

Case Report

Acute gangrenous appendicitis and acute gangrenous cholecystitis in a pregnant patient, a difficult diagnosis: a case report

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ABSTRACT

Abdominal pain is a common complaint in pregnancy, especially given the physiological and anatomical changes that occur as the pregnancy progresses. The diagnosis and treatment of common surgical pathologies can therefore be difficult and limited by the special considerations for the fetus. While uncommon in the general population, concurrent or subsequent disease processes should be considered in the pregnant patient. We present the case of a 36 year old, 13 weeks pregnant female who presented with both acute appendicitis and acute cholecystitis.

Keywords: Appendicitis, Cholecystitis, Pregnancy, Pregnant

INTRODUCTION

General surgeons are often called to evaluate patients with abdominal pain. The differential diagnosis list must be expanded in pregnant woman and the approach to diagnosing and treating certain diseases must also be adjusted to prevent harm to the fetus. The physiological changes that occur during pregnancy can often lead to benign abdominal pain such as stretching of the round ligament in early pregnancy, Braxton Hicks contractions or compression of the urinary tract leading to symptoms mimicking nephrolithiasis.¹ Acute appendicitis is the most common general surgery problem encountered in pregnancy, occurring in about 0.06-0.12% of pregnancies.² The frequency of appendix perforation is also much higher in the pregnant population at 55% compared to the 4-19% of the general population.³ Acute cholecystitis is the second most common non-obstetric abdominal emergency in pregnant woman, occurring in 0.01-0.1% of pregnancies.⁴ The simultaneous occurrence of acute appendicitis and cholecystitis in the general

population is rare.⁵ Here we report a case of concurrent appendicitis and cholecystitis in a pregnant woman.

CASE REPORT

A 36 year old, 13 weeks pregnant female (G2P1001) presented with periumbilical pain for one day. She was afebrile with a white blood cell count of 10.5 and normal liver function tests. Ultrasound demonstrated cholelithiasis without evidence of cholecystitis and non-visualization of the appendix (Figure 1a). A subsequent MRI showed a borderline distended appendix, equivocal for appendicitis (Figure 1b). The patient was initially managed non-operatively with intravenous antibiotics as the diagnosis of appendicitis was equivocal. Over the course of two days, the patient clinically worsened developing localized right lower quadrant (RLQ) tenderness, increasing leukocytosis and tachycardia. The patient was taken for a laparoscopic appendectomy during which a gangrenous perforated appendix was removed and a drain left in place (Figure 2). After a brief

period of improvement, on post-operative day five, the patient experienced intense right upper quadrant pain. A repeat ultrasound demonstrated a distended gallbladder filled with sludge, edema and wall thickening (Figure 3a). CT abdomen/pelvis showed a distended, thickened gallbladder (Figure 3b) with adjacent fat stranding as well as a 5 cm RLQ fluid collection (Figure 3 c and d).

