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Research Paper

Varied Presentation of Diaphragmatic Hernia- A Case Series.

Medical Science

KEYWORDS : Diaphramatic hernia, traumatic rupture

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ABSTRACT

Diaphragmatic hernia in adults is a rare clinical entity and there have been fewer than hundred such cases so far reported in the literature We herein report 3 cases of Diaphragmatic hernia- one in a 45-year-old woman, in 25 year old female and other in a young 19 year old male. Elderly female was admitted to our hospital with chronic history of dyspnea and abdominalpain. Young female had presented with symptoms of sudden onset dyspnea and left sided chest pain 3 days following blunt injury to the chest in a motor vehicle accident. Third patient was completely asymptomatic and findings were detected incidentally. Chest X-ray and computed tomography revealed the diagnosis in these cases. This case series highlights varied presentation of same disease, different etiologies of the same disease and appropriateness of surgical intervention.

INTRODUCTION

Diaphragmatic hernia(DH) is more common in infants (90%) with an incidence of 1/2500 live births. Reporting of cases in adults is limited as patients are asymptomatic especially when defect is small. Rightsided hernias are rare because the right pleuroperitoneal canal closes earlier and the liver buttresses the right hemidiaphragm**.** The potential for strangulation of the herniated organs makes this condition a surgical emergency. We report 3 cases of DH which presented differently with varied etiology and were managed successfully. The following case seriesnot only illustrates the typical findings of DH but also different etiologies of condition and dangers associated with delay in diagnosis.

CASE REPORT

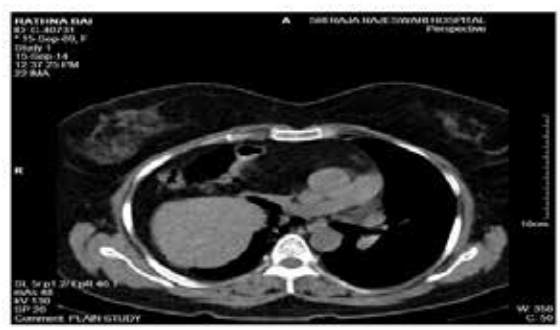
CASE 1

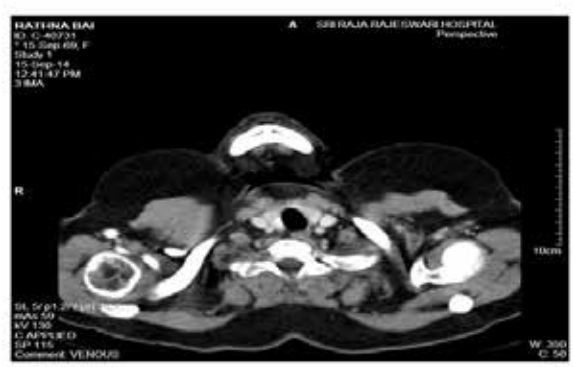
A 45year old female patient got admitted to Medicine wards of SreeRajarajeshwari Medical College and hospital on 11-9-2014 with complaints of breathlessness, cough and non-specific pain abdomen of 5 years duration. She was not a known case of hypertension, diabetes mellitus, ischaemic heart disease. The patient was diagnosed with chronic bronchitis and was on inhaler therapy.

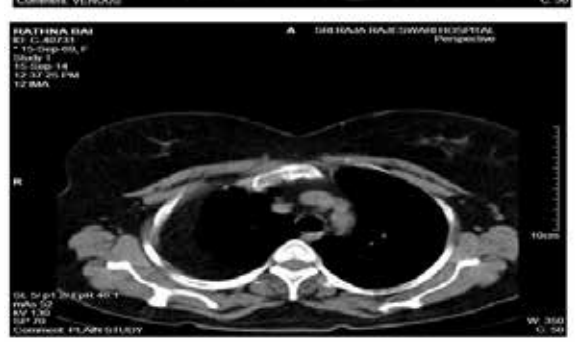
On examination patient was short statured withheight of 140 cm weighing 50 Kg. Her pulse was 84beats/min, blood pressure 140/90 mm Hg, she did not have pallor, cyanosis. On Respiratory system examination,intensity of breath sounds was reduced and bowel sounds were audible on the right side of the chest. Other systems examination was normal. Arterial blood gas analysis showed hypoxia (PaO2 70mmHg, PaCO2 45 mmHg). Hemogram, blood sugars, renal and liver function tests were normal. Chest X-ray showed ill-defined non homogenous opacity occupying entire right hemi thorax with shift of mediastinum to opposite side. Right hemidiaphramatic silhouette was obscured. CT scan thorax was performed which showed right DH with right lobe of liver, loops of small intestine, transverse colon as its contents.Heart was pushed to opposite side, right lung was atelectatic.

