CASE REPORT

TRAUMATIC RIGHT DIAPHRAGMATIC HERNIA; A DELAYED PRESENTATION

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Diaphragmatic rupture following blunt or penetrating thoraco-abdominal trauma is frequently missed. It presents years later with herniation of abdominal viscera. Surgical treatment should be sought for when diagnosed. A 56 year old female presented to emergency with traumatic right diaphragmatic hernia, road traffic accident 8 years ago when she sustained multiple rib fractures on the right side. Upon diagnosis, successful primary hernia repair was performed. Non-specific clinical and radiological features of diaphragmatic hernia (diminished breath sounds, respiratory distress, orthopnoea, dyspnoea, hydro-pneumothorax, and mediastinal shift and lung collapse) lead to delayed or missed diagnosis. Patients present months to years later with complications. By including it in the differentials while managing a trauma patient along with collaboration of the radiology department, the chances of missing this finding would be lowered substantially.

Keywords: Diaphragmatic hernia; Trauma; Intestinal obstruction
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INTRODUCTION

Diaphragmatic injuries related to trauma are rare and frequently missed.[1,2] Acquired diaphragmatic hernias occur after blunt or penetrating thoracic or abdominal trauma. Right sided diaphragmatic hernia is rare because of protection by the liver.[1,2] Moreover, right hemidiaphragm is congenitally stronger. Right sided hernia occurs in 0.8–3.6% of blunt trauma cases.[3]

Traumatic diaphragmatic hernia (TDH) is frequently missed in the acute trauma setting because of non-specific features, lack of familiarity with the condition and initial small size of hernia.[4]

CASE PRESENTATION

A 56 year old female, with no known comorbid, presented to the emergency department with severe shortness of breath, right upper quadrant pain and vomiting for 4 days. Pain radiated to right shoulder tip. She gave a history of road traffic accident 8 years ago, when she sustained multiple rib fractures on the right side.

She was hypertensive, 200/100 mm Hg, and tachypneic, 26 breaths/min. Her abdomen was tender in right upper quadrant. She had reduced breath sounds on right side.

Her routine investigations and amylase were normal. Arterial blood gas analysis revealed uncompensated respiratory acidosis with metabolic acidosis. Chest radiograph showed effusion.

Multiple bowel loops occupied whole of right hemithorax on CT scan, along with contralateral mediastinal shift, partial collapse of ipsilateral lung and a 3cm defect in right hemidiaphragm (Figure-1 and 2).

At that stage patient was unfit for surgery due to dehydration, her persistently high blood pressure and respiratory acidosis, so she was optimized in collaboration with the cardiology department to stabilise her blood pressure and correction of acidosis by oxygen inhalation.

On the 10thday, surgery was performed. An upper midline laparotomy to assess entire bowel for viability was done. Small bowel was distended, herniating into right hemithorax . (Figure-3) Hernia was reduced. The defect was repaired with interrupted mattress polypropylene sutures (Figure-4), and abdomen was closed. A chest drain was placed in the right hemithorax. Post-operatively, patient remained stable. Chest drain was removed on 3rd day and patient was discharged on day 7. Follow up was unremarkable.

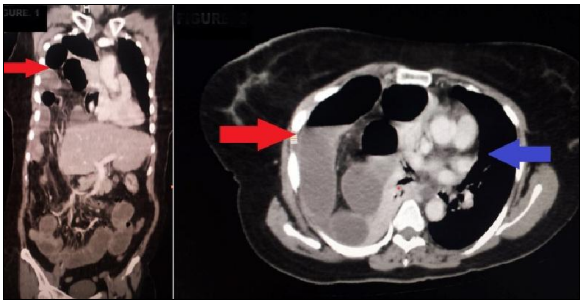

Figure-1: Coronal Section. Figure-2: Transverse section.
CT scan showing bowel loops in right hemithorax (red arrow), contralateral mediastinal shift and ipsilateral lung partial collapse (blue arrow).

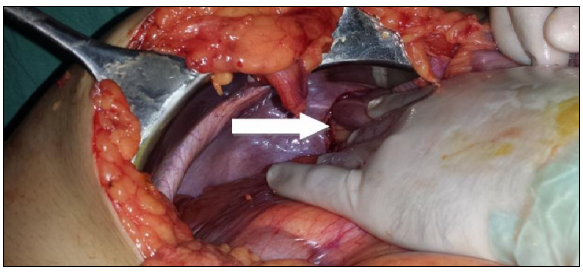

Figure-3: Approximately 3 cm defect in right hemidiaphragm (white arrow).

