

Case Report

Case Report of Acalculous Cholecystitis in the Postpartum Period at St. Paul's Hospital Millennium Medical College

Introduction

Acute abdomen in pregnancy remains one of the most challenging diagnostic and therapeutic dilemmas today. The incidence of the acute abdomen during pregnancy is 1 in 500–635 pregnancies. Despite advancements in medical technology, preoperative diagnosis of acute abdominal conditions is still inaccurate. Laboratory parameters are not specific and often altered as a physiologic consequence of pregnancy. The use of laparoscopic procedures as diagnostic tools makes the diagnosis of such conditions earlier, more accurate, and safer. Appendicitis is the most common cause of acute abdomen during pregnancy, occurring with a usual frequency of 1 in 500–2000 pregnancies, which amounts to 25% of operative indications for non-obstetric surgery during pregnancy [1].

Gallbladder disease is a leading non-obstetrical cause of hospitalization in the first year postpartum. Acute cholecystitis is the second most common cause of acute abdomen during pregnancy, occurring in 1 in 1600–10,000 pregnancies [1,2].

Cholecystitis is when a gallbladder is inflamed. Gallbladder inflammation can be caused by mainly Gallstones which is termed calculus cholecystitis. Another form of cholecystitis known as acalculous cholecystitis can be caused by a variety of reasons without gallstone appearance on imaging. Acalculous cholecystitis can occur in critically ill or injured patients. However, the development of acute acalculous cholecystitis is not limited to surgical or injured patients, or even to the intensive care unit [2].

The symptomatology of acute cholecystitis is almost identical in pregnant and nonpregnant women. Nausea, vomiting, dyspepsia, intolerance of fatty foods, and an acute onset of a colicky or stabbing pain that begins over the mid epigastrium or right upper abdominal quadrant and radiates to the back are typical. Murphy's sign is less common in pregnant women with cholecystitis. Differential diagnosis includes Myocardial Infarction, Acute Fatty Liver in Pregnancy, HELLP Syndrome, Acute Appendicitis, Preeclampsia, Acute Hepatitis, Pancreatitis, Peptic Ulcer Disease, Pyelonephritis, Pneumonia, and Herpes Zoster. Hospitalization for the gallstone-related disease is common in the first year postpartum, most commonly for uncomplicated cholelithiasis. Risk factors for hospitalization include Pre-Pregnancy Body Mass Index, Race, Hispanic Ethnicity and Maternal Age [1-4].

Case Report

This is a 32-year-old female patient who came to the emergency on her 9th post-partum period after she presented with right upper quadrant abdominal pain of 4 days' duration. The pain is colicky in type which radiates to the back. It exacerbates with per oral intake of any kind of food. She also had associated vomiting of ingested matter for 4-5 episodes which later progressed to vomiting of bilious vomiting in 2-3 episodes. She also complained of low-grade intermittent fever, malaise, chills, and rigor.

All her symptoms started on the 3rd post-partum period after she gave birth to a 3.3 Kg female alive neonate via spontaneous vaginal delivery with an APGAR score of 7 and 8.

She had a history of preeclampsia during her first pregnancy but her current pregnancy was uneventful.

Otherwise

No history of yellowish discoloration of the eye and skin

No history of bowel habit change

No history of cough, contact with a chronic cougher

No history of shortness of breath, chest pain

No history of chronic illness

On the first day of admission on physical examination, she looks acutely sick looking. On her vital

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sign, her blood pressure ranges from 110/70 to 130/90. Her pulse rate ranges from 60-87. She had 2 episodes of 38.8°C temperature recording otherwise she had normal temperature recording. Her respiratory rate ranges from 16-23.

Her oxygen saturation ranges from 83-90% on atmospheric oxygen and she had a desaturation episode up to 83% but maintains up to 94% with 2 L of oxygen. She has pink conjunctiva and non-icteric sclera. She had fine crepitation over the lower 1/3rd of the left lung field. On abdominal examination, the abdomen was full and moves with respiration.

There is severe tenderness up on both superficial and deep palpation. Murphy's sign was positive. There was no sign of organomegaly as well as fluid collection.

For this, she was investigated with CBC which showed a White blood cell count of 5550 with left shift with a neutrophil percentile of 88.8% and lymphocyte of 9.5%. other parameters were in the normal range. CRP was elevated to the level of 163.5. chest x-ray was unremarkable. Abdominal ultrasound showed gall bladder collapsed with wall thickening of 1 cm and no stone seen. This ultrasound was repeated after 6 hours of fasting and showed gall bladder distension with wall thickening to the level of 1.6 cm, ultrasound murphy sign was positive and there was no stone seen which reported the possibility of acalculous cholecystitis. for this she was started on ceftriaxone 1g BID, metronidazole 500 mg IV TID, PCM 1g QID, omeprazole 40 mg iv BID, Plasil 10 mg iv TID, tramadol 50 mg IV TID. She was kept NPO and was on Maintenance fluid. She was on strict vital sign follow-up, abdominal pain monitoring, and investigation follow-up. In the following days, her symptoms subsided, and all her vitals were normal. Up on investigation her white blood cell count become 5580 with 59.3% of neutrophils and 30.1% of lymphocytes. Subsequent ultrasound findings showed a gall bladder normally distended with anechoic content, with increased wall thickness measuring 0.6cm. there was no pericholecystic fluid or stone seen. There was no sonographic murphy sign noticed. For this, she was discharged after fully recovering on short appointments.

Discussion

Acalculous cholecystitis is a hypokinetic condition of gallbladder emptying. It often presents as an acute ailment (acute cholecystitis), but it can also exhibit more chronic (chronic cholecystitis) symptoms. Acalculous cholecystitis is a life-threatening disorder that has a high risk of perforation and necrosis compared to the more typical calculous disease [4].

