

ACUTE NECROTIZING PANCREATITIS COMPLICATING UTEROPLACENTAL APOPLEXY

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SUMMARY

Objective: Abruptio placentae induced by acute pancreatitis during pregnancy is very rare. We present a pregnant woman with a series of complications due to acute necrotizing pancreatitis.

Case Report: Presented herein is a 21-year-old, nulliparous woman at 33 weeks' gestation. The initial episode of abdominal pain was thought to be acute appendicitis (which in actuality was identified to be acute pancreatitis) and was complicated with abruptio placentae, uteroplacental apoplexy, and intrauterine fetal demise. Sterile necrotizing pancreatitis was confirmed by computerized axial tomography and total negativity of bacterial cultures taken from blood and ascites during the hospitalization. Nonsurgical management with conservative treatment was employed and the patient recovered gradually.

Conclusion: Acute pancreatitis is difficult to diagnose during pregnancy. It presents as a systemic inflammatory response syndrome resulting in hemodynamic changes and may lead to abruptio placentae. Nonsurgical conservative treatment may be useful in such patients. [*Taiwanese J Obstet Gynecol* 2007;46(1):64-67]

Key Words: abruptio placentae, acute necrotizing pancreatitis, intrauterine fetal demise, pregnancy, uteroplacental apoplexy

Introduction

The frequency of acute pancreatitis during pregnancy has been reported to be between one in 1,000 and one in 12,000 deliveries [1]. In nonpregnant patients, biliary stone disease and alcohol consumption are equally responsible for 80% of patients with pancreatitis, 10% is due to various causes and 10% to idiopathic causes [2]. Most cases of acute pancreatitis in pregnancy are associated with cholelithiasis, which is a common cause of this disease process [3]. Previous studies [1,4,5] revealed that maternal and perinatal mortality due to acute pancreatitis during pregnancy is approximately 20–50% and most occur during the third trimester.

Abruptio placentae is indicated when the decidual spiral artery ruptures to cause a hematoma that separates the placenta from the uterus and is commonly associated with maternal hypertension [6]. In severe cases, blood prominently infiltrates the uterine myometrium up to the serosa and this phenomenon is designated as uteroplacental apoplexy. Abruptio placentae induced by acute pancreatitis is very rare and was reported in 1962 by Pagliari [7].

We describe a nulliparous woman who was diagnosed with sterile necrotizing pancreatitis at 33 weeks' gestation, complicated by abruptio placentae, uteroplacental apoplexy, intrauterine fetal demise (IUFD), and diabetes mellitus. These problems were resolved gradually with conservative nonsurgical treatment during 36 days of hospitalization. Complicated diabetes mellitus was diagnosed and the patient was given oral hypoglycemic agents for blood sugar control. We discuss the potential cause of abruptio placentae and a series of associated complications due to acute pancreatitis during pregnancy.

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Case Report

A 21-year-old, nulliparous woman at 33 weeks' gestational age presented to the emergency room with severe abdominal pain radiating to the back, along with nausea and vomiting for 12 hours on 9th July 2004 (Day 1). Body mass index of the patient was 29.7 kg/m², height was 152 cm, and weight 68.6 kg. The patient had no history of hypertension, diabetes mellitus, alcohol consumption, or biliary stone disease. In the emergency room, the vital signs were blood pressure 140/100 mmHg (supine), heart rate 80 beats/minute, respiration rate 18/minute, and ear temperature 38.5°C. Leukocytosis was 26,180/mm³, nonfasting blood glucose was 193 mg/dL (reference range: 60–100 mg/dL), blood urea nitrogen was 17.4 mg/dL (reference range: 6–22 mg/dL), and aspartate transaminase was 32 IU/L (reference range: 13–38 IU/L). Acute appendicitis was initially suspected from the clinical manifestations. The patient was given intravenous antibiotics and prepared for surgical exploratory laparotomy. We closely monitored the fetal status and cardiotocography revealed a fetal heart beat of 160 beats/minute with moderate variability and occasional uterine contractions. Soon after hospitalization, the fetal heart rate monitoring revealed fetal deceleration (< 100 beats/minute) and fetal distress was apparent. Emergency cesarean section was performed and a demised fetus was delivered. Intraoperatively, the appendix was normal in appearance; however, massive serosanguineous ascites and abruptio placentae accompanied by uteroplacental apoplexy (Couvelaire uterus) were noted (Figure 1).