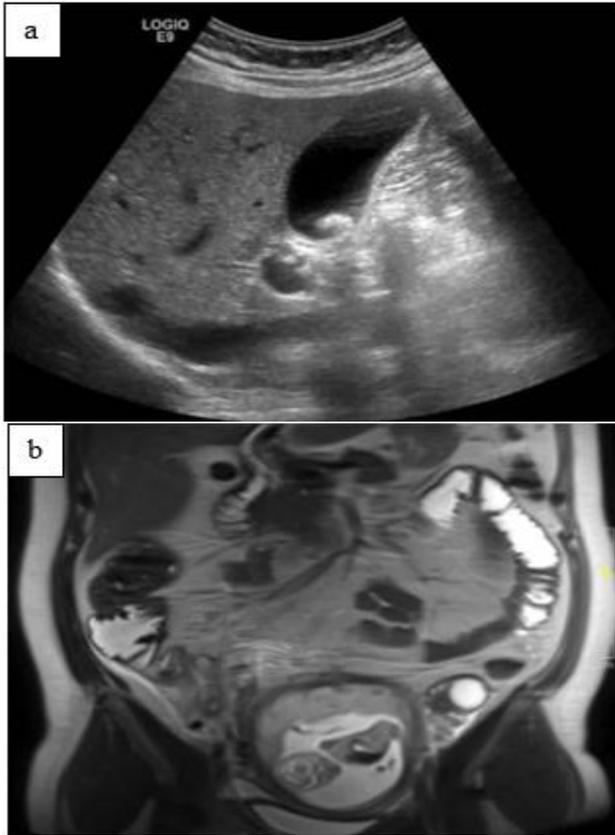


Figure 1: (a) ultrasound showing cholelithiasis without cholecystitis; (b) MRI showing borderline distended appendix.

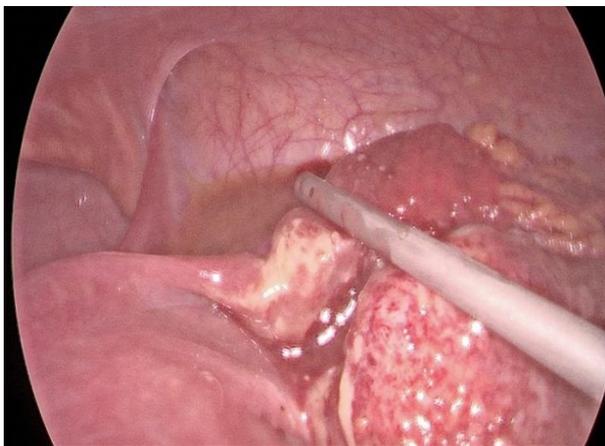


Figure 2: Intraoperative laparoscopic view of perforated, gangrenous appendix.

