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Diaphragmatic Hernia during Pregnancy: A Case Report

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Abstract

Objective: *Our objective is to highlight the management of congenital diaphragmatic hernia (DH) during pregnancy that maybe life-threatening due to improper diagnosis or treatment impediment.*

Report: *Hereby, we report a case of a woman in her first trimester of pregnancy who presented with sudden onset of abdominal pain, dyspnoea, vomiting, mild distension, palpitation and absolute constipation. Chest X-ray revealed obliterated left phrenic angle with air bubbles in thoracic cage and the diagnosis of diaphragmatic hernia with intestinal obstruction was confirmed. The patient was treated through emergency laparotomy and colostomy. She delivered safely at term by caesarean section.*

Conclusion: *The diversities in the clinical picture of DH with pregnancy lead to diagnosing challenges for this condition. Also, the treatment options depend on the patient characteristics mainly and her condition upon diagnosis confirmation without universal agreement or clear guideline from a respectable authority.*

Keywords: *Complicated pregnancy, Diaphragmatic hernia, Intestinal obstruction.*

Introduction

Diaphragmatic hernia (DH) is a clinical condition that presents when the abdominal viscera shift into the thoracic cavity. DH can be classified into 3 categories: congenital, acquired and traumatic. DH was first described by *Bochdalek* in 1848, although the description origins of it can be referred to writings of 1690. [1]

It is believed that a previously existed anatomical failure which is probably decompensated by either increased abdominal pressure (pregnancy) or trauma (labour) that can lead to the cascade of clinical presentation and complications. Other aetiologies include blunt or penetrating trauma, physical exertion (including sexual intercourse), sneezing or coughing, and even ingestion of a large meal. [2]

High pregnancy progesterone levels causes laxity and relaxation of the ligaments and muscles and the rise in intra-abdominal pressure by the gravid uterus and bearing down, all result in diverse forces, which can harm the diaphragm at its weakest defect. Symptomatic DH during pregnancy, labour and delivery are rare, but the potential hazards are significantly high. As most of their presentations simulate common symptoms during pregnancy, their management may be delayed, resulting in high morbidity and mortality to mother and baby. [3]

Here, we describe a patient at 12 weeks' gestation with DH. Following the case report, we present a discussion reviewing the literature for the reported cases with the same clinical condition.

Case Report

35 years old woman G5 P3 + 1 presented at 12 weeks' gestation to emergency unit of Benha University Hospitals complaining of abdominal pain, mild distension, vomiting, dyspnoea, palpitation and absolute constipation for three days. She had toxic earthy look, but vitally stable. There was generalized tenderness and rebound tenderness with tympanic resonance on percussion and empty rectum on per rectal examination.

Her investigations were within normal limits. Pelvi-abdominal ultrasonography showed single viable

foetus, minimal free intra-abdominal fluid collection and distended bowel loops. Chest x-ray showed obliterated left phrenic angle with air bubbles of the intestine in chest. Abdominal x-ray on erect position showed multiple air fluid levels, dilated bowel loops and no free air under diaphragm.

The couple was consented for emergency exploration laparotomy after explaining all the risks and complications during operation or postoperative with probability of diversion of stool and abortion.

Midline incision detected diaphragmatic hernia with splenic flexure of large intestines herniated in the chest but without the spleen. Incision was done in the diaphragm and the splenic flexure was retained from the chest and it was totally gangrenous but not ruptured in the chest.

There was a toxic fluid and pyogenic membrane in the chest. The toxic fluid was aspirated and the diaphragm was closed in two layers with prolene sutures over a chest tube. The splenic flexure of the colon is resected and Hartmann colostomy was done without any splenic injury. The colostomy was done high on left hypochondrium. Then peritoneal washing was done and the mass closure of the abdomen with two pelvic drains. The patient was admitted to intensive care unit for three days with a close multidisciplinary monitoring. She was taught the care of the colostomy and explained the common complications of it. She was discharged one week later in a favourable condition.

Elective caesarean section was performed at 39 weeks' gestation due to breech presentation. The caesarean section was uneventfully without bowel injury. It was conducted without bowel preparation. Six months later, revision of colostomy was done after bowel preparation by surgical team. The patient was followed closely for one year without any complaints. Up to date, she is well after four years and using intrauterine contraceptive device as contraception.

Discussion

DH is usually diagnosed either antenatal or early neonatal period, some are lately detected in children who present with pulmonary symptoms. In adults, most DHs are likely to be asymptomatic, thus its finding is incidental.

