ANAESTHETIC MANAGEMENT OF BOCHDALEK HERNIA IN A 72-YEAR-OLD PATIENT- A RARE CASE REPORT

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PRESENTATION OF CASE

A 72-year-old female was admitted to the hospital with the complaints of difficulty in breathing and chest discomfort after food intake since 7 months. She also complained of reflux vomiting after a regular meal for the same duration. Other complaints included weight loss, cough after taking even water and recurrent upper respiratory tract infection.

DIFFERENTIAL DIAGNOSIS

Chest x-ray PA view shows elevated diaphragm on the left side. At this point, our differential diagnosis included hiatal hernia (fundic gas shadow), left lower lobe abscess (air fluid level) and infected bulla (air fluid level).

CLINICAL DIAGNOSIS

The patient was asymptomatic 7 months back, then developed difficulty in breathing and chest discomfort after food intake, which was associated with loss of appetite and weight. She had history of recurrent URTI and cough. She visited many hospitals where it was misdiagnosed as chronic bronchitis and was treated for the same. She was admitted in our hospital where a diagnosis of Bochdalek hernia was established and the patient was subjected for surgery (repair of diaphragmatic hernia).

On examination, patient was thin, emaciated and dehydrated. There was no pallor, cyanosis, clubbing, lymphadenopathy, oedema and icterus. Family history was not significant. She was conscious and coherent. Vitals were within the normal limits except for her BP being 158/80 mmHg. On systemic examination, there was decreased air entry in the left hemithorax and bowel sounds were present in the left hemithorax. Abdomen was found to be scaphoid shaped. Chest x-ray PA view shows elevated diaphragm on the left side.

CT scan revealed left diaphragmatic hernia with contents as stomach, splenic flexure of colon and omentum. At the level of D7 and D8, the contents are stomach and transverse colon. Atelectatic changes were noted in left lung base. Fibrotic changes were noted in right upper lobe.

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PATHOLOGICAL DISCUSSION

Diaphragm is the most important respiratory muscle. Diaphragmatic hernias, which occur because of a defect on the diaphragm, maybe congenital or acquired. CDH that presents shortly after birth, usually have few diagnostic problems, while late presenting diaphragmatic hernia is associated with a wide range of clinical symptoms occurring in various constellations. Dyspnoea and vomiting are the most frequent symptoms found in patients with either chronic or acute manifestations. Bochdalek Hernia (BH) was first described in 1848 as a congenital hernia resulting from developmental failure of the posterolateral diaphragmatic formation to fuse properly. Most BHs are diagnosed in the neonatal period with clinical symptoms caused by pulmonary insufficiency. BH identified in adulthood is extremely rare and only around 100 cases of BH in adults have been reported. However, the prevalence of BH in adults has been estimated to range between 0.17 and 12.7%. Incidental identification of BH in asymptomatic adults is also increasing due to advances in imaging modalities and this pathology maybe more common than previously reported. Adult BH patients are generally recommended to undergo surgical repair.[1,2]

DISCUSSION OF MANAGEMENT

On preanaesthetic evaluation, patients Mallampati grading was grade 2. TM joint movement was normal. Thyromental distance was found to be 6.5 cms. There were no dentures, missing tooth or loose tooth. Haematological and biochemical profile were within the normal limits. Pulmonary functions test showed normal range of values and ABG was also normal. Echocardiography revealed EF-64%, normal cardiac chambers, no RWMA, good LV function and grade 1 diastolic dysfunction with trivial TR.

Anaesthetic management was done by general anaesthesia and placement of thoracic epidural catheter. Aspiration prophylaxis was done with Ryle tube insertion and stomach was deflated. Antacids and H_2 receptor antagonist were administered. Premedication included Inj. Glycopyrrolate 0.2 mg, Inj. Ondansetron 4 mg, Inj. Fentanyl 100 micrograms IV, Inj. Midazolam 1 mg, which were given intravenously. Monitoring of heart rate, noninvasive BP, central venous pressure, SPO_2, capnography and ECG was done. Denitrogenation was carried out for 3 mins. with

100% O_2.Induction was done by inhalational technique (Sellick's manoeuver). Volatile anaesthetic sevoflurane 8% was used. Intubation with 7 mm cuffed endotracheal tube was carried out. Air entry was checked on both the sides and fixed at 19 cms. Maintenance was carried out by O_2 + air + sevoflurane 2% + vecuronium, which was given by controlled mechanical ventilation.

