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A rare case of an elderly patient with incidentally diagnosed spontaneous diaphragmatic hernia

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***Abstract*---**Spontaneous acquired diaphragmatic hernia is a rare finding, which occurs in the absence of any history of surgery or trauma. We report a rare case of incidentally diagnosed spontaneous diaphragmatic hernia in an elderly female who came in emergency department for pathological intertrochanteric fracture. She had left ventricular ejection fraction 35% and mild mitral regurgitation. Surgical repair of diaphragmatic hernia was planned. But she developed respiratory distress and was shifted to intensive care unit for stabilization. We are mentioning the successful management of this elderly female with diaphragmatic hernia. This case explains the importance of physical examination and various considerations in patients with diaphragmatic hernia and low ejection fraction.

***Keywords*---**Acquired diaphragmatic hernia, Low ejection fraction, Intertrochanteric fracture.

Introduction

Diaphragmatic hernia is the protrusion of abdominal contents into the chest through a rent in the diaphragm. It is of two types- congenital and acquired. Acquired hernias occur by blunt or penetrating trauma to abdomen.[1] Very less often acquired hernias are spontaneous in origin which occur either due to a small congenital defect in diaphragm or through trivial trauma.[2,3] These spontaneous diaphragmatic hernias can be asymptomatic and goes unnoticed and are found incidentally. Very few cases are reported in literature.[4] We are here reporting a case of an elderly female who came in emergency department for pathological intertrochanteric fracture and was diagnosed with spontaneous diaphragmatic hernia. This case explains the successful management of this elderly female with diaphragmatic hernia.

Case Report

An eighty year old female, weighing 40 kgs presented in the emergency department with complain of severe pain in the left hip since one week. X-ray was done and she was diagnosed with pathological intertrochanteric fracture. She had no history of trauma and surgery in the past. History of dyspnea on exertion was present since 5 years which she attributed to advanced age. On examination bowel sounds were heard on left side of the chest. So chest x-ray was done which showed abdominal contents on left side. To confirm the diaphragmatic hernia, CECT thorax was planned which showed deviation of trachea to right side, non-visualization of left dome of diaphragm and herniation of stomach, intestine and spleen into left hemi thorax (Image 1 and 2). She had no signs or symptoms of intestinal obstruction.

Image 1

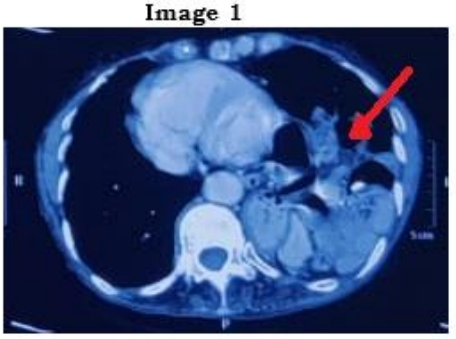

Image 2

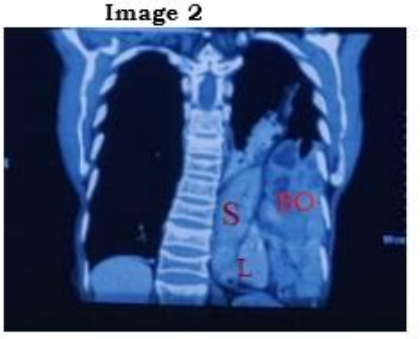

Image 1, 2- Contrast Enhanced Computed Tomography of chest showing herniation of bowel loops (Red arrow), herniation of bowel loops (BO), stomach (S) and spleen (L) in left hemi thorax.

On examination she was conscious, oriented and had heart rate of 90 b/m, blood pressure 120/72 mmhg, respiratory rate 16 b/m and saturation of 96% at room air. On auscultation of chest, she had decreased air entry and bowel sounds were heard on left side. Her investigations showed hemoglobin 9.3 g/dl, total leukocyte count 7900 cumm, platelet count 1.6 lakhs, blood urea 23 mg/dl, serum creatinine 0.6 mg/dl and INR 1.39.