The patient underwent electivethoraco- laparotomy. Findings on opening correlated with CT findings. 6 cm intradiaphragmatic defect was found. The surgical treatment performed included reduction of hernia contents, trans abdominal pleural drainage, and primary repair of the diaphragmatic defectwith non-absorbable suture. There were no ischemic changes but the colon was slightly edematous. No malformation of the intestine or the volvulus of the stomach was recognized.

Following surgery, the patient had an uneventful hospital course and was discharged home.







Case 2

A 25 year old female patient got admitted to Emergency ward of SreeRajarajeshwari Medical College and hospital on 3-8-2014 with complaints of sudden onset of breathlessness, cough and left sided chest pain of 3 days duration. Patient had history of motor vehicle accident 3 days back and had sustained blunt in-

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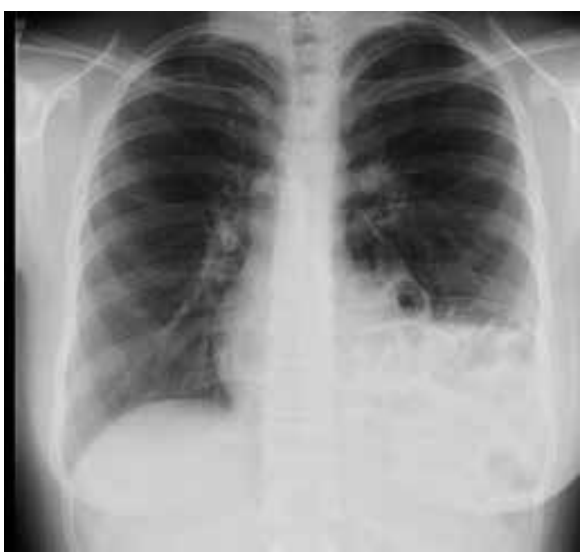
jury to the chest.

On examination patient was in acute respiratory distress with cyanosis and SpO2 was 80% with oxygen. Her pulse was 114beats/min, blood pressure 140/90 mm Hg, she had mild pallor. On Respiratory system examination, tenderness was noted in left intercostal spaces and dullness was elicited on percussion of left hemithorax. Intensity of breath sounds were reduced on the left side of the chest. Other systems examination was normal. Arterial blood gas analysis showed hypoxemic acidosis(PaO2 50mmHg, PaCO2 55 mmHg). Hemogram, blood sugars, renal and liver function tests were normal. Chest X-ray showed ill-defined non homogenous opacity occupying left hemi thorax. Diagnosis of left hemothorax was made and intercostal tube drainage was done under aseptic precautions. However, no blood was drained. Since patient condition was worsening she was urgently shifted to operating room for thoracotomy. On the table diaphragmatic rupture was noted with herniation of stomach, small intestine and spleen into thoracic cavity. ICD placed was just beside stomach with no perforation. The contents of hernia were reduced and tear in diaphragm was repaired.

The patient was electively ventilated for 12 hours postoperatively and extubated. Postoperative chest radiograph did not reveal any residual abnormality. The postoperative stay was uneventful, and the patient was discharged after three weeks.



Case 3
A 21 year old male patient got admitted to surgery ward of SreeRajarajeshwari Medical College and hospital on 5-11-2014 for operation of left inguinal hernia. Patient did not have any respiratory or gastrointestinal symptoms. On routine preoperative evaluation, Chest X-ray showed ill-defined non homogenous opacity occupying left hemi thorax. Patient was not willing for CT scan thorax or operation for DH as he was asymptomatic.