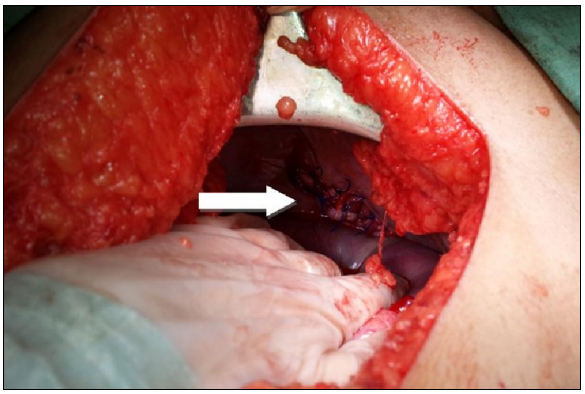

Figure-4: Repaired diaphragmatic defect with interrupted mattress polypropylene sutures (white arrow).

DISCUSSION

Trauma is the leading cause for acquired diaphragmatic hernias. Incidence of traumatic diaphragmatic injuries ranges from 5.2–17%, wherein blunt injuries share 0.8–1.6%.[1] However, diaphragmatic rupture along with diaphragmatic hernia occurs in 3% of abdominal injuries.[4] Traumatic diaphragmatic hernia is more common in males than in females.[5] Blunt injury leads to 74% of acquired hernias.[6]

Delayed presentation occurs in as many as 30%[7], because most hernias are small to begin with but enlarge due to pressure differences between thoracic and abdominal cavities to allow herniation[2].

CT scan is the diagnostic tool of choice with a sensitivity of 73%. Signs on CT include discontinuation of the diaphragm, Collar sign, visceral herniation, elevated liver hilum, elevation of hemidiaphragm and dependent viscera sign.[8]

Diaphragmatic rupture and subsequent herniation pass through three phases: initial phase, at the time of trauma; delayed phase, where defect enlarges or herniation occurs (asymptomatic); and obstructive phase, where patient presents with complications of hernia .e.g., obstruction, strangulation or posterior rupture.[1] Most common organs that herniated include stomach, spleen, colon, small bowel and liver. In cases of missed or delayed diagnosis, mortality rises up to 30%.

Surgical management depends upon time of presentation. In the acute phase, a laparotomy is indicated. When diagnosed later, a thoracotomy may be performed to address intrathoracic adhesions. Laparoscopy, thoracoscopy or video-assisted thracoscopic surgery (VATS) may be considered in stable patients. In our case, we considered upper midline laparotomy to assess the bowel for viability.

Primary surgical repair is reserved for small defects. For large defects, mesh may be used.[2] Since right-sided diaphragmatic hernia is rare and difficult to diagnose initially, patients present with complications increasing risk of morbidity and mortality. A thorough evaluation of patient's complaints and past history, detailed examination with involvement of radiologist will lead to initial accurate diagnosis.

CONSENT

Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

AUTHORS' CONTRIBUTIONS

TK performed the surgery. QAAA assisted the surgery, performed the literature search and wrote the manuscript. Both authors reviewed and refined the manuscript.

Competing interests: The authors declare that they have no competing interests.

REFERENCES

1. Viallonga R, Pastor V, Alvarez L, Charco R, Armengol M, Navarro S. Right-side diaphragmatic rupture alter blunt trauma. An Unusual entity. World J Emerg Surg 2011;6:3.
2. Jadloweic CC, Sakorafas LU. Delayed presentation of traumatic right-sided diaphragmatic hernia after abdominoplasty. Case Rep Surg 2014;2014:949531.
3. Ebrahimi G, Bloemers FW. A delayed traumatic right diaphragmatic herni with hepatothorax. J Surg Case Rep 2012;2012(1):1.
4. Goi G, Callegaro D, Villa R, Moroni E, Bondurri A, Danelli P. Large bowel obstruction as a result of occult diaphragmatic hernia 11 years after injury. Ann Ital Chir 2012;83(5):425–8.
5. Hajong R, Baruah A. Post-traumatic diaphragmatic hernia. Indian J Surg 2012;74(4):334–5.
6. Kuppusamy A, Ramanathan G, Gurusamy J, Ramamoorthy B, Parasakthi K. Delayed diagnosis of traumatic diaphragmatic rupture with herniation of the liver: a case report. Turk J Trauma Emerg Surg 2012;18(2):175–7.
7. Magu S, Agarwal S, Jain N, Dalal N. Diaphragmatic hernia mimicking hydropneumothorax: common error in emergency department. BMJ Case Rep 2013;2013.pii:bcr2012008547.
8. Nalladaru Z, Wessels A. Diaphragmatic hernia masquerading as pleural effusion. Niger J Surg 2012;18(2):94–6.

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