Next day she developed respiratory distress, so was shifted to intensive care unit for stabilization. On arrival in intensive care unit she had heart – 132/min, blood pressure- 106/66 mmhg, respiratory rate- 38/min and saturation 88% on Hudson mask at flow of 6l/min. Her ECG showed supraventricular tachycardia. She was put on humidified high flow oxygen therapy at 30 l/min and fraction of inspired oxygen concentration of 0.4. Her echocardiography showed left ventricular ejection fraction 35%, mild mitral regurgitation and trace tricuspid regurgitation. She was given tab. aspirin plus atorvastatin, tab. metoprolol, tab. spironolactone plus furosemide, tab. ceftriaxone plus sulbactam, tab. pantaprazole, tab. paracetamol and inj. tramadol for pain relief. Under all aseptic precautions left radial artery and right internal jugular vein was cannulated under local anesthesia. Continuous invasive blood pressure and CVP monitoring was done. Surgery team was informed in case emergency surgery required. Overzealous fluid administration was avoided.

She also had low ejection fraction so our goals were to maintain normovolemia, avoidance of afterload and drugs causing myocardial depression Patient was accepting orally, she was encouraged to accept feeds. Patient's condition improved and oxygen therapy was tapered. Her arrhythmias got resolved. She was shifted to ward in stable condition after three days and was posted for repair of diaphragmatic hernia in cardiothoracic vascular surgery operation theater.

Discussion

Acquired diaphragmatic hernias are usually caused by blunt or penetrating trauma to the abdomen. Diagnosis is often delayed if patient is asymptomatic after diaphragmatic injury.[1] Symptoms are variable such as difficulty in breathing, absence of breadth sounds in chest, pain abdomen and obstruction of bowel.[5] Our patient did not give history of trauma or surgery in the past. So most probably cause of diaphragmatic hernia was either trivial trauma or a small congenital defect which became extensive. Drave *et al* reported the spontaneous rupture of diaphragm during delivery.[6] While Jha *et al* reported spontaneous rupture of diaphragm leading to respiratory distress after weight lifting.[7]

In asymptomatic cases physical examination and chest radiography are important for diagnosis. These asymptomatic cases may go unnoticed. For confirmation of diagnosis CECT thorax can be done. Treatment of diaphragmatic hernia depends upon presentation. If patient presents with symptoms of respiratory distress or bowel obstruction, emergency surgery is planned after initial resuscitation. Surgical repair of diaphragmatic hernia is always required weather it is congenital or acquired.

As this patient developed signs and symptoms of respiratory distress, she was shifted to intensive care unit for stabilization before proceeding to surgical repair of the diaphragmatic hernia. Main concerns in this case were presence of diaphragmatic hernia, low left ventricular ejection fraction, mild mitral regurgitation, arrhythmias and advanced age of the patient. Herniated viscera produces mass effect to lungs, heart and great vessels leading to cardiopulmonary compromise.[8] Positive pressure ventilation can lead to gastric insufflation increasing the mass effect and expansion of compressed lung can decrease

venous return and cardiac output. Thus low tidal volume and low airway pressure strategy is recommended.[9] Large gauge intravenous access should be secured to manage hemodynamic instability. Invasive blood pressure and CVP monitoring is necessary considering cardio respiratory impairment. Other modalities of medical management include permissive hypercapnia, gentle ventilation, high frequency oscillatory ventilation, inhaled nirous oxide in case of pulmonary hypertension diagnosed in echocardiography and extracorporeal membrane oxygenation.[10]

Conclusion

This is a rare case of intensive care unit management of an elderly patient with spontaneous diaphragmatic hernia. Careful physical examination and reading of chest radiographs is important for diagnosis and management of asymptomatic cases. Herniated viscera lead to cardiopulmonary impairment. Surgical repair is almost always required. But if initial stabilization is necessary gentle low tidal volume ventilation, high flow oxygen therapy, high frequency oscillatory ventilation and ECMO are the helpful modalities available.

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