

Atypical course of incarcerated post-traumatic diaphragmatic hernia


Olexandr Kryzhanovskiy, Serhii Dolzhkovyi, Volodymyr Sheiko, Valery Zhamardi

POLTAVA STATE MEDICAL UNIVERSITY, POLTAVA, UKRAINE

ABSTRACT

The article focuses on the instrumental imaging methods which greatly enhance the possibilities when arriving at correct and quick diagnosis of acute surgical pathology. Analysis of clinical and anamnestic data of the disease course and the results of instrumental research methods made it possible to arrive at clear clinical diagnosis, determine the indications for surgical treatment in this specific clinical case. The use of modern visualization methods while examining the patients prevents errors in diagnosis and helps to determine the optimal treatment tactics.

KEY WORDS: post-traumatic diaphragmatic hernia, acute pancreatitis, differential diagnosis

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INTRODUCTION

Abdominal pain is the leading symptom in most acute and chronic diseases of the abdominal cavity. Considering the nature of pain, its localization, intensity and other symptoms, it is possible to suspect certain pathology. However, in case of atypical course of diseases, the symptoms may be false, not typical, which can result in clinical errors in diagnosis and treatment tactics. Therefore, it is often not possible to arrive at clinical diagnosis based only on the clinical presentation [1–4].

In the clinical picture, a diaphragmatic hernia is accompanied by a painful symptom in patients. Also the symptoms include dysphagia, belching, nausea, vomiting, difficulty breathing, etc. Pain is usually localized in the epigastric area or behind the sternum, in the right or left hypochondrium, depending on the hernia location. The same symptoms can be present in other diseases of the abdominal cavity. Gastric volvulus or incarcerated hernia is associated with the intense pain, which can simulate acute surgical diseases, namely, acute pancreatitis, acute cholecystitis, perforated ulcer, etc [5–8].

CASE REPORT

A 20-years-old female patient presented to the district hospital acutely unwell with the complaints of constant pain in the left hypochondrium irradiating to the left half of the back, urges to vomit, dry mouth, general weakness. The initial diagnosis included «Left-sided renal colic. Chronic pancreatitis in the stage of exacerbation».

We did not use modern instrumental examination methods due to the lack of certain conditions in the hospital. Thus, the symptomatic conservative treatment was provided (infusion therapy, antispasmodics, painkillers). But the patient's condition became worse. She was referred to the surgical department of the regional hospital with a diagnosis «Acute pancreatitis».

On admission to the hospital (according to the records in the inpatient card), the general condition of the patient was determined as moderate severe, the patient was active. Physical examination revealed the pale pink skin, muffled heart tones, heart rate – 100 beats/min., BP – 100/60 mmHg. On auscultation: breathing was practically not heard on the left side, it was vesicular on the right one. The abdomen was soft, painful in the epigastric area, both right and left hypochondrium, more painful in the left one. Soft elastic 15x10 cm mass was detected on palpation of the left side, in the infracostal area.

Laboratory tests data. Complete blood test: Hb – 143 g/l, erythrocytes – $4.2 \times 10^{12}/l$, leukocytes – $11.6 \times 10^9/l$, rod nuclear – 10%, segment nuclear – 70%, eosinophils – 1%, basophils – 1%, lymphocytes – 13%, monocytes – 5%. Urinalysis: specific gravity – 1016, reaction – acidic, protein – traces, glucose – absent, erythrocytes – 24-26 in the field of vision, leukocytes – 2-3 in the field of vision, bacteria – absent. Biochemical blood test: total protein – 52 g/l, potassium – 4.4 mmol/l, sodium – 155 mmol/l, urea – 5.7 mmol/l, creatinine – 102 $\mu\text{mol}/l$, total bilirubin – 22.3 $\mu\text{mol}/l$. Coagulogram: prothrombin

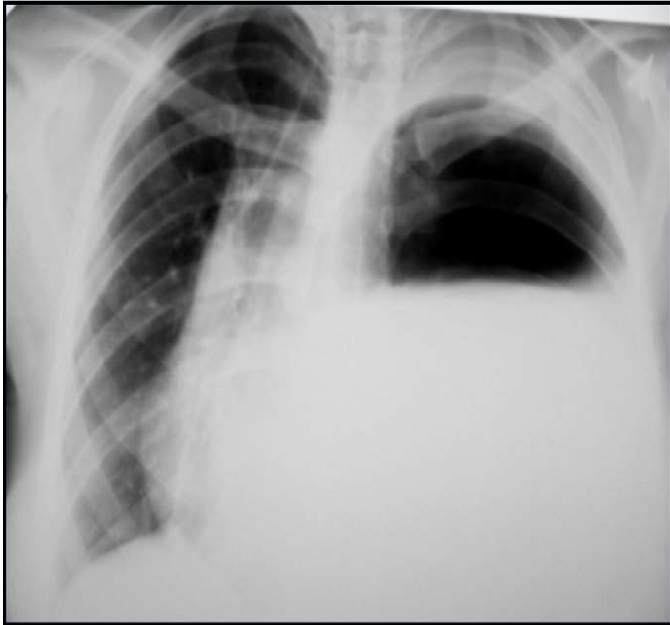


Fig. 1. X-ray of the patient's chest.

index – 96.6%, fibrinogen – 3.1 g/l. Urinary amylase according to Wohlgemuth – 32 units, blood glucose – 3.6 mmol/l. Based on the data of laboratory tests, it was impossible to confirm any diagnosis.