However, the true prevalence of adulthood DH is undetermined. Based on abdominal CT, *Mullins et al,* reported 0.17% incidence in adults. There were more hernias on the right side (68%), and more women affected than men (17:5). Asymptomatic patients had mostly right-sided hernias, while left-sided ones were found in most of reported symptomatic cases. [1]

Clinical presentation for the first time in the adulthood is unusual (around 100 case reports) and pregnancies complicated by DH are even more rare (according to our knowledge 44 cases had been reported in the literature search since 1928).

The key investigation for DH diagnosis is chest X-ray with 70% sensitivity. [4] However, computerized tomography (CT) and magnetic resonance imaging (MRI) are occasionally used. Although CT provides a better imaging opportunity of the diaphragmatic defect and any herniated abdominal organs, the radiation exposure of CT is much higher than that of plain X-ray. Moreover, the cost of MRI is considered challenging especially in developing countries. [3]

Operative repair is a must in most cases of DH. Operative approaches include thoracic, abdominal and thoraco-abdominal. An advantage of abdominal technique is to facilitate any needed repair of the affected organs. On the other hand, the thoracic one allows better access to repair the diaphragmatic defect. [2] With the visceral relocation during pregnancy, operative correction could be extremely challenging.

The appropriate DH treatment selection depends mainly on the gestational age and clinical situation. If uncomplicated DH is discovered on the first or second trimesters, second trimester elective surgery is usually recommended, after complete foetal organogenesis and before progressive organs' displacement by the growing gravid uterus. [1] In symptomatic women, intervention and repair should be immediately initiated, regardless of foetal status or gestational age, [2, 3] to avoid high (35–50%) maternal and foetal morbidity and mortality. [1] The leading causes of mortality are respiratory distress, gastric or intestinal perforation and cardiac shock that lead to hypoxia and acidosis. [1]

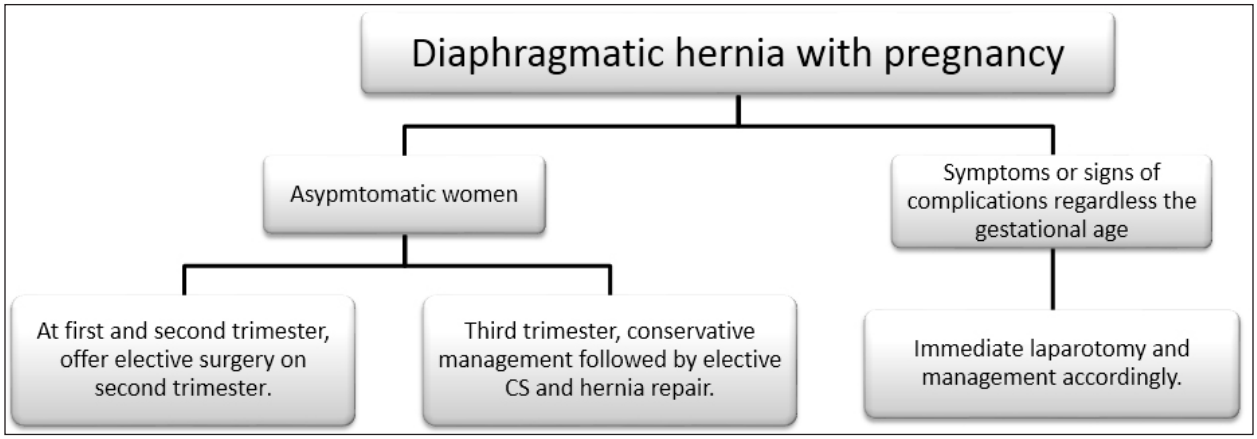
Women with asymptomatic DH during third trimester should be under close feto-maternal surveillance as long as they are stable. Also, this conservative management could be used for symptomatic women as long as there are no symptoms or signs of intestinal obstruction or strangulation. In certain conditions,

gastric decompression using nasogastric tube may offer an advantage of improving the clinical condition of the patient, allowing surgery delay until administration of a rescue course of antenatal corticosteroids to enhance foetal lung maturity. [1]

Moreover, deciding the route of delivery is still diverse. If the foetus is mature, the baby should be delivered by caesarean section and the hernia repair should be conducted simultaneously during the procedure. [1] For the women who got their DH repaired, they can withstand normal labour and vaginal deliver as the uterine contractions alone are not enough to affect the repaired hernia. [1]

In conclusion, diaphragmatic hernia is a rare severe clinical condition that can cause maternal and foetal deaths if its diagnosis is delayed or missed. There should be a consensus or universal agreement about the management of DH during pregnancy conducted by one of the evidence-based well established committees.

Figure 1. *shows a simple algorithm for management of DH with pregnancy according to clinical presentation and gestational age*



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