Review article

Acute Pancreatitis in Pregnancy

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ABSTRACT

Any cause for acute abdomen can occur coincidently with pregnancy. Acute pancreatitis during pregnancy is rare but severe disease, with high maternal and fetal mortality. It usually occurs during the third trimester or the early postpartum period. Maternal mortality (37%) and perinatal mortality (40%) has recently decreased thanks to earlier diagnosis and some maternal and neonatal intensive care improvement. Acute pancreatitis in pregnancy is most commonly caused by gallstones (65–100%), alcohol abuse and hypertriglyceridemia. Most of the patients (60%) are diagnosed with pancreatitis in the third trimester. Conservative treatment during the first and third trimester and laparoscopic cholecystectomy during the second trimester and early postpartum period are recommended. A multidisciplinary approach, including gastroenterologists, obstetricians, and surgeon seems to be the key in improving threats, such as preterm labor, prematurity and in utero fetal death. As in any other disease associated with pregnancy, acute pancreatitis is associated with greater concerns as it deals with two lives rather than just one as in the non-pregnant population.

ETIOLOGY

Acute pancreatitis in pregnancy (APIP) is rare condition with incidence of 1/1000–12,000 pregnant women. The wide variation in the incidence is influenced by the prevalence of its most important etiological factor, i.e., gallstone disease (4, 5). Some factors have been recognized as pathogenic cause for APIP: gallstone increased maternal age, increased pregnancy number, high fat diet, and high body mass index.

Cholesterol secretion in the hepatic bile increases in the second and third trimester compared to bile acids and phospholipids, leading to supersaturated bile. Fasting and postprandial gallbladder volumes became greater, with reduced rate and volume of emptying. Combination of physiological changes leads to the retention of cholesterol crystals and eventual gallstones. The formation of biliary sludge and stones is strongly associated with frequency and number of pregnancies.

Serum lipoproteins and triglycerides are tree times elevated in pregnant women. Cholesterol is elevated 25–50 %, because of high estrogen rate. The limit of triglycerides is 300 mg/dL, and values that are needed to cause pancreatitis are as high as 750–1000 mg/dL

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(1, 6). The most common misdiagnosis of pancreatitis in the first trimester is hyperemesis. In women presenting with severe nausea and vomiting in the first trimester, consider obtaining amylase, lipase levels, and liver function tests which, when elevated, are diagnostic for pancreatitis.

ACUTE PANCREATITIS DEFINITION

APIP is divided into three severity categories. Mild acute pancreatitis referred to pancreatitis without organ dysfunction or generalized complications. Moderate to severe pancreatitis referred to pancreatitis with transient organ dysfunction or localized/generalized complication within 48 hours after treatment. Severe pancreatitis referred to pancreatitis with persistent organ dysfunction or localized complications, including acute peripancreatic fluid collection, pancreatic pseudocyst, acute necrosis and encapsulated necrosis (12). The generalized complication referred to two of the following: body temperature > 38 °C or < 36 °C; white blood cell count > 12,000/mm^3 or < 4000/mm^3; heart rate > 90 beats/minute, respiratory rate > 20/minute or pCO_2 < 32 mmHg more than 48 hours after treatment. Acute gallstone pancreatitis was diagnosed by an increased alanine aminotransferase level > 150 U/L within 48 hours of onset, as well as radiological evidence of abdominal US and magnetic resonance cholangiopancreatography (MRCP) (7). Hypertriglyceridemic pancreatitis is diagnosed based on Chinese guidelines for the management of acute pancreatitis (6) with either a serum triglyceride ≥ 11.3 mmol/L or serum triglyceride 5.65–11.3 mmol/L with a lipid turbidity appearance after excluding gallstone, alcohol or medication factors. Idiopathic pancreatitis was diagnosed with radiological evidence of pancreatitis after excluding gallstone, alcohol, hypertriglyceridemia, medication, trauma, autoimmune and surgical factors (7).

DIAGNOSIS

The approach to pregnant patients with severe abdominal pain is very similar to that for non-pregnant patients with acute abdomen. However, the physiologic changes associated with pregnancy must be considered when interpreting findings from the history and physical examination. Nausea, vomiting, constipation, increased frequency of urination, and pelvic or abdominal discomfort are frequently experienced in normal pregnancy.

