TENSION GASTROTHORAX: OCCULT CHILDHOOD DIAPHRAGMATIC INJURY PRESENTING AS ACUTE EMERGENCY IN PREGNANCY

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Abstract

We present a case of tension gastrothorax in a 27 year old primigravida with the complaints of respiratory distress. She was hypoxic and tachycardiac. Left thorax was resonant to percussion and had no air entry. Chest X ray was not helpful to reach the diagnosis. Later on tracheal deviation was noted and thoracostomy was done. The patient aborted overnight. Greenish fluid in the chest drain led to investigation with computed tomography which revealed massive vicerothorax. Review of her history revealed that she had blunt abdominal injury as child. Laparotomy confirmed the above findings along with a gastric perforation. Diaphragm and stomach were repaired, gastropexy and caecopexy was done. Occult diaphragmatic injury can complicate the pregnancy. High intra-abdominal pressure during the pregnancy can push much of abdominal contents through the diaphragmatic defect. Creation of angulation at gastro esophageal junction acts as a one way valve and thus leads to progressive dilation of the stomach, resulting in tension gastrothorax.

Keywords: tension pneumothorax, tension gastrothorax, vicerothorax, pregnancy

Introduction

0.15% of patients can have diaphragmatic injury due to blunt trauma [1]. Only 23% of these are recognized during initial assessment [2]. Many of these injuries can remain occult and can present later with complications. Angulated gastroesophageal junction of a herniated stomach through the diaphragmatic defect can act as a one way valve. Accumulation of gastric contents can compromise the thoracic cavity and can result in mediastinal shift, much like a tension pneumothorax [3]. We report a case of tension gastrothorax and gastric perforation in a pregnant lady who had an occult diaphragmatic injury during the childhood. High intrabdominal pressure during the pregnancy was one of the contributing factors to the drama masquerading as tension pneumothorax.

Presentation of the case

A 27 year old 22 weeks primigravida presented to obstetric unit for sudden onset of abdominal pain and respiratory distress. She was having blood pressure of 110/70 mmHg, heart rate of 145 bmp, respiratory rate of 40 per minute and oxygen saturation of 84% on room
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Her abdomen was soft and non-tender. Left thorax was resonant to percussion and no air entry was noted on the left side. After starting her on oxygen the patient was promptly shift the emergency room. The chest X ray showed left apical pneumothorax and hazy lung base (Figure 1). It was then recognized that her trachea had shifted to the right.

Follow up chest X ray showed that the left thorax was still opaque and lung had failed to inflate. Overnight the chest tube drained about 2 liters of brownish fluid. The patient was again having tachycardia and was hypotensive. Ultrasound showed large amount of free fluid in the abdomen. The patient had aborted by this time and unfortunately the baby didn't survive. CT evaluation of chest and abdomen was performed. It showed that opacified left hemithorax was occupied with small bowel, stomach, omentum, mesentery and the left hepatic lobe. The ascending and transverse colon had also migrated to left hemi thorax. They were all passing through a diaphragmatic defect on the left side (Figure 2). The stomach was seen within the left hemi thorax with contrast extravasating through its wall.

A review of past medical history was done. The patient revealed that she had a road traffic accident when she was 2 years of age. She sustained significant blunt abdominal injury in that accident. Diaphragmatic injury had not been recognized at that time.

She underwent laparotomy; the above mentioned findings were noted. Additionally, there was a 10 cm perforation in the greater curvature of stomach (Figure 3). The margins of perforated stomach were necrotic. The edges were refashioned and closed in two layers. Gastropexy, caecopexy and repair of diaphragmatic defect were done. Postoperatively intra-abdominal pressure monitoring was done using a probe in the bladder.

Figure 1 - Pre-procedure chest X-ray, G = Gastric shadow, T = deviated trachea

Figure 2 - Coronal section of CT Chest and abdomen showing stomach and transverse colon in the left hemi-thorax

Figure 3 - Perforated stomach as seen per operatively
Discussion

Tension vicerothorax is a rare condition. Few factors are essential for the development of this condition which includes a diaphragmatic defect that allows the viscera to prolapse to the thoracic cavity along with formation of angulation at gastro esophageal junction to create a one way valve. The presence of high intrabdominal pressure further worsens the condition and leads to mediastinal shift and cardiorespiratory compromise [4]. In this case the presence of pregnancy might have been the contributing factor in the formation of higher abdominal pressure and thus the tension gastrothorax [5, 6]. This case report describes gastric perforation in a pregnant patient due to tension gastrothorax.

Tension gastrothorax can be a diagnostic dilemma for the physician attending to the patient. It is frequently misdiagnosed as tension pneumothorax. In a pregnant patient with acute respiratory distress most physicians are reluctant to utilize CT scan to evaluate the thorax in the presence of doubtful chest x-ray. For tension gastrothorax emergent management entails insertion of nasogastric tube first [6]. If no improvement is seen then a thoracostomy (needle or tube) should be employed to decompress the thoracic cavity. If the facilities are available endoscopic decompression can also be utilized before the patient can be taken for definitive surgical reconstruction [7]. Consideration should be given to the monitoring of intra-abdominal pressure because of the risk of development of compartment syndrome which is another dreaded complication.

The presence of the pregnancy further complicates the management. Diagnosis can be delayed due to avoidance of Computed Tomography. Repair of diaphragmatic defect along with a visceral repair demands more room in the abdomen. To create more space in the abdomen third trimester pregnancy can be managed with early Caesarean section under cover of steroids and backup by general and thoracic surgeon [8]. However termination of pregnancy can be considered in the setting of high abdominal pressures, post procedure, if the fetus has not reached the viability period.

The choice of whether to perform a thoracotomy or laparotomy depends on individualized patient circumstances, and surgeon's preference. Laparotomy allows the surgeon to explore other abdominal organ injuries and is needed for caecopaxy. While with a thoracotomy, it is easier to repair the diaphragm rupture site and allows much quicker resolution of obstructive shock.

Conclusion

High index of suspicion is required in the assessment of pregnant patients for respiratory distress. Eliciting the history of previous trauma may alert the physician for the possibility of vicerothorax.

Declarations

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Authors' contributions: SH conceived the idea of the case report. AK wrote the report. FY helped in data and image collection. SA helped provide the references. MA and AH oversaw the activity and did the proof reading.

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