

CASE REPORT

Teratodermoid mimicking cholecystitis

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Key Clinical Message

An acute abdomen assessment in pregnancy is complicated. Pain can have obstetric and nonobstetric causes. Cholecystitis is a common cause of pain in pregnancy with significant morbidity if not managed promptly. We report a case of a ruptured, torted, right ovarian teratodermoid erroneously diagnosed as cholecystitis in pregnancy.

Keywords

Acute abdomen, cholecystitis, cholecystitis, ovarian, pregnancy, teratodermoid.

Introduction

Evaluation of an acute abdomen in pregnancy is complicated as the pain may be caused by both obstetric and nonobstetric causes. Cholecystitis is a common cause for acute abdominal pain in pregnancy and may be associated with significant morbidity and mortality if not managed promptly. Here, we discuss a case of a pregnant patient who had a ruptured and torted right ovarian teratodermoid, which was erroneously diagnosed as cholecystitis.

Ovarian teratodermoids are benign tumors and have been previously reported in pregnancy [1]. They may pose no threat to the individual and may be discovered incidentally or when they are involved in complications such as torsion or rupture, which can lead to peritonitis and an acute abdomen. This case illustrates an unusual presentation of rupture of a teratodermoid mimicking cholecystitis in pregnancy. Following this, we discuss the presentation of teratodermoids, their occurrence in pregnancy and management options available. We particularly focus on assessment of acute cholecystitis in pregnancy, the imaging modalities that can be used to reach diagnosis, and the management options available in a pregnant patient as an important learning point.

Case Presentation

A 31-year-old pregnant female gravida 2 para 1 was readmitted to Ipswich Hospital NHS Trust at 20 weeks of her pregnancy with abdominal pain. She complained of a 3-day history of pain in the right upper quadrant and was unable to tolerate any foods. The patient denied any pelvic pain or vaginal discharge. She also denied any jaundice or pruritis. She had been admitted to the hospital 3 weeks prior with a similar presentation and had been reviewed by surgeons, gynecologists, and obstetricians. She had an ultrasound scan which confirmed the presence of gallstones with no CBD dilatation and excluded appendicitis. She was managed supportively with analgesia and anti-emetics and discharged.

Her medical history included epilepsy for which she took lamotrigine. She had experienced no complications in her previous pregnancy and had a daughter from the previous pregnancy. Her family history was negative for any type of cancer. She denied any history of smoking or drinking alcohol during the current pregnancy.

In the initial physical examination, she was found to be tender in the right upper quadrant, the epigastrium, and the right iliac fossa. Otherwise, systems examination was unremarkable. Patient's urine dip was negative for infection and the blood test revealed a slightly raised CRP and mildly deranged LFTs.

The case was discussed with the gynecology and obstetric team who felt that the patient was unlikely to have a gynecological or obstetric cause of the abdominal pain as she had no pelvic or vaginal symptoms, and the routine ultrasound scans during pregnancy had been satisfactory. Differential diagnosis at this stage included appendicitis, cholecystitis, pancreatitis, and ruptured ovarian cysts. However, the patient's clinical presentation, the gynecology and obstetric opinion, and the ultrasound results from previous admission reported by an experienced radiologist guided us to the presumed diagnosis of cholecystitis. The patient was commenced on antibiotics, anti-emetics, and analgesia, respectively.

Patient's condition continued to decline with persistent vomiting and worsening abdominal pain. Subsequent physical examination revealed increased tenderness throughout the abdomen and repeat blood tests revealed a drop in hemoglobin, static LFTs, and a rise in the white cell count and CRP.

Patient underwent an OGD which confirmed distal esophagitis for which esomeprazole was advised. She had a repeat abdominal and pelvic ultrasound scan, which confirmed gallstones with normal CBD parameters and revealed an epigastric echogenic mass-like lesion with a trace of fluid in the pelvis. It was queried by radiology whether this could represent a peripancreatic collection secondary to pancreatitis; hence, patient had an emergency MRI scan which revealed a large multilocular lesion in the right upper quadrant extending into the right adnexa and free fluid in the pelvis. Radiologists confirmed that this likely represented a ruptured or tortured ovarian teratodermoid (Fig. 1).