Postoperatively, the patient presented with abdominal pain, mild fever, leukocytosis (18,950/mm³), tachycardia

(> 140 beats/minute), and tachypnea (> 30/minute), and was transferred to the intensive care unit immediately. Fever, abdominal pain with distension, post-operative ileus, intra-abdominal ascites, and vomiting during feeding for the first time occurred in the intensive care unit. The patient was treated nil by mouth (NPO), and given gastric decompression with nasogastric tube, continuous intravenous antibiotics, and fluid supplementation. Due to the persistence of these symptoms, the patient underwent abdominal computerized tomography on 16th July 2004 (Day 7), which revealed necrotizing pancreatitis with ascites and left pleural effusion (Figure 2). Biochemical profiles on the same day were unremarkable with amylase 42 IU/L (reference range: 0–90 IU/L) and lipase 75 U/L (reference range: 7–60 U/L). However, hypoalbuminemia (2.5 g/dL; reference range: 3.5–5.1 g/dL) and hypocalcemia (7.4 mg/dL; reference range: 8.4–10.4 mg/dL) were detected. Abdominal ultrasound revealed the absence of biliary stones, gallbladder sludge, and a thickened gallbladder wall. All cultures of blood, urine, and ascites revealed no growth of aerobic and anaerobic bacteria during 36 days of hospitalization.

Acute sterile necrotizing pancreatitis complicated with abruptio placentae, uteroplacental apoplexy, IUFD, and postpartum diabetes mellitus was diagnosed; we missed the episode of acute pancreatitis, which was not suspected initially. The patient was treated with nasogastric suction, NPO, intravenous fluids, analgesics for pain relief, antibiotics, and insulin control. Fever, tachycardia, and gastrointestinal symptoms subsided after treatment began. The patient recovered and was discharged after 36 days of hospitalization. Complicating diabetes mellitus was diagnosed and the patient

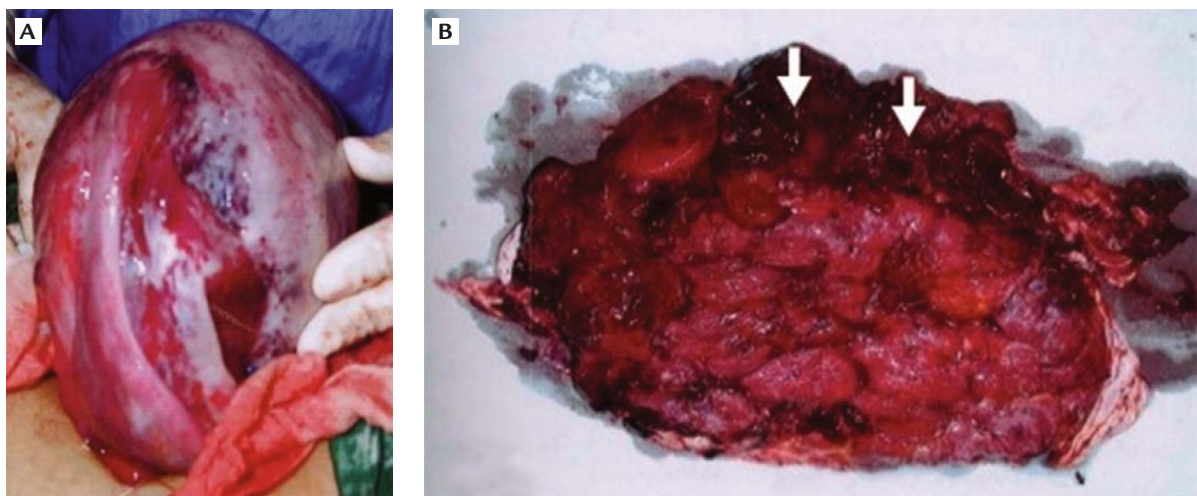


Figure 1. Uterus and placenta are demonstrated in the patient with acute necrotizing pancreatitis. (A) Uteroplacental apoplexy, the so-called Couvelaire uterus, means extravasation of blood into the uterus myometrium and serosa. (B) Blood clots adherent to the placenta (arrows) indicates abruptio placentae and the cause of uteroplacental apoplexy.