ECG data: heart rate – 105 beats/min, electrical axis of the heart was shifted to the left by 69 degrees. ECG revealed the intracardiac conduction disorder and enlargement of the left atrium. Considering the data obtained, a myocardial infarction (anterior and lateral lower) was suspected. But the patient's condition did not correspond to the clinical presentation.

Abdominal ultrasound findings: liver – the right lobe was 12.5 cm, the left lobe – 2.9 cm, was not enlarged, homogeneous in structure. Gallbladder was oblong – 6.2x2.6 cm, wall – 0.26 cm with septal bile sediment. Choledochus – 0.4 cm, pancreas was not visualized, right and left kidneys were in typical position, parenchyma – moderately echogenic. Ultrasound examination re-

vealed a great amount of gastric content, small amount of free fluid in the left half of the abdomen. Formation of increased echogenicity 16.2x10.0 cm in size, uniform in structure was detected in the left hypochondrium above the stomach (similar to spleen). The spleen was not visualized in a typical position; a great amount of free fluid between the intestine loops could be observed. Conclusion: formation in the abdominal cavity, ascites.

On admission, a chest X-ray was provided to the patient (Fig. 1.).

Radiological findings showed intense opacity in the left half of the thoracic cavity, the level of fluid up to the 3rd rib and free air above it. Lung tissue on the left was not traced. The medial shadow was shifted to the right, squeezing the right lung. X-ray of the abdominal organs did not reveal free air and fluid levels. The presentation of the tense left-sided pneumo-hydrothorax was observed.

The clinical presentation did not correspond to examination data. The patient underwent radiography of the gastrointestinal tract for differential diagnosis, which detected accumulation of contrast agent in esophagus, as well as minor traces up to 4 cm from the cardia in stomach. Conclusion: radiological signs of diaphragmatic hernia were present.

The confirmation of the clinical diagnosis involved 3D spiral computer tomography of the thoracic cavity with modeling (Fig. 2).

CT scan showed a significantly dilated stomach with small omentum, small intestine loops and partly colon loops on the left side of the thoracic cavity. Small amount of fluid content and edema of the mesentery were also visualized. The left crus of the diaphragm was not clearly visible. The left lung was completely collapsed and lost pneumatization. The organs of the mediastinum were sharply shifted to the right. The right lung was compressed and pneumatized within normal range. The liver had normal size and shape, the paren-



Fig. 2. 3D spiral computer tomography of the thoracic cavity with modeling.

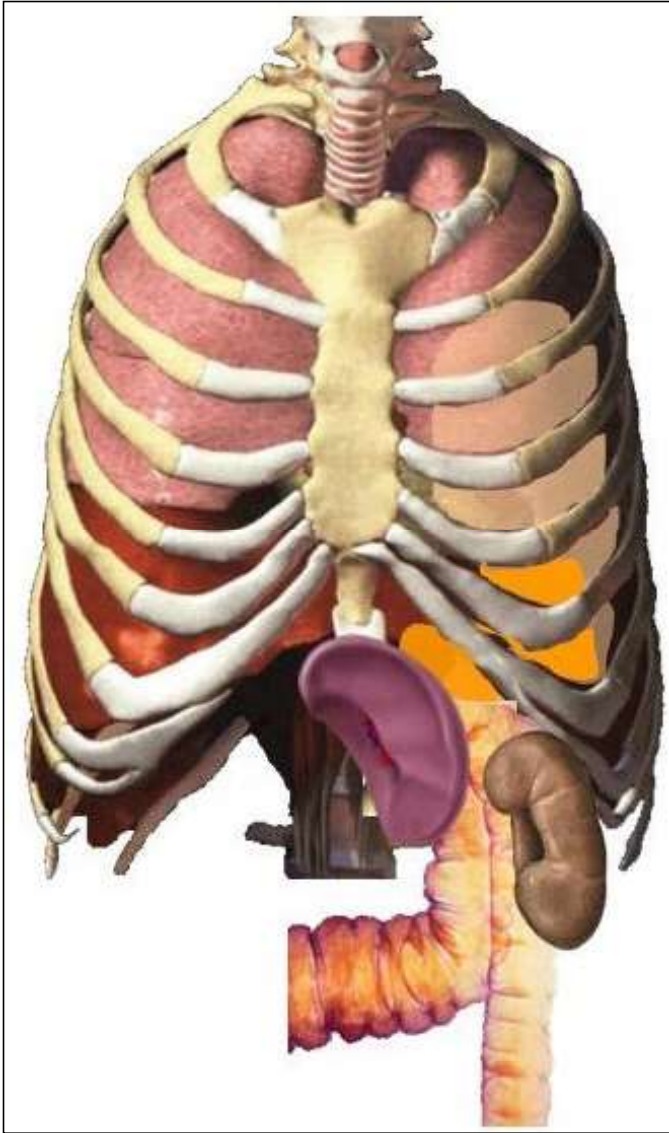


Fig. 3. Diagnosis «Post-traumatic diaphragmatic left-sided hernia with gastric and colon incarceration and upward displacement of the spleen and left kidney».

chymal density was homogeneous. The pancreas had homogeneous density and compressed in the caudal projection. Kidneys and adrenal glands had normal shape and position, homogeneous. Conclusion: CT scan detected the signs of rupture in the left dome of the diaphragm.