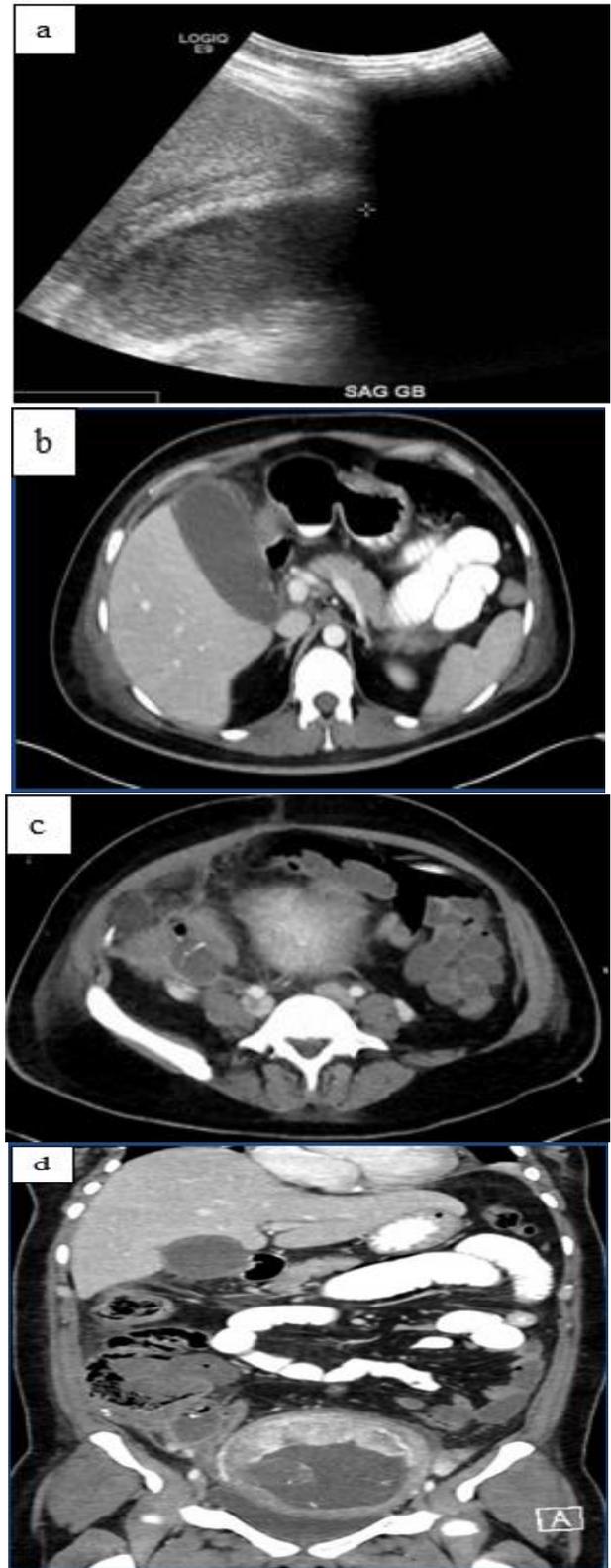


Figure 3: (a) repeat ultrasound demonstrating distended gallbladder with edema and wall thickening; (b) CT abdomen/pelvis confirming distended, thickened gallbladder with adjacent fat stranding (c and d) CT abdomen/pelvis showing 5 cm RLQ collection.

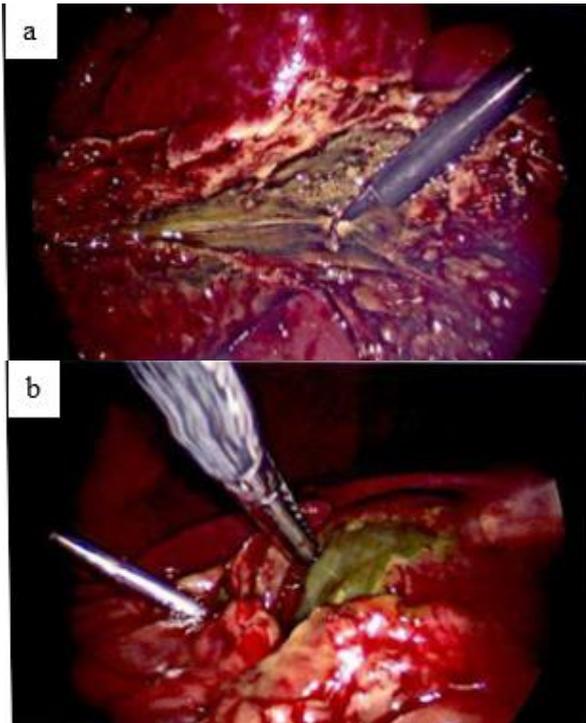


Figure 4 (a and b): Intraoperative laparoscopic view of gangrenous gallbladder.

The patient did not improve with continued IV antibiotics and was taken for laparoscopic cholecystectomy. A gangrenous gallbladder was removed (Figure 4 a and b) and washout of the right lower quadrant fluid collection was performed. Two days later, feculent fluid was noted from the drain consistent with appendiceal stump blowout. She was taken back to the operating room and underwent diagnostic laparoscopy converted to laparotomy, washout and creation of diverting loop ileostomy. Postoperatively she remained intubated and was managed in the surgical intensive care unit. The fetus ultimately was spontaneously aborted. The patient improved and was discharged home in good condition. Final pathology confirmed acute gangrenous appendicitis and acute on chronic cholecystitis with serosal fibrosis and adhesion. She returned three months later for reversal of ileostomy, which was uncomplicated. She was doing well at her five week post-operative visit.