DISCUSSION
The diaphragm is a thin musculoaponeurotic barrier that separates the thoracic and abdominal cavities. Defective closure of thepleuroperitoneal canal during ninth to tenth week of gestation gives rise to DH. In 1761, GeovanniBattista Morgagnidscribed classic anterior diaphragmatic hernia which is now referred to as Morgagnian hernia. In 1848, Victor Alexander Bockdalek described right and left posterolateral hernia now called bockdalek hernia. Most common DH is left sided posterolateralhernia(85%).[7]

Under normal conditions, a pressure gradient exists between the more negative thoracic cavity and the positive pressure of the abdominal compartment. Secondary to these continuous pressure changes, small unrecognized defects can enlarge, particularly when subjected to increased intraabdominal pressure. Abrupt changes to the pressure gradients have also been noted to result in asymptomatic hernias becoming symptomatic. Predisposingconditions includepregnancy, trauma, obesity, chronic constipation,chronic cough. Most common presenting symptoms are pressure or pain in chest/abdomen followed by pulmonary symptoms(cough, breathlessness) , bowel obstruction and dysphagia. When patients are totally asymptomatic, hernia be detected incidentally.

As the first case did not have any prior history of trauma and was suffering from chronic cough , we believe that the defect in the diaphragm may have been congenital and worsened due to increased intra abdominal pressure.

Diaphragmatic rupture is a potentially life-threatening clinical situation. Right-sided rupture is less common due to hepatic protection and increased strength of the right hemidiaphragm. Trauma can cause sudden increase in the intra-abdominal pressure, resulting in diaphragmatic tear and visceral herniation.[2,3,6] Second patient in our series sustained blunt injury to the chest which might have resulted in diaphragmatic rupture and herniation of contents into chest. This case highlights that not all opacities in chest following trauma are hemothorax, and the potential hazard of inserting a chest drain into the herniated viscus would be avoided.

Third patient was diagnosed with DH after an incidental chest X-ray taken for preoperative evaluation illustrating that patients can be asymptomatic when defects are small

Diagnostic methods used to evaluate patients with DH are chest X-ray, computed tomography (CT) scan , contrast enema , upper gastrointestinal (GI) study , upper GI endoscopy , and magnetic resonance imaging (MRI) . A chest roentgenogram demonstrating gas and fluid filled viscera above the diaphragm can support the diagnosis of DH. Other more subtle findings include blunting of the costophrenic angle, presence of a posterior mediastinalmass, and small pleural effusion. Findings on Computed tomography include abutment of fat or soft tissue along theupper surface of the diaphragm, characteristic posterolateral location on the hemidiaphragm, diaphragmatic discontinuity adjacent to the mass, and density continuity above and below the diaphragm through the defect. Intestinal series with gastrografin or barium have also been used to confirm the diagnosis.

Surgery provides definitive management for patients with MH. Repair of MH has been accomplished primarily through four procedures: laparotomy, thoracotomy, thoracoscopy and laparoscopy. A thoracic approach is used when viscera-pleuraladhesions and the risk of intrathoracic visceral perforation chances are high. Laparotomy is required to assess viability of abdominal organsand complications such as malrotation, obstruction, strangulation and perforation of abdominal viscera.[1]

During laparoscopy, the hernia sac usually is removed. Some cases are repaired by primary repair and some by primary repair reinforced with mesh. The reported outcomes for the laparoscopic approach have been excellent with low mortality and shorter hospital stay. Closure with mesh typicallyis reserved for situations where the defect is too large to beclosed primarily.[1]

CONCLUSION
DH is a very rare clinical entity. Most common etiology is congenital which commonly presents in childhood. Small congenital hernia can enlarge due to increased intra abdominal pressure and present later in adulthood. Diaphragmatic rupture after blunt injury to the chest canpresent as a surgical emergencyand

is difficult to diagnose in trauma patients. A high index of suspicion with appropriate use of radiological modalities helps in reaching a correct diagnosis. Surgical repair should be done as quickly as possible to reduce morbidity and mortality.

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