

Ultrasound In Diagnosis Of Herniae In Pregnancy: A Case Report And review of literature.

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Abstract

A 26-year old trader presented with abdominal pain with a four month old pregnancy and was diagnosed clinically, (wrongly of course) as a case of peptic ulcer in pregnancy, with co-existing uterine fibroid. Ultrasound scan (USS) revealed an incarcerated supra-umbilical (anterior abdominal wall) hernia as the cause of her pain. She had no evidence of previous abdominal surgery or incisions. The importance of imaging studies in diagnosis of similar cases in pregnancy most especially non-clinically visible congenital diaphragmatic hernia is highlighted with a review of literature.

Key words: sonography, pregnancy, hernia and diagnosis errors.

Introduction:

A hernia is the protrusion of an organ or the fascia of an organ through the wall of the cavity that normally contains it¹. The clinical presentation of a hernia depends upon the site, size and hernial sac contents and the complications include incarceration, irreducibility, obstruction and strangulation. The diagnosis and management of some of these herniae and related complications especially in pregnant women may be problematic, requiring a high index of suspicion for accurate detection and differentiation from other causes of abdominal pain and masses, particularly congenital diaphragmatic hernia and a few other cases as shown in this case report, and this is the reason or justification for this report.

Case report:

This is a case of a 26 year old female trader. She was unsure of her last menstrual period which was estimated to be about 4 months prior to presentation. She was referred from a private hospital for abdominal USS, with a history of intermittent upper abdominal pain in pregnancy and a provisional diagnosis of peptic

ulcer disease with possible co-existing leiomyoma, was made by the referring General practitioner. This was based on a nodular swelling above the umbilicus which was thought to be a fibroid.

She was scanned with Siemen sonoline SI-1 ultrasound machine using a 5MHZ probe with patient in the supine position, and the initial findings were normal hepato-biliary system, spleen, kidneys pancreas with nil ascites.. The uterus contained a gestation sac, with a viable fetus within it. The estimated gestational age (EGA) of the fetus was about 18weeks. The placenta site was posterior in the upper uterine segment and amniotic fluid volume was normal. While the scanning was in progress the patient indicated that the site of pain was in the supraumbilical area and a nodular swelling was noticed at this site. The mass was seen on USS to be due to a mixed echogenic mass with subtle movement within it. A higher frequency transducer revealed the swelling to be an obstructed, painful supra-umbilical hernia; the neck of the hernia was clearly demonstrable, with visible transmission of movement (hernia sac contents) through it. See figures: 1, 2

Furthermore, the patient revealed that the swelling was always noticeable during her previous pregnancies and usually subsided after deliveries. This was her third pregnancies.

Discussion

A hernia of the abdominal wall is a protrusion of the abdominal contents through an acquired or congenital area of weakness or defect in the wall. Diagnosis is clinical, but was mis-diagnosed in this

case report.

Abdominal hernias are extremely common, particularly in males, necessitating about 700,000 operations each year in the United States of America (USA)².

A hiatal hernia for instance occurs when the stomach protrudes into the mediastinum through the esophageal opening in the diaphragm, while Epigastric hernia is a hernia through the fibres of the linea alba. Other forms of abdominal and pelvic herniae are: femoral, incisional, inguinal, internal, lumbar, obturator, periumbilical, richter spegelian and umbilical. The incisional herniae are iatrogenic occurring in 2-10% of all abdominal operations, secondary to break down of the surgical closure sites^{3,4}. Among the list, of greater importance is diaphragmatic

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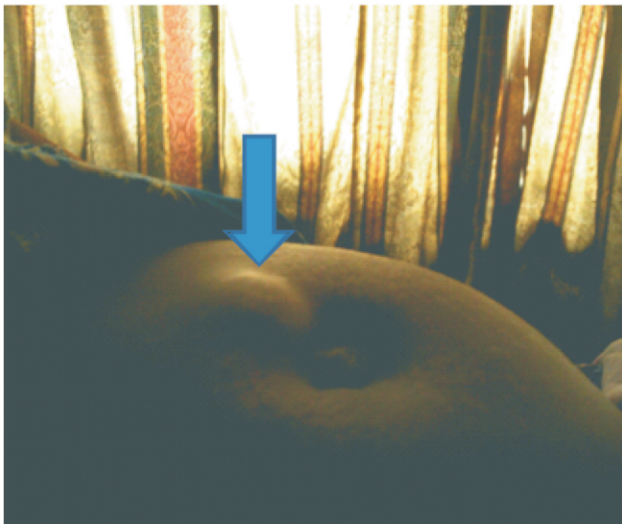


Figure 1: The supraumbilical swelling clinically diagnosed as fibroid, (Arrowed),but was shown on USS to be an incarcerated hernia sac.

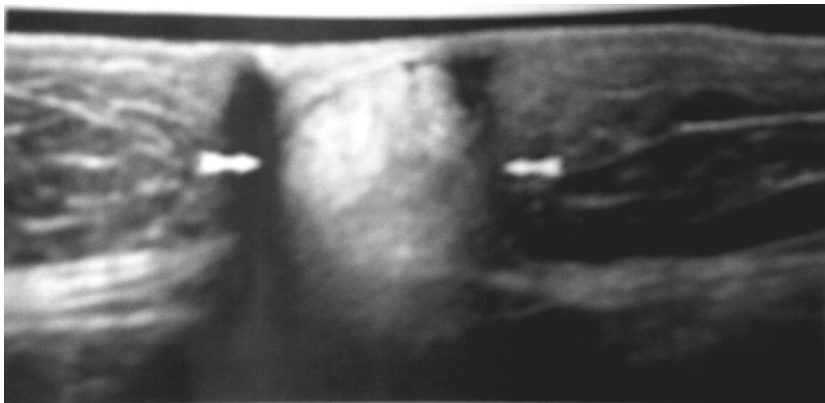


Figure 3: A Sonographical depiction of abdominal hernia with the herniated bowel loop and its gas content arrowed¹³. Unfortunately the sonographic picture for this case report is not available because it was mistakenly deleted from the archive or records when a repair service was carried out on the USS machine, before this report.