Surgical approach included laparoscopic repair. The diaphragmatic defect was closed with polypropylene mesh and sutured in two layers with uninterrupted non-absorbable sutures and the thoracic cavity was drained by a single chest tube drain. Patient was shifted to CCU for controlled ventilation. For the first 2-4 hours, patient was on muscle relaxant support for ventilation. Her postoperative ABGs and chest x-ray was normal. Postoperative analgesia was managed with epidural topups. Dexmedetomidine 1 mcg/kg (loading dose) followed by 0.7 mcg/kg (maintenance dose) was given for subsequent ventilator modes. Weaning was started from controlled mode to SIMV, then to T-piece and then extubated. The patient had an uneventful postoperative recovery. A repeat of GI barium was undertaken, which showed no herniation into the thoracic cavity. The left lobe showed no hypoplastic changes, but however, preoperatively left lung volume and atelectatic changes were present as reported by radiologist.

FIG 1: CHEST X RAY PA VIEW, SHOWING ELEVATED DIAPHRAGM ON LEFT SIDE.

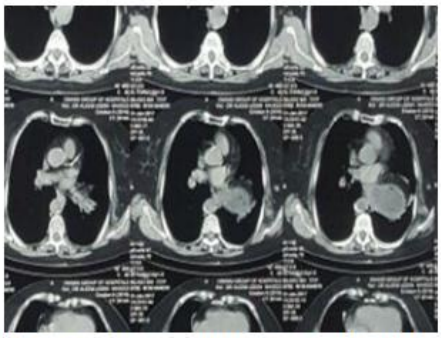

FIG 2: PLAIN CT CHEST; SHOWS AT D7 AND D8 LEVELS, CONTENTS ARE STOMACH & TRANSVERSE COLON.

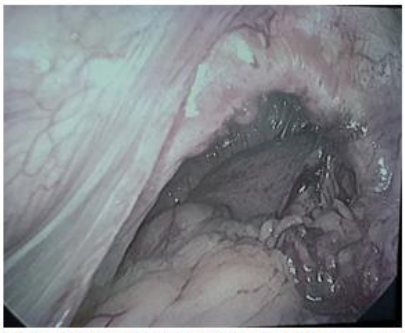

FIG 3: LAPAROSCOPIC VIEW OF DEFECT IN LEFT DIAPHRAGM.

FIG 4: SURGICAL REPAIR OF DEFECT BY MESH.

FINAL DIAGNOSIS

The final diagnosis made in our case was Bochdalek hernia and patient was subjected for surgical repair.

Foramen of Bochdalek and foramen of Morgagni were discovered by Czech anatomist and Italian anatomist. They are present in the posterolateral and anteromedial aspects of the diaphragm, respectively.

In this case, foramen of Bochdalek was 4 x 5 cms in left posterolateral aspect of the diaphragm through which the pleuroperitoneal canal communicates between the pleura and the peritoneal cavities. This canal normally closes during the 8th week of gestation. Failure or incomplete fusion of the posterior compartment of diaphragm leads to Bochdalek hernia. The incidence of Bochdalek hernia is estimated to be 1 in 2,500-5,000 livebirths. The male:female is 2:1. The incidence of left posterolateral is 80% while right posterolateral foramen of Bochdalek is significantly low.[3] A diagnosis is well established by CT scan of chest.[4,5] Adult incarcerated right-sided Bochdalek hernia can also be seen.[6] The organs that most commonly herniate through these defects are stomach, ileum, colon and spleen.[7] It is believed that delay or absence of symptoms may be due to occlusion of diaphragmatic defect by intra-abdominal viscous.[8]

The patient complained of dyspepsia, breathlessness since 7 months only on exertion. Various cuts on CT scan showed at the level of D7 and D8 - stomach and transverse colon, atelectatic changes in the left lung base, fibrotic changes in the right upper lobe. A 3 level ultrasonography has an importance in establishing a diagnosis of congenital diaphragmatic hernia in utero. Presence of polyhydramnios

and intrathoracic stomach bubbles and mediastinal cardiac shifts signifies CDH.[9]

Computed tomography is believed to be the most accurate method of diagnosing and evaluating the contents of the hernia even for the smaller one.[5,10] The hypoplasia of the lung is not seen in our case. CT scan has an increasingly important role without which it can be misdiagnosed as pleural effusion, empyema, lung cyst and pneumothorax.[11] Left-sided Bochdalek hernia are reportedly associated with lung hypoplasia, extra lobar sequestration, malrotation of the gut, which are conspicuously absent in our case. The treatment of Bochdalek hernia is surgical and patient generally do not have any recurrence postoperatively and patient is asymptomatic.[12]

Adult Bochdalek hernias are extremely rare, however, diagnosis should be suspected in patients who have been exposed to factors that increase the intra-abdominal pressure. Signs and symptoms could be nonspecific. Delay in diagnosis and surgical intervention could lead to complications and increased mortality.

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