The diagnosis of acute pancreatitis is often complicated by other obstetrical emergencies. Common clinical findings are sudden in onset, severe, constant abdominal pain and may radiate to the back, nausea, severe vomiting and general physical impairment. During physical exam, we can find epigastric tenderness and calm peristaltic, although it is difficult to interpret abdominal tenderness, muscular guarding and distention. The underlying inflammation has no direct contact with the parietal peritoneum, and this prevents the muscular response or guarding that would otherwise be expected (8). To help distinguish extra-uterine tenderness from uterine tenderness, examining with the patient in the right or left decubitus position displacing the gravid uterus to one side is helpful.

Diagnosis of APIP, based on Atlanta classification, requires two of the following three features: abdominal pain consistent with acute pancreatitis (acute onset of a persistent, severe, epigastric pain often radiating to the back), serum lipase activity (or amylase activity) at least three times greater than the upper limit of normal characteristic findings or acute pancreatitis on contrast-enhanced CT and less commonly MRI or transabdominal US. Abdominal pain without elevated serum amylase/lipase activity requires imaging, while abdominal pain and positive enzymes does not require imaging (9).

US is probably the most frequently used radiologic modality for evaluating a pregnant abdomen. Also, it is the initial imaging technique of choice to identify a biliary etiology. Gallstones as a potential cause of AP are identified by abdominal US in most cases. Radiography and CT evaluation of patients who are pregnant is often a source of anxiety for the practicing clinician, although radiation exposure from a single diagnostic

procedure does not result in harmful fetal effects (10). Diagnostic endoscopic retrograde cholangiopancreatography is to be avoided whenever possible owing to the associated risks, including bleeding, perforation, pancreatitis and fetal radiation.

TREATMENT

Initial treatment is supportive and includes intravenous fluids for hypovolemia, correction of electrolyte imbalances, glucose levels, calcium disturbances, withholding oral intake, nasogastric suction and total parental nutrition (11).

In evaluating pregnant patients with AP, the four important questions to be answered are: does the patient have AP; if it is AP, what is the predicted severity; is there a biliary etiology and what trimester of pregnancy is. The answer to the last question determines the choice of imaging studies and mode of therapy (12).

Patients with mild AP do not need antibiotics. In a pregnant patient, there are concerns with antibiotics being transplacentally transferred to the fetus with a risk of teratogenicity. Regardless of initial drug regimen, therapy should be modified to reflect the organisms recovered in blood cultures and the clinical status of the patient (4).

AP patients with gallstones need to be evaluated for early cholecystectomy to prevent recurrence of AP later on in the pregnancy when it could be more serious and dangerous. The second trimester is the best period for surgery since during this period organogenesis is complete, and the uterus is not big enough to obliterate the surgical view for laparoscopic approach. It has also been recognized that cholecystectomy during the second trimester is safe for both the mother and the fetus (13, 14).

The indications for surgery in pregnancy are severity of symptoms, obstructive jaundice, acute cholecystitis intractable to medical treatment and peritonitis. Although laparoscopy is accepted as safe, reports of fetal demise after the procedure continue to occur in the literature (15). Several studies have indicated, however, that laparoscopic surgery can be safely performed on pregnant patients during any trimester, without an appreciably increased risk to the mother or fetus (16).

Pregnancy termination is made by experienced obstetricians and gastroenterologists after 34th week of pregnancy. The indications were confirmed fetal death in utero, obligation to use fetal-toxic medication for pancreatitis or organ failure. Approaches for pregnancy termination included Caesarean section, natural birth including pre-term and termed birth and natural or drug-induced abortion. Mode of delivery should also be decided by obstetric indications. If continuation of the pregnancy is expected to lead to maternal morbidity or mortality, delivery is indicated. If improvement of the maternal condition cannot be expected with delivery, treat the patient with the fetus in utero (3).

CONCLUSION

Acute pancreatitis is rare in pregnancy, occurring most commonly in the third trimester. Among the various etiological factors for AP in pregnancy, gallstone disease is the most common one. Abdominal ultrasound, CT scan, endoscopic US, and MRCP are the available imaging studies in diagnosing a biliary etiology for AP. The general management of AP in pregnancy is supportive. Laparoscopic cholecystectomy is ideally performed in the second trimester when the risk to injure fetus is the least. We are limited with diagnostic and surgical therapy. Early diagnosis and good supportive care by multidisciplinary team are crucial to ensure good maternal and fetal outcomes.

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