hernia complicating pregnancy, although rare but results in a high mortality rate, particularly if early surgical intervention is not undertaken. Any history of Persistent vomiting may signal undetected obstruction of gastrointestinal tract in pregnancy⁵. The management of a pregnant patient with symptomatic hernia (especially diaphragmatic) is challenging^{6,7}. For asymptomatic diaphragmatic hernia for instance, Kurznel and Naunheim recommended cesarean delivery after fetal lung maturity is documented, with simultaneous hernia repair⁷. Genc *et al* on the other hand suggested that gastric decompression might improve the clinical condition of the pregnant patient with a diaphragmatic hernia who presents with symptoms and signs of obstruction⁸. Such an improvement can allow surgery to be delayed until the patient is transferred to a tertiary care center. However the incisional hernias are managed conservatively^{1,3,8}

The diagnosis of these hernias complicating pregnancy requires a high index of suspicion especially for the non-incisional cases⁹. Symptoms like abdominal pain, nausea, vomiting and dyspnoea should

be investigated adequately. Signs of bowel obstruction and respiratory compromise are indications for a surgical emergency. None clinically obvious hernia should not be taken as a rare complication of pregnancy¹⁰. By roentgenologic examination Rigler and Eneboe¹⁰ demonstrated clinically undetected hernia specifically, diaphragmatic type in 25, or 12.8 per cent, of 195 women in the last trimester of pregnancy; in 4, or 5.1 per cent, of 71 primiparas; and in 21, or 18.1 per cent, of 116 multiparas.

The incidence increases with age and repeated pregnancy and it should be noted that increased intra-abdominal pressure is an important etiologic factor. Herniae may or may not present either with pain at the site, a visible or palpable lump, or in some cases by more vague symptoms resulting from pressure on an organ which has become “stuck” in the hernia, sometimes leading to organ dysfunction. Fatty tissue usually enters a hernia first, but it may be followed by or accompanied by an organ¹. See figures 2 & 3 (the illustrated diagram and sonogram).

Most of the time, herniae develop when pressure in the compartment of the residing organ is

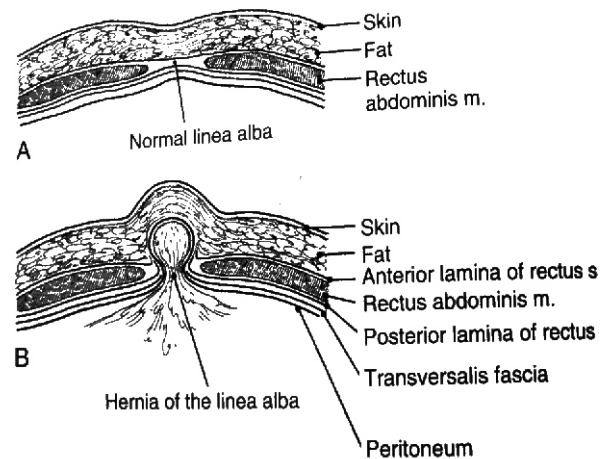


Figure 2: A Schematic illustration of the normal anterior abdominal wall and B, when there is a hernia¹³

increased, and the boundary is weak or weakened.

The weakening of containing membranes or muscles is usually congenital and this explains part of the tendency of herniae to run in families, and also increases with age, example of which is the degeneration of the annulus fibrosus of the intervertebral disc, but it may be on the basis of other illnesses, such as Ehlers-Danlos syndrome or Marfan syndrome, stretching of muscles during pregnancy, losing weight in obese people, etc., or because of scars from previous surgery^{1,11}. However in this case report the patient had no previous surgery done on her. Other conditions causing chronic increase in intra-abdominal pressure, like in pregnancy are ascites, chronic obstructive pulmonary disease (COPD), dyschezia, benign prostatic hypertrophy (BPH), in male.

Plain x-ray is not usually the modality of choice for diagnosis of herniae especially in pregnant patient; however it is of use when bowel obstruction, secondary to a hernia is suspected and hernia is occasionally identified during a barium meal study but not in a pregnant patient^{2,10,12}. USS is useful to localise herniae and for differentiation from other causes of a palpable lump, such as solid masses or haematoma. The woman in this case report, during the scanning session, was initially thought to have an anterior abdominal wall abscess collection, until a visible movement in the mass that was linked to the neck of the hernia was noticed because of the real time scanning.

Furthermore, US can provide good resolution of many superficial hernia, while Magnetic Resonance imaging (MRI) and Computer Tomography (CT) will provide more information regarding internal herniae (not in pregnant uterus of course). And so for the non-obvious cases, such as congenital diaphragmatic hernia complicating pregnancy, high index of suspicion is vital in order to prevent fetomaternal loss or to reduce morbidity. It is important to be alert that herniae may appear or increase in size during pregnancy and inherently weak fascial structures are further weakened by the pressure of the enlarging uterus and by the effect of pregnancy hormones¹². This is confirmed in this report in which the patient gave history of recurrence during previous 2 pregnancies, see figures 1, 2 & 3.

Conclusion: Abdominal herniae are usually diagnosed clinically^{2,11-13}, but this case report has shown that Ultrasound scan can eliminate error in diagnosis due to certain clinical limitations in some cases, for instance, diaphragmatic hernia and hernias simulating other abdominal masses, as shown in this case report.

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