Patient was referred to gynecology and obstetrics team and had an emergency laparotomy and right salpingo-oophorectomy. Findings included a 20 cm massive hemorrhaging ovarian teratodermoid that had tortured on itself at the pedicle three times. The gall bladder contained stones but otherwise appeared normal. Patient recovered

well postoperatively and was discharged home with appointments to be seen in gynecology and antenatal clinics. Patient opted for an elective C-section at 39 weeks and 2 days and delivered a healthy baby girl. She was discharged from the surgical perspective and advised to get a referral to surgeons should she become symptomatic with the gall stones in the future.

Discussion

Teratodermoids

Teratodermoid is an encapsulated tumor and it has been stipulated that it is composed of components arising from abnormal development of germ and embryonic cells although the exact cause remains unknown [1, 2]. Consequently, teratodermoids have been reported to contain tissues and organs such as hair, teeth, bone and eyes, or even limbs. Frequently, the teratodermoids may also contain fluid filled cysts. These tumors can occur at all stages of life, but have been commonly reported in the reproductive years [3, 4]. Hence, these tumors are frequently seen during pregnancy [4]. These tumors which are often an incidental finding during routine scans, are often benign, usually asymptomatic and only come forth if there are complications [5].

Due to physiological changes that occur in pregnancy, there is increased risk of complication associated with such tumors including rupture, torsion, infection, and degeneration. In fact, several cases of ruptured or tortured teratodermoids have been reported in literature and most of these occurred spontaneously or iatrogenically [6, 7]. This will eventually lead to a clinical presentation of an acute abdomen secondary to chemical peritonitis [7]. Based on the size, place, and the physiological changes associated with pregnancy, the tumor may mimic other differentials as happened in this case [8].

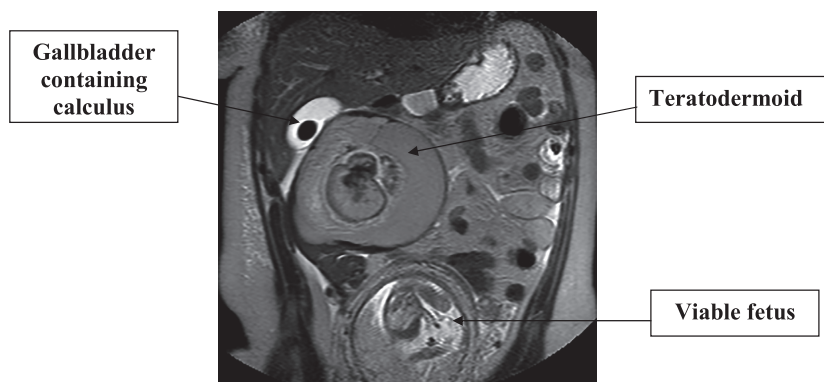


Figure 1. Teratodermoid mimicking cholecystitis.

Acute cholecystitis

The assessment of acute cholecystitis in an acute abdomen is similar in both pregnant and nonpregnant patients. Pregnancy has been implicated as a cause of bile stone formation, and gallstones have been reported in 1–3% of pregnant patients [9]. Subsequently, acute cholecystitis is a well-known pregnancy-associated condition that may cause an acute abdomen.