Acalculous cholecystitis constitutes 10% of all cases of acute cholecystitis and 5-10% of all cases of cholecystitis and occurs in 0.2-0.4% of critically ill patients. AAC is estimated to constitute at least 50-70% of cases of acute cholecystitis in children. The gallbladder wall thickness of 3.5 mm or more is generally accepted to be diagnostic, with a specificity of 98.5% [5].

In acalculous cholecystitis, the changes within the blood vessels in the gallbladder are initiated as the chain of events set in motion by the activation of factor XII-dependent pathways. Injuries to the blood vessels may be followed by edema of the serosa and muscularis, ischemia, and necrosis of a part or all of the gallbladder. Because of their severity, major burn injuries expose patients to many risks, including acute acalculous cholecystitis. Recent experimental evidence supports a vascular insult through the activation of Factor XII pathways as the initial event. Narcotic-induced biliary stasis appeared to be the prime factor involved in the genesis of acalculous cholecystitis after trauma. Acute acalculous cholecystitis was revealed by histologic studies of the gallbladder removed from six patients who had a cholecystectomy and at postmortem examination of the two patients who died following severe body burns and had not been operated upon. The most significant changes on microscopic examination were focal necrosis of the wall of the arteries and veins of the serosa and muscularis leading to dissection of the endothelium by erythrocytes and ultimate thrombosis in both arteries and veins [6,7,8].

There are different scientific research showing the occurrence of acalculous cholecystitis in different cases other than ICU patients and burn patients such as *P. falciparum* and *P. vivax* infection, sunitinib-related acute cholecystitis in a patient with chromophobe RCC, and also Acute acalculous cholecystitis may rarely present as a Mirizzi syndrome [9,10,11].

Acute cholecystitis is the second most frequent non-obstetric emergency of pregnancy, with approximately 40% of acute cases requiring surgery [12].

Profound physiologic changes in the gastrointestinal tract are encountered in pregnancy. Gastrointestinal motility and gastric emptying are decreased. These changes and the displacement and physiologic relaxation of the cardiac sphincter result in increased gastric reflux. In addition, the function of the gallbladder and pancreas is altered in pregnancy. These changes can make the diagnosis and treatment of various gastrointestinal disorders difficult. Although pregnancy does not predispose the gravid woman to cholecystitis or pancreatitis, it does increase the risk of cholelithiasis and biliary sludge formation [13].

Even if pregnancy and the postpartum period expose calculous cholecystitis there are only a few reports

regarding acalculous cholecystitis. Reports are suggesting a link between Hepatitis A and E infection. As for symptoms although most patients later presented with more classic symptoms of cholecystitis, many of these patients still presented with confusing clinical signs and symptoms leading to a delay in diagnosis. Ultrasound proved to be an important adjunct to the often-confusing clinical clues in making an early diagnosis. Three ultrasonographic signs in the absence of stones--1, a thickened gallbladder wall; 2, an enlarged tender gallbladder, and 3, a pericholecystic collection--were suggestive of acute acalculous cholecystitis [14-16].

Reports are suggesting other differentials which, might delay the diagnosis of acalculous cholecystitis. Patients may have preeclampsia associated with HELLP syndrome, where these abnormalities may cause not only HELLP syndrome but also pancreatitis and cholecystitis because of association with microvascular abnormalities that may involve splanchnic circulation. So, patients can have symptoms but they will not be identified unless there is a strong suspicion and investigation [17,18].

Patients also present with symptoms mimicking hyperemesis where a diagnosis can be easily missed [19].

In general, the mortality and morbidity rates associated with acalculous cholecystitis can be high; the illness is frequently observed in patients with sepsis or other serious conditions. The reported mortality range is 10%-50% for acalculous cholecystitis as compared to 1% for calculous cholecystitis.

A study by Gu et al found a significantly higher frequency of cerebrovascular accidents in patients with Acute Acalculous Cholecystitis (AAC) than those with Acute Calculous Cholecystitis (ACC), the respective rates being 15.9% and 6.7%. The incidence of gangrenous cholecystitis was also greater in the AAC than in ACC (31.2% vs 5.6%, respectively).

Main complications include Perforation or gangrene of the gallbladder and extra biliary abscess formation may occur. A Complete Blood Cell (CBC) count, liver function studies, and blood culture tests are some of the main laboratory tests that should be performed. However, note that laboratory findings may be negative or inconclusive in late-stage disease, and bile culture results are negative in nearly 50% of patients with acalculous cholecystitis, probably because of concurrent antibiotic therapy in these patients.

Perform abdominal ultrasonography or Computed Tomography (CT) scanning.

For surgical candidates, perform cholecystectomy using an open or laparoscopic approach as indicated. For patients who are not surgical candidates, perform percutaneous cholecystostomy [20,21,22].

Regarding cases during pregnancy and postpartum, Conservative treatment of cholelithiasis and its complications during pregnancy is associated with recurrent biliary symptoms and frequent emergency department visits.

Studies exhibit significant trends favoring surgical management of acute cholecystitis during pregnancy. Although further studies are still warranted, ERCP and early laparoscopic cholecystectomy are safe alternative approaches during pregnancy. Even if conservative management is considered, a strict follow-up to a patient's clinical condition and ultrasound findings will be very important [23,24].

In this case report the patient was being followed strictly with all the vital signs, physical examination, and clinical condition as well as ultrasound which the conservative management was enough.

Conclusion

Conservative management in a setting where the strict follow-up to a patient's clinical condition can be followed with serial ultrasound examination may prevent any surgical intervention. Otherwise, due to the high rate of mortality and complications surgical intervention must be considered.

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