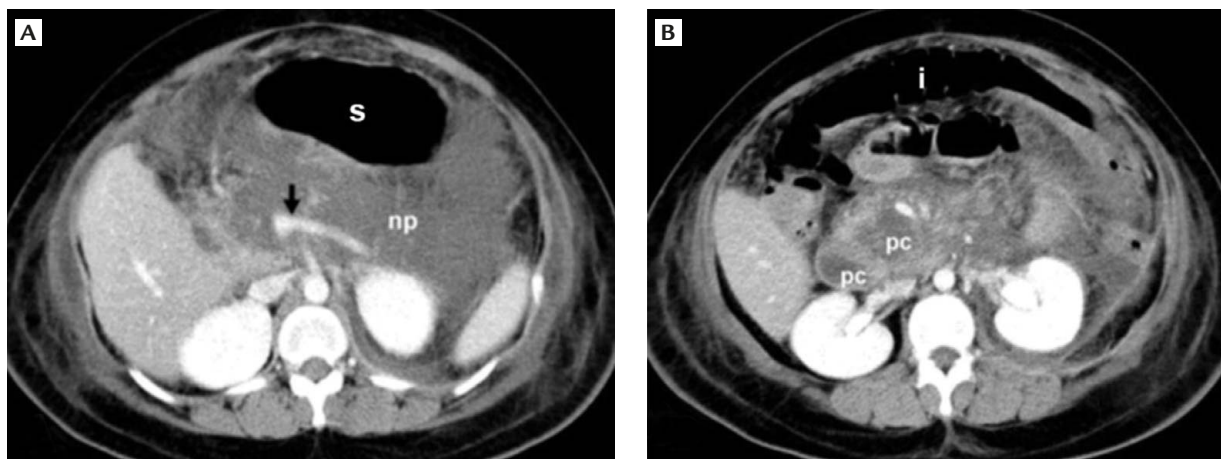


Figure 2. Intravenous contrast-enhanced computed tomography of the abdomen 1 week after hospitalization. (A) Extensive inflammation and necrotic changes surround the pancreas. Necrotizing pancreatitis (np) and contrast-enhanced splenic artery (arrow) are identified. Gaseous distension of the stomach(s) suggests at least partial obstruction in the duodenum. There is no evidence of perforation. (B) Peripancreatic collection (pc) forming a lesser sac as identified in the head of the pancreas that caused duodenal obstruction resulting in bowel ileus (i).

was given oral hypoglycemic agents for blood sugar control.

Discussion

The primary etiology of abruptio placentae, which means the separation of the placenta from the uterus, is unknown. An increased incidence is associated with advanced maternal age, maternal hypertension, multiparity, preterm premature ruptured membranes, maternal shock, external trauma, and cocaine and tobacco use [6,8,9].

Acute pancreatitis is due to autodigestion by pancreatic enzymes and is characterized by cellular proteolysis, edema, and necrosis of the pancreas. Two phases are identified in the progression of acute pancreatitis that may proceed into two possible types of necrotizing pancreatitis, including infected and sterile types. The first phase is characterized by the systemic inflammatory response triggered by the release of inflammatory mediators during the first 14 days [10]. Sterile necrotizing pancreatitis means absence of infection and often occurs in the first phase. General intravascular fluid derangements occur in the first period and include hypovolemia, hyperdynamic circulatory regulation, fluid loss from the intravascular compartment, and increased capillary permeability [11,12]. The second phase generally follows 2 weeks after the onset of the disease and is demonstrated by sepsis-related complications due to infectious necrotizing pancreatitis. Multiple systemic complications, including renal, pulmonary, and cardiovascular failure dominate

during the second period and can cause mortality in approximately 40–70% of patients [13]. It is generally accepted that infected necrotizing pancreatitis should be managed surgically. Buchler et al [14] reported that infection of pancreatic necrosis should be proven by computed tomography (CT)-guided fine needle aspiration with sequential Gram stain, bacterial cultures, and surgical intervention (necrosectomy and continuous postoperative lavage of the necrotic cavities) must be performed within 24 hours. Recent controlled trials [14–16] have confirmed that nonsurgical management in patients with sterile necrotizing pancreatitis, including early antibiotic treatment, with holding oral intake, providing pain relief and fluid supplement, is safe and effective.

In the present case, we supposed that abruptio placentae likely occurred in the first phase of acute pancreatitis, resulting from a systemic inflammatory response. This patient presented, retrospectively, with nausea, vomiting, and abdominal pain radiating to the back, which are typical symptoms of acute pancreatitis. However, pancreatitis was confused with acute appendicitis and uterine contractions during pregnancy. Abdominal pain with ileus, fever, tachycardia, hypoalbuminemia, and hypocalcemia were likely secondary to acute pancreatitis, which must be suspected initially. Uteroplacental apoplexy and massive serosanguineous ascites may also be the clinical manifestations of acute pancreatitis due to hemodynamic circulatory changes. Fortunately, the patient was sent to the intensive care unit, oral intake was withheld, and intravenous antibiotics and fluid resuscitation were given. Gradually, her condition stabilized.

Necrotizing pancreatitis was identified incidentally 1 week later by CT scan but the amylase and lipase values measured after the episode were normal. Absence of infection was identified via negative bacterial cultures of all possible causes during the hospitalization. Sterile necrotizing pancreatitis was diagnosed clinically and the patient was treated with nonsurgical conservative care.

Ramin et al [5] reported that pregnant women with acute pancreatitis were treated with prompt hospitalization, supportive care, and surgical intervention when indicated; however, morbidity and mortality of mothers and fetuses could not be avoided. Most pregnant women suffered with acute pancreatitis (53%) during the third trimester (> 28 weeks' gestation) and five of 39 delivered newborns died in Ramin's study [5]. Cholelithiasis in pregnancy predisposes to acute pancreatitis. Theoretical reasons to explain the association of advancing pregnancy with symptomatic biliary tract disease include increased bile acid pool size, decreased percentage of cholic acid, increased cholesterol secretion, and bile stasis [17]. However, idiopathic causes of acute pancreatitis have been reported in approximately 10% of patients [2,5]. The patient presented herein was diagnosed with idiopathic acute sterile necrotizing pancreatitis after all examinations and laboratory studies were completed. Prompt conservative treatment with nonsurgical intervention was employed for this patient and she demonstrated excellent recovery with good prognosis. Diabetes