A wide range of symptoms have been associated with gallstones including right upper quadrant pain, anorexia, nausea, vomiting, heartburn, bloating, intolerance to fatty foods, itching, and jaundice may be seen. Despite this, the diagnosis remains a challenge because most of these symptoms may be mimicked by alternative differentials including appendicitis, peptic ulcer disease, pyelonephritis, HELLP syndrome, acute fatty liver, hepatitis, ovarian pathology (ruptured cysts and torsion) and pregnancy-related complication such as hyper emesis, cholestasis and upper digestive complaints. Additionally, majority of the gravida patients with gallstones often remain asymptomatic, and gallstones may be an incidental finding during routine scans [9]. Furthermore, physical examination to look for the classical Murphy's sign may be complicated by gestational age and body mass index. None the less symptomatic patients exhibiting suspicious signs must be considered as having acute cholecystitis. It is especially important to exclude this diagnosis by admitting the pregnant patients because if left untreated, the presence of calculi in the common bile duct pose a risk of developing complications such as ascending cholangitis, pancreatitis, empyema, perforation, and gangrenous cholecystitis with life-threatening consequences [10].

Use of imaging modalities

Clinical diagnosis can be confirmed by utilizing imaging studies. Common imaging modalities considered for the diagnosis may include ultrasound, MRI, CT, and ERCP. However, it is important to weigh the advantages, disadvantages, risks, and benefits of these studies in a pregnant patient. The main concern is that fetal exposure to the ionizing radiation may have carcinogenic and teratogenic effects [11]. It has been estimated that exposure to ionizing radiation in pregnancy may lead to miscarriage, fetal malformations, growth restriction, mental retardation, and behavioral defects [11]. Hence, great consideration needs to be given to ionizing versus nonionizing imaging modalities prior to making any decision.

Ultrasound can be performed as it is the most sensitive and safe imaging modality to confirm the presence of gallstones or adenexal masses in pregnant females with no concern about exposure to ionizing radiation [12].

Additionally, this imaging modality is relatively inexpensive and readily available. Adenexal masses may have a characteristic sonographic appearance which allows the radiologist to distinguish if the features are consistent with a benign, malignant, ovarian, and extraovarian cause [13–15]. Similarly, a thick walled gallbladder with pericholecystic fluid and calculi will be consistent with the diagnosis of acute cholecystitis [12]. These findings will be similar in pregnant and nonpregnant patients. Ultrasound will provide sufficient information majority of the time to guide decisions regarding conservative management versus explorative surgery in pregnant patients, however, ultrasound has its limitations; it does not show soft tissue detail as well as MRI or CT, is operator dependent, and may fail to classify nonspecific sonographic features when investigating adenexal disease or identify small stones, calculi present in the ductal system or small biliary leaks secondary to perforation in gallstone disease. In such cases, further radiological testing is required [12, 13].

The MRI is an imaging modality which uses electromagnetic radio waves to generate images and can be relied upon to diagnose different etiologies of abdominal pain in any stage of pregnancy. It provides better images than ultrasound while avoiding the ionizing radiation of CT scanning and is particularly useful as a second imaging study in distinguishing significant abdominal pathologies and offers a timely diagnosis in surgical or gynecological emergencies where treatment for optimal care for the patient or fetus is essential [11, 16, 17].

Although not ideal, however, in situations where other modalities may not be available CT scanning can still be considered and discussed with the pregnant patient [11]. The risk of ionizing radiation exposure, although relatively small, still exists with this modality; however, this should not prevent its use in an emergency situation if the need arises and can be adjusted by modifying scanning protocols after discussing with radiological department to ensure minimal radiation exposure to the fetus [18].

In cases of acute cholecystitis and its complications, specifically if there are great concerns about the clinical situation of a pregnant patient, ERCP with or without sphincterotomy may also be useful in diagnoses and treatment [19]. The theoretical risk of the fetus being exposed to the radiation is of little concern when this modality is used after the first trimester; however, the abdomen should be shielded throughout to minimize this risk.

Management Options

Teratodermoids

In pregnant patients with teratodermoids, management options may be conservative or surgical and are deter-

mined by the clinical situation, fertility status, gestational age, and surgeon's preference. Where the teratodermoids are found in the first trimester of pregnancy and are asymptomatic, patients can be managed conservatively and the treatment can be deferred until delivery provided there are no concerning features, including diameter greater than 10 cm as a greater size increases the risk of complications such as torsion, rupture, or obstruction of labor; additionally, features such as presence of septae with solid, cystic or papillary areas may be consistent with the likelihood of malignancy [4, 14, 15].