When working with the retrospective investigation of the medical history, we determined that 3 months ago the patient had a domestic injury (a fall from the height of 3 meters with the damage to the left half of the chest). She did not seek medical help and did not have any significant complaints. Her condition was stable.

The data of additional imaging techniques made it possible to arrive at the diagnosis «Post-traumatic diaphragmatic left-sided hernia with gastric and colon incarceration and upward displacement of the spleen and left kidney» (Fig. 3).

The surgery was performed under general anesthesia according to absolute indications. It included upper midline laparotomy, diaphragmotomy up to 8 cm, elimination of incarceration and gastric and colonic volvulus. Incarcerated in the diaphragm organs were placed into the abdominal cavity. The viability of the organs was preserved, constriction mark on the stomach and colon did not have the signs of necrosis of their walls. Plastic surgery of the diaphragm was carried out applying patient's own tissues with duplicature; a transnasal probe was introduced into the stomach and the initial part of the small intestine as well as the drainage of the left pleural cavity and abdominal cavity with tubular drains. It should be noted that the narrowing area on the stomach and colon was not peritonized during the operation.

The postoperative management included analgesia, correction of water and electrolyte balance, perioperative antibiotic prophylaxis. The patient was activated on the 2nd day, enteral nutrition was started on the 3rd day.

General or local complications were absent. The treatment course lasted from April 13 to May 4, 2022. The patient was discharged from the hospital on the 10th day after the surgery. Follow up after 1 year: did not have complaints, worked in previous specialty, satisfactory quality of life.

The causes of post-traumatic hernia are rupture of the diaphragm and its layering when inertial injuries of the chest and abdomen occur. Such hernias are more often left-sided. Post-traumatic diaphragmatic hernias are quite rare and occur in 0.8-7% of thoracoabdominal trauma cases [9–11].

According to the literature data, the time after trauma to the formation and clinical manifestations of post-traumatic diaphragmatic hernias can range from a few weeks to 50 years. In more than 50% of cases, hernias may not have clinical manifestations, and symptoms appear after the occurrence of complications [1–4].

The atypical course of surgical diseases usually does not allow arriving at a clinically clear diagnosis and determining the tactics and methods of treatment. The use of modern imaging techniques helps to avoid errors in clinical diagnoses and determines the optimal treatment tactics for patients [6–10].

Diagnosis of hernia, in addition to the analysis of the clinical picture and anamnesis data, includes radiography with the introduction of contrast material, esophagoscopy and research of the contractile activity of the esophagus (manometry). In the event that the hernia is asymptomatic and does not cause discomfort, treatment will be aimed at choosing monitoring tactics and lifestyle correction. Thus, the patient should eat properly, avoiding overeating, not lie down immediately after eating, control body weight, etc. [12–14].

In addition, it is possible to carry out drug therapy, first of all, with the addition of gastroesophageal reflux disease (for example, prokinetics, proton pump inhibitors, antacids). The absence of results after conservative therapy and the severe course of the diaphragmatic hernia require surgical intervention followed by suturing of the hernial gate, ligation of the esophageal ligaments, fixation of the stomach in the abdominal cavity but also carrying out funduplications according to one of the methods (fundoplication according to Nissen) [7–9].

CONCLUSIONS

The combination and analysis of clinical and anamnestic data of the disease course and the results of instrumental research methods made it possible to arrive at clear clinical diagnosis, determine the indications for surgical treatment in this specific clinical case. The use of modern visualization methods while examining the patients prevents errors in diagnosis and helps to determine the optimal treatment tactics.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

CORRESPONDING AUTHOR

Olexandr Kryzhanovskyi

Poltava State Medical University

23 Shevchenko st., 36011 Poltava, Ukraine

e-mail: umsasurg2@gmail.com

ORCID AND CONTRIBUTIONSHIP

Olexandr Kryzhanovskyi: 0000-0001-8014-8424 **B** **D** **F**

Serhii Dolzhkovyi: 0000-0003-2813-3051 **B** **D**

Volodymyr Sheiko: 0000-0001-9862-6543 **A** **E** **F**

Valery Zhamardiy: 0000-0002-3579-6112 **F**

A – Work concept and design, **B** – Data collection and analysis, **C** – Responsibility for statistical analysis, **D** – Writing the article, **E** – Critical review, **F** – Final approval of the article

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