were diagnosed. Chest roentgenograms revealed discrete opacities in the left lower lobe and a slight enlargement of the cardiac silhouette. Accordingly, therapeutic measures for cardiac recompensation as well as antibiotic therapy and corticosteroids for the treatment of pneumonia were initiated.

Though endosonography and computed tomographic (CT-scan) had been suggested to the patient, he strictly refused further investigations.

After 1 week, neither the laboratory parameters nor the subjective complaints of the patient had improved. A control chest roentgenogram revealed narrowing of the cardiac silhouette, the pericardium, however, remained distended suggesting a pneumopericardium. Only then the patient gave consent for further diagnostic measures.

CT-scan of the chest revealed a severe pneumopericardium and a small epididymal abscess-like formation in close vicinity to the gastric fundus. A connection of the abscess to the abdominal cavity was suspected. A swallow of water-soluble contrast medium showed a part of the gastric fundus apparently adherent to the pericardium (Fig. 1). Gastroscopically, an ulcer perforating into the pericardium was documented.

Lateral thoracotomy revealed the tendinous part of the left diaphragm adherent to the lateral circumference of the pericardium. By dissecting the pericardial surface, a gastric ulcer originating in the fundus and penetrating through diaphragm and pericardial wall into the pericardial cavity was found (Fig. 2). Apart from local pleuritis at the lingula which was in close vicinity to the perforation, no pathological findings in the pleural cavity were present.

Excision of the ulcer was done and both stomach and diaphragm were sutured over the thoracotomy. After exten-
sive lavage, the pericardium was left open for drainage over a chest tube with its tip positioned close to the perforation. Histologically, a benign ulcer of the stomach was found. The microbiological specimen from the pericardium revealed candida tropicalis and staphylococci. After antibiotic and antymycotic therapy, the pericarditis gradually subsided. After an uneventful recovery, the patient was discharged on the 24th postoperative day.

3. Discussion

In all non-traumatic cases of ectopic gas accumulation, two basic origins are possible: gas deriving from an intrinsic source (i.e. caused by rupture of a gas-filled organ) and gas originating in loco (i.e. by the action of gas-producing organisms).

These mechanisms are also true for pneumopericardium. Its most frequent cause is gas penetrating from the lung due to sudden increase of airway pressure or following severe infection, whereas hematogeneous infection with gas-producing organisms is rather uncommon [1,2].

Very rarely, pneumopericardium due to perforation of intestinal organs has been reported. Gastropericardial fistula associated to malignant or benign ulcer has been described in six instances [3–8]. Other reports of intestinal sources of pneumopericardium concern esophageal perforation or perforation of a duodenal ulcer [9,10].

Paraesophageal hiatal hernias with an herniated stomach are not rare nowadays, but a perforation of a gastric ulcer in such a herniated stomach is difficult to diagnose. Like in our case, patients complain of acute thoracic pain which rather lead you to an acute cardial problem than to a perforation of a gastric ulcer.

Though the risk of tension pneumopericardium is less than in cases with pericardio-pulmonary fistula, the course of pericarditis caused by perforation of intestinal organs is likely to be fatal due to septic complications [5,10]. The fact, that our 88-year-old patient survived is probably connected to the fact that pericarditis most likely developed gradually following penetration rather than sudden perforation, and that neither contamination of the pleural space nor of the abdominal cavity were present.

References