However, if teratodermoids persist into second trimester, have concerning features or the patient is symptomatic due to rupture or torsion surgical removal should be performed to avoid further complications [4]. In pregnant patients, surgical options include laparoscopy or a laparotomy with the intent to resect these tumors via oophorectomy or cystectomy depending on the clinical situation and intraoperative findings [6].

Acute cholecystitis

Pregnant patients with acute cholecystitis warrant a hospital admission. They can be managed conservatively or surgically based on patient's clinical condition and preference. Conservative treatment focuses on pain management, hydration, and antibiotics. It is often an attempt to avoid surgery during pregnancy because of the risks associated with surgical intervention. Over recent years, literature has been published which is suggestive of poor fetal outcome, longer hospital stays and increased complications in pregnant patients managed conservatively when comparison to those who underwent surgical management [20].

An intermediate approach in pregnant patients as an alternative to surgical management that has received attention is percutaneous cholecystostomy. This approach involves biliary drainage under ultrasound guidance [21]. These patients can subsequently have cholecystectomy after delivery. However, limited data are available to recommend this approach in pregnancy. For this reason, this approach may be seldom used in pregnancy compared to conservative or surgical options.

Laparoscopic versus Laparotomy

Surgical management in pregnancy can involve laparoscopy or laparotomy and will be based on operating surgeon's judgment, preference, and experience. Gestational age, uterine size, maternal BMI, surgical history, and clinical condition need to be taken into account when deciding upon a surgical approach. Laparoscopic approach can be safely performed during any trimester and has the possible advantage of minimal uterine han-

dling while providing greater surgical view for inspection [22]. However, it does pose a risk of injuring the gravid uterus, and there are concerns regarding fetal acidosis secondary to pneumoperitoneum when raised intra-abdominal pressure is maintained over prolonged periods; however, there is no evidence to support this in human pregnancies [22]. The risk of injuring the gravid uterus can be minimized by using certain techniques such as the open Hasson's technique during the initial port placement as this allows abdominal access by taking into account previous incisions and the fundal height in pregnancy [23, 24]. Additionally, the risk of fetal acidosis in pregnant patients can also be reduced by maintaining CO₂ insufflation pressures between 10–15 mmHg while allowing for adequate visualization and monitoring maternal CO₂ by capnography during laparoscopy [23, 25].

In addition, conversion to open surgery may be necessary due to complications or technical issues. A laparotomy allows an adequate incision to be made over point of maximal tenderness allowing easy access and direct view of the affected pathology and avoids the risk of fetal acidosis secondary to pneumoperitoneum [22]. Additionally, the abdomen can be extensively irrigated hence minimizing the risk of infection. The open approach may have the disadvantage of prolonging postoperative recovery [22].

Conclusion

This is an interesting case of a torted and ruptured teratodermoid misdiagnosed as acute cholecystitis. Acute cholecystitis is a diagnosis frequently encountered in pregnant patients presenting with acute abdomen given the physiological changes that predispose to formation of gallstones. These patients can be managed conservatively or surgically based on the clinical situation and clinician's preference.

Careful consideration need to be given to use of imaging modalities in gravid patients as diagnostic delay can lead to adverse outcome for the patient and liaising with radiology department is helpful. Additionally, alternative differential diagnosis need to be considered as many conditions can mimic symptoms of biliary disease and misdiagnosis may be associated with significant morbidity and mortality.

To conclude, the diagnosis of an acute abdomen in pregnancy poses a great challenge for most clinicians and a multidisciplinary approach is essential to reach and ensure a positive outcome. This is evident in our care where gynecology and obstetrics, radiology, and surgical department worked together as a team to optimize patient management.

Conflict of Interest

None declared.

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