DISCUSSION

Pregnant patients with appendicitis or cholecystitis often have atypical presentations, such as heartburn, bowel irregularity, malaise with pain that may or may not localize to the mid or upper right side of the abdomen.¹ As the pregnancy advances into the third trimester, the clinical picture can become more complex as the gravid uterus distorts the abdominal anatomy. The diagnosis is made even more difficult by the fact that typical imaging modalities, that is, ultrasound or CT are less sensitive in pregnancy for acute appendicitis (sensitivity 67-100%, specificity 83-96% versus 86 and 96% respectively in

nonpregnant population) and controversies exist about contraindications due to potential fetus harm.⁶ MRI is the preferred next test in both cases but may not be readily available. In such cases, there may be value in modified CT protocols to minimize the exposure to radiation.⁷

Perforation rates in acute appendicitis are higher in pregnant women compared with the non-pregnant population possibly due to delay in diagnosis.⁸ The risk of morbidity, preterm delivery and fetal loss increases with perforation.⁹ A number of randomized trials have demonstrated the efficacy and safety of non-operative treatment with antibiotics alone for uncomplicated appendicitis in non-pregnant adults.¹⁰ There are several case reports where acute uncomplicated appendicitis has been treated non-operatively in pregnant patients. Early surgical intervention is still recommended to prevent complications.¹¹ A higher negative appendectomy rate is seen in pregnant versus non-pregnant patients and has been seen as acceptable to avoid a missed diagnosis.⁹ However, negative appendectomy in pregnant patients has been associated with increased fetal loss and preterm labor.¹²

Although data is limited comparing the outcomes of operative versus non-operative management of acute cholecystitis in pregnant patients, surgical intervention is still the recommended management.¹³ Given the high risk of recurrence of symptoms or serious complications, surgical intervention rather than conservative management is recommended to women in their first or second trimester. Cholecystectomy is generally not recommended in the third trimester as it is associated with increased preterm delivery.¹⁴

The differential diagnosis for abdominal pain is extensive and while most patients have a single pathology, general surgeons must also consider that more than one disease process can occasionally be present at one time. In 1977, over an 8 year period, Black observed three cases of acute cholecystitis, alongside a second abdominal illness: acute appendicitis, small bowel obstruction and acute diverticulitis, respectively.¹⁵ Buhamed et al reviewed 11 published case reports of concurrent acute appendicitis and acute cholecystitis with more than half of the patients presenting with different often ill-defined pain locations: epigastric, right upper quadrant or diffuse abdominal pain. CT scan was the most common modality used to diagnose both conditions, although in pregnant woman it is commonly avoided.¹⁶

Acute appendicitis with concurrent acute cholecystitis is rare in both the non-pregnant and pregnant populations. In our literature search, only one case report by Grimes in 1976 describes a 36 year old, at 10 weeks of gestation, identified with spontaneous perforation of the gallbladder and simultaneous appendicitis.¹⁷ In our case, the acute appendicitis process was treated first. The pathogenesis of concurrent appendicitis and cholecystitis is unclear. It has been hypothesized that bacterial translocation from

the appendix into the portal venous system is a causative factor. This can lead to impairment of bile salt excretion via *E. coli* endotoxins causing damage to liver cells.¹² In our case, it was also possible that the septic state from perforated appendicitis of the patient, coupled with pre-existing gallstones, contributed to the subsequent development of cholecystitis. A laparoscopic approach in these cases can be ideal as it gives the optimal view of the entire abdomen and can be used to remove both the appendix and gallbladder in the same setting.

CONCLUSION

The diagnosis of abdominal pain in the pregnant patient can be difficult given the physiological, anatomical and chemical changes associated with pregnancy. Concurrent acute appendicitis with cholecystitis is a rare entity in both the pregnant and non-pregnant populations. The possibility of one disease process being subsequent to the other has not been elucidated. Perforated appendicitis compounded by acute cholecystitis can lead to deleterious outcomes for the mother and fetus. CT scan done promptly may provide a more accurate diagnosis. Although non-operative management is being performed for pregnant patients, early surgical intervention is still recommended for both conditions, to avoid the potential devastating outcomes resulting from perforation and sepsis.

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