

Boerhaave's Syndrome: A Case Presentation

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Case Report

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Abstract

Background

Spontaneous oesophageal rupture is a rare and non-common presentation which requires a high level of clinical suspicion.

Case presentation

A 39-y-old patient presented with atypical symptoms of severe abdominal pain, constipation, and vomiting. Abdominal pain resolved after initial treatment, thought to have acute abdominal pathology, initial chest X-ray & abdominal X-ray were normal studies with no identified acute pathologies. The patient was kept under observation till deterioration happened, a computed tomography scan (CT scan) was done for suspected intra-abdominal sepsis, and then images showed a ruptured oesophagus. Eventually, the patient was admitted for urgent surgical intervention.

Conclusions

This case report describes a rare Emergency Department (ED) presentation which requires a high index of suspicion, early diagnosis, and urgent management.

1. Introduction

Boerhaave's syndrome is a rare but serious condition that is characterized by oesophageal non-traumatic rupture, it usually happens after forceful vomiting. If not diagnosed and treated early, it can be fatal. Challenge is the variation in clinical pictures and presentations [1]. It requires urgent intervention [2].

Epidemiological data regarding oesophageal perforation is sparse. In a national study in Iceland, the incidence was reported as 3.1 per million population [3]. A systematic review reported that spontaneous oesophageal perforation incidence among the other causes is (38%) [4]. A case of postoperative oesophageal rupture was reported [5]. Around 70% of the oesophageal rupture is thoracic [6–7]. Clinical presentation usually depends on the site, size, and onset of perforation, according to Medscape : Patients with cervical oesophagus perforation may present with neck or upper chest pain. Patients with middle or lower oesophagus perforation may present with interscapular or epigastric discomfort. Findings of pleural effusion are common. If present, subcutaneous emphysema is particularly helpful in confirming the diagnosis. Subcutaneous emphysema is seen in 28–66% of patients at initial presentation. More typically, subcutaneous emphysema is found later. Other classic findings include tachypnoea and abdominal rigidity. Tachycardia, diaphoresis, fever, and hypotension are common, particularly as the illness progresses. However, these findings are non-specific. The mortality risk is about 13% [4]. Different diagnostic modalities are being used, CT confirmed the diagnosis (38.7%), X-ray (36.6%) and endoscopy (37.4%) [4]. Using contrast media with/or a CT scan has a false negative rate of 10% [7–8]. A rapid diagnosis with chest drains after diagnosing a left-sided pleural effusion/pneumothorax is indicative

when the chest tube drains bile or food particles [9]. Early management, involvement of senior experienced physician and early diagnosis has been shown to have a good impact on decreasing mortality [10]. Treatment is usually surgical, depending on the severity of perforation, and some reports described recovery also after conservative management [11]. There is no clear data about the long-term survival rates after Boerhaave's syndrome, some studies revealed three years survival of 90% with surgical treatment [11].

2. Patient Information

A 39-year-old patient presents to the emergency department in Hamad General Hospital in Qatar (a large tertiary hospital), the patient complained of severe abdominal pain and two episodes of forceful vomiting that had started 4 hours before he presented to the ED. The patient described the pain as severe generalized (all quadrants), colicky with no radiation to any area, he had constipation for 2 days, and no active vomiting on presentation. The patient had a history of chronic alcohol intake, last alcohol consumption since one week (as per the patient himself). Examination revealed tenderness, and rigidity in all abdominal quadrants, and chest examination was normal. Vital signs were normal, blood pressure (SBP150), pulse 105/min, RR 20/min with normal temperature.

3. Treatment

After initial analgesia, the patient showed improvement and started to localize the pain to the epigastrium and periumbilical area. Given the history of alcohol consumption and normal chest & abdomen X-rays, the patient was investigated as a case of possible pancreatitis and was kept NPO (Nil Per Oral). After 4 hours of observation, the patient was pain-free, still in constipation and had no vomiting.

On further reassessment, the patient was not in severe pain, still constipating but had a normal bowel sound, and a rectal exam showed stool matter. Enema was given and patiently passed stool.

The patient was kept for observation, IV antibiotics were commenced because he was febrile, and WBCs came higher in repeat CBC. He then gave a history of URTI cough and expectoration.

4. Investigations

Table 1: CBC showing leucocytosis and neutrophilia.

Haematology	15/7 /17 06:39	15/7 /17 14:45	15/7/17 18:37	16//7/17 04:19	Unit measurement and reference range
WBC (White blood cells)	18.2	24.4	25.1	24	4.5 -11 X 1000/mm ³
RBC (Red blood cells)	5.8	5.8	5.3	5.5	4.5 - 5.9 X 10 ⁶ /mm ³
Platelet	155	153	151	150	150 -450 x 1 000/mm ³
MPV (mean platelet volume)	11.1	10.8	11.3	11.3	fl
Neutrophil	15.3	21.8	22.6	20.7	2-7.5 %

Normal RBCs, WBC count is building up with the neutrophils raising through the course of observation.

Table 2: Normal liver function results, normal amylase, and elevated CRP.

	15/7 /17 06:39	15/7/17 21:05	16//7/17 04:19	Unit measurement and reference range
Albumin		37	35	35 – 50 g/L
ALK Phos (Alkaline phosphatase)		71		60 – 306 U/L
ALT (Alanine Transaminase)		19		Up to 42 U/L
AST (Aspartate aminotransferase)		Sample haemolyzed		Up to 37 U/L
Amy-p (Amylase)	12			25 - 125 IU/L
Lipase	17			10-140 IU/L
Glucose	4.9			4 – 5.9 mmol/L
CRP (C Reactive Protein)	46	172		<10 mg/L
Lactic Acid			2.8	0.5 - 2.2 mmol/L

Normal levels of liver functions, lipase and amylase ruled out the acute pancreatitis and cholecystitis which raised mor suspicion about the cause of symptoms

Table 3: Mild hypokalaemia, and normal troponin

Laboratory view	15/7 /17 06:39	Unit measurement and reference range
Na (sodium)	135	135 – 145 mEq/L
K (potassium)	3.3	3.6 – 5.2 mmol/L
Creatinine	73	61.9 – 114.9 µmol/L
Lactic acid	2.1	0.5 -2.2 mmol/L
Troponin	<10	< 10ng/mL

Normal serum electrolytes initially, normal creatinine level wasn't pointing towards organ failure, also normal range of troponin with the initial ECG were not in favour towards acute cardiac event.

5. Case Progression

After 24 hours in the observation unit, the patient started to develop chest pain, high-grade fever, and tachycardia. Antibiotics were changed to sepsis protocol and an immediate chest X-ray (Figure 3J) was ordered. X-ray showed wide mediastinum with mediastinal emphysema, suspected Aortic Dissection (A.D.), and multiple infiltrations. Immediate CT chest with contrast oral and IV was ordered to investigate oesophageal rupture and it was positive for features suggesting oesophageal rupture with the mediastinal collection and pleural effusion. (Figure 4–5)

Urgent cardiothoracic surgery consultation was done, and a barium swallow was done which confirmed the diagnosis of intrathoracic oesophageal rupture.

The patient was shifted to CTICU (Cardiothoracic Intensive Care Unit) where urgent endoscopy was done in the theatre.

6. Outcome And Follow-up

After admission, OGD was done and revealed oesophageal perforation at about 33 cm from the incisors, and the GEJ was at 40 cm at the oesophageal opening of the diaphragm. Treated with stenting which showed migration then it was replaced. The stent was removed after 6 weeks. The patient resumed feeding and was discharged home after 2 months of admission.

The patient had his first follow-up in the clinic, and he was doing well eating all solid food with no sequela.

7. Discussion

In this case, we did not detail the surgical management as we focused on the emergency department course of the Boerhaave's syndrome and the challenges that encounter any clinician in the diagnosis.

This case was very close to being named atypical presentation because of some points that ambiguated the diagnosis:

1. The patient presented to ED with abdominal pain only, colicky in nature generalized, and he did not link the pain to vomiting. The pain was never in the chest, shoulders or back. Given the fact that the perforation was intrathoracic, however, the low site of perforation, only 7 cm above the diaphragm made the site of pain in the abdomen.
2. Chest X-ray was taken 5 hours after symptoms and yet showed no changes at all. In our perspective, this could be explained by the containment of the perforation after the initial release of contents. And we favour that this increases the emphasis on low sensitivity for such tests to rule out the condition.
3. The patient became pain-free after analgesia, his main complaint lately was fever, but because of inflammatory markers and initial presentation, he was not discharged.
4. The concomitant occurrence of URTI and fever, which happened 3 days before presentation, hindered further investigating of the septic focus for such infection.

8. Conclusion

What we conclude from this case is that a high index of suspicion should be made for the diagnosis of spontaneous oesophageal perforations. Emergency physicians should not wait for a full-blown picture or set of typical findings to diagnose it.

Despite the fact being rare, Boerhaave's disease should be on the list of possible diagnoses, especially if risk factors like alcoholism and a history of vomiting exist.

Also, the diagnostic process should be guided by a clinical picture, but it should not only be bound to it. The presence of findings like leucocytosis and high inflammatory markers should widen the range of differential diagnoses and push to further diagnostic modalities, like early CT abdomen, even if pain improved, in the case that definitive diagnosis is not already obtained.

Abbreviations

CT: Computed tomography.

ED: Emergency Department.

SBP: Systolic blood pressure.

RR: Respiratory rate.

NPO: Nil per oral.

IV: Intravenous.

CBC: Complete blood count.

URTI: Upper respiratory tract infection.

AUD: Alcohol use disorder.

CTICU: Cardiothoracic Intensive Care Unit.

OGD: Oesophago-Gastro-Duodenoscopy.

GEJ: Gastro-esophageal junction.

Declarations

Ethical Approval and Consent to Participate

The ethical approval is Exempt from the Medical Research Center at Hamad Medical Corporation, Doha, Qatar and Prince Sultan Military Hospital, Taif, Saudi Arabia. We certify that the study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

A sentence confirming that written informed consent was obtained from all participants or, if participants are under 16, from a parent and/or legal guardian.

Consent for publication

Written informed consent to publish this information was obtained from the patient.

Availability of data and materials

The data used in the review is available from the corresponding author on a reasonable request.

Competing interest

The authors declare that they have no competing interests.

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This study is not funded by anybody, and all authors confirm that they didn't receive funds for that case study.

Additional Points

Patient Perspective. The doctors' care was amazing, they saved my life, I was suffering and was in severe pain, and I thought I will never pass through this. I would like to thank and appreciate what the team has done for me.

Authors' Contributions

All authors contributed to the study's conception and design. Material preparation, data collection and analysis were performed by [Mahmoud Saqr], [Ahmed Almasloot], [Osama Hawana] and [Mahmoud Eltawagny]. The first draft of the manuscript was written by [Mahmoud Saqr] and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Not applicable.

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Figures

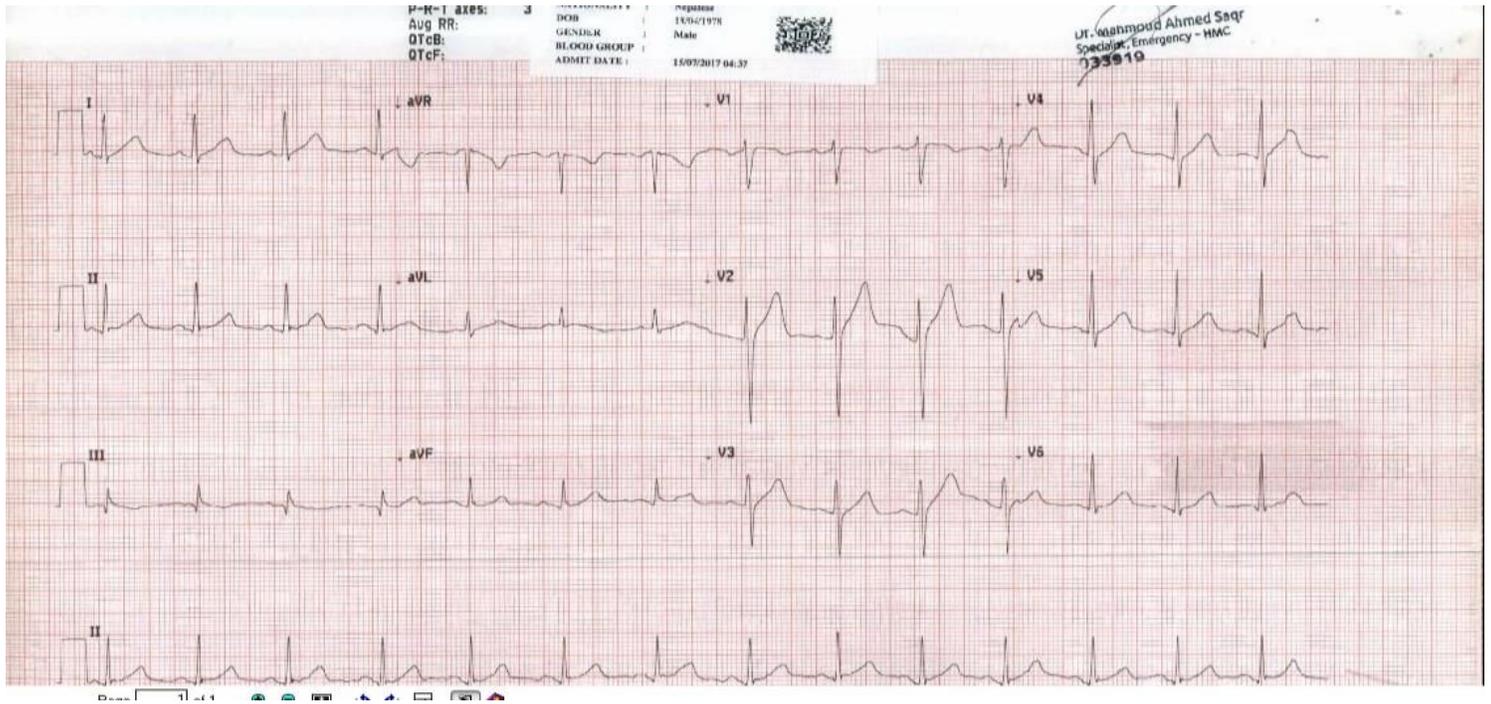


Figure 1

ECG, showing normal Sinus Rhythm, and no /ischemic Changes.



Figure 2

CXR showing normal mediastinum and no air under diaphragm.

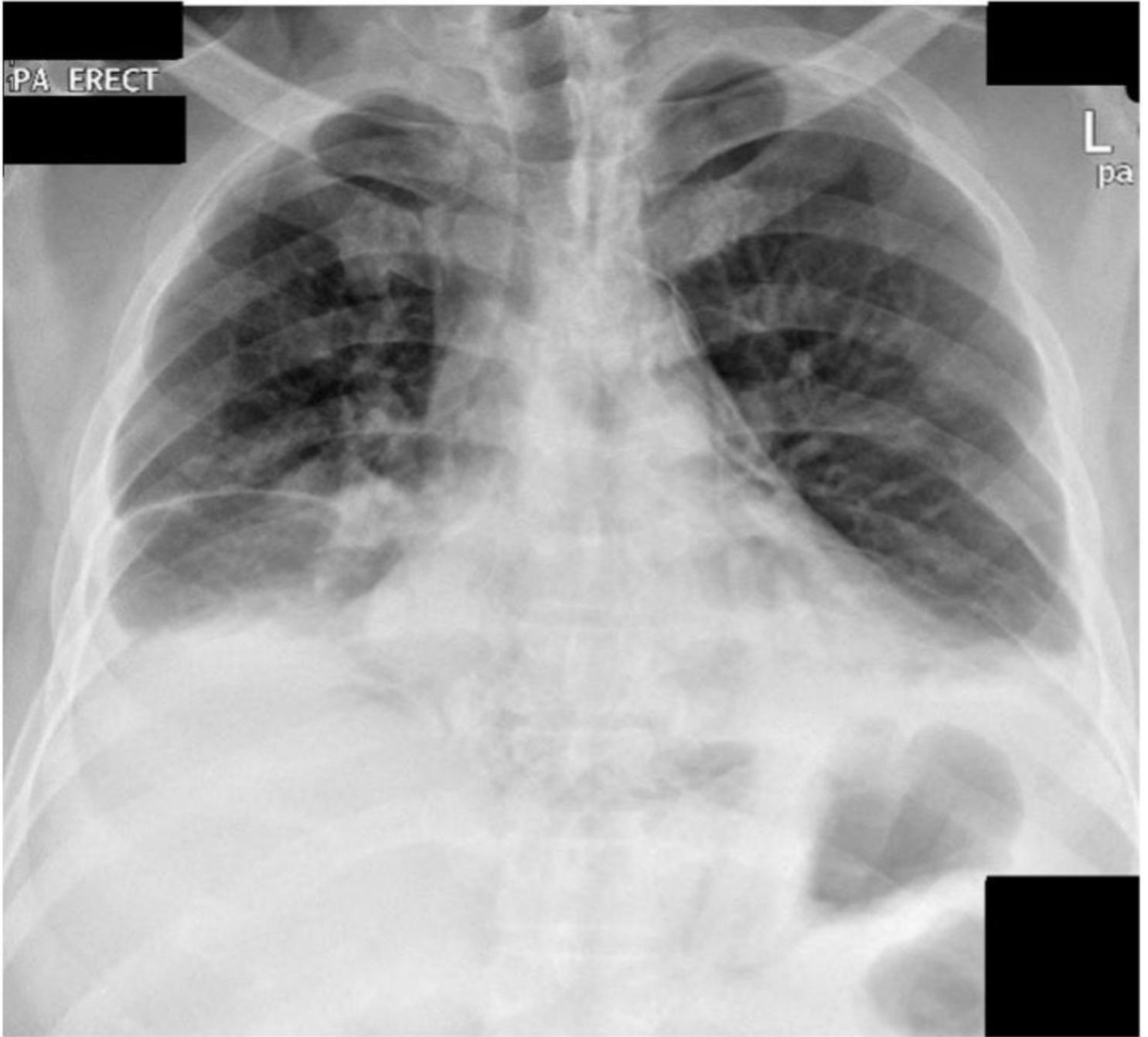


Figure 3

CXR showing Wide mediastinum, mediastinal emphysema, and multiple infiltrations.

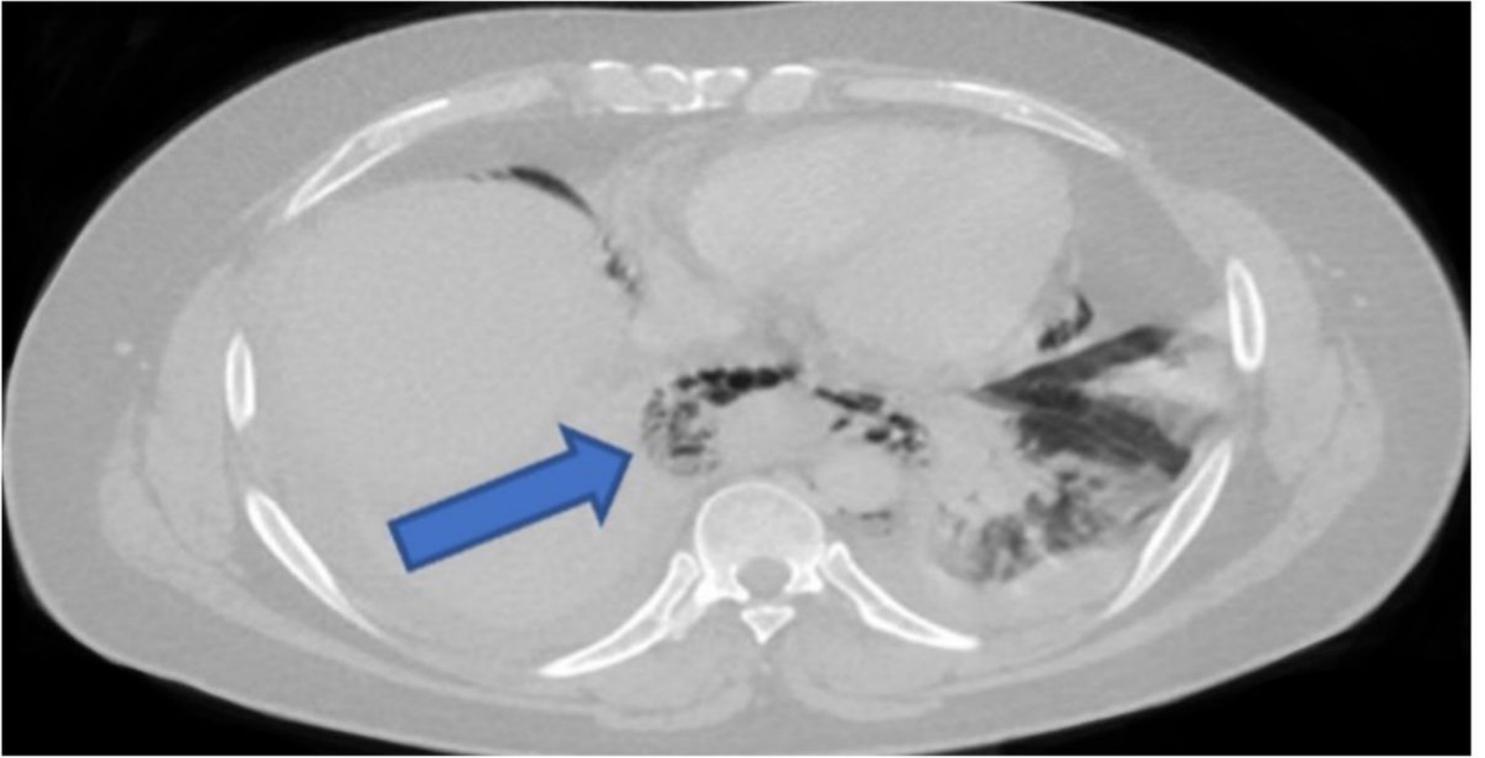


Figure 4

CT chest with oral and IV contrast showing signs of rupture oesophagus

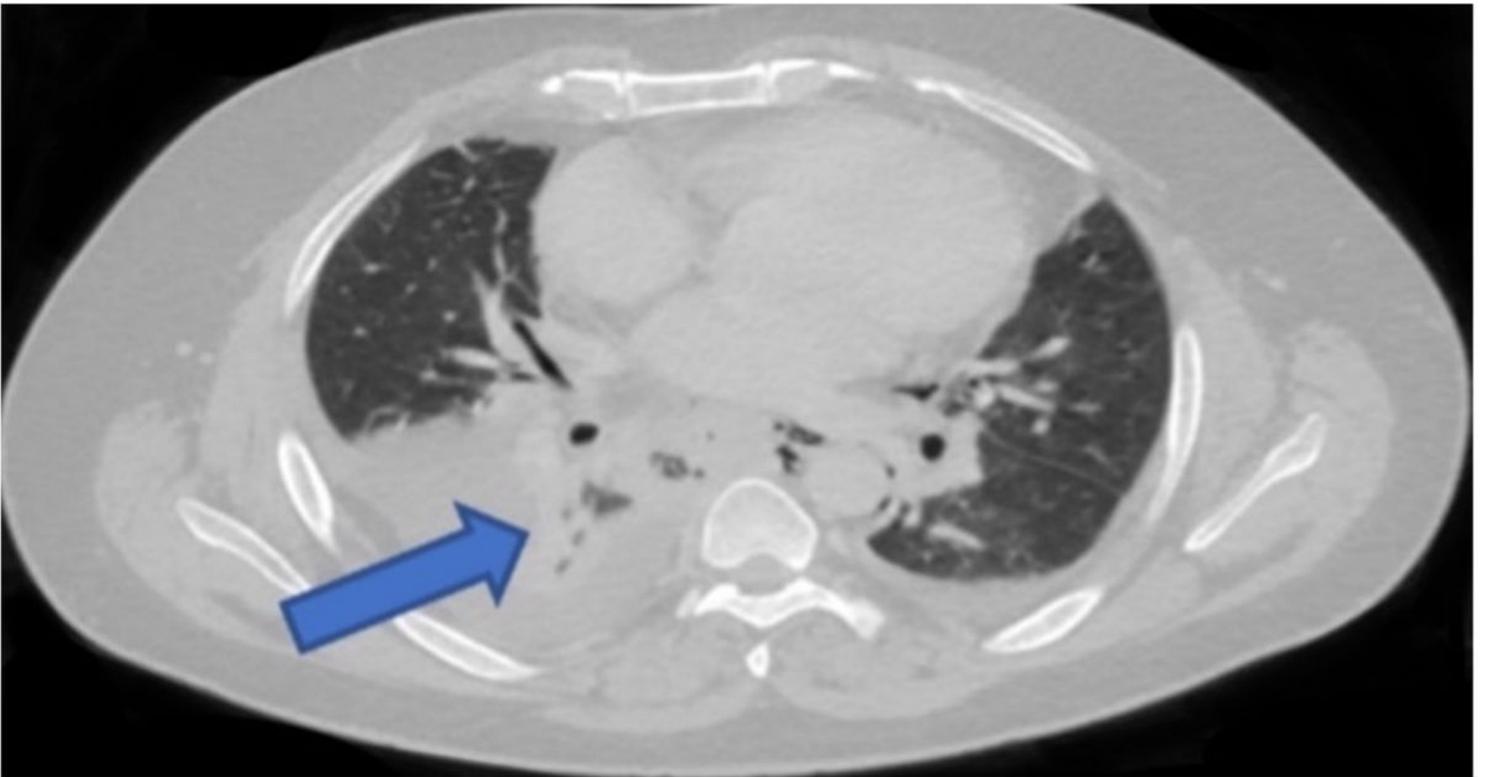


Figure 5

with oral and IV contrast showing signs of rupture oesophagus, mediastinal collection, and bilateral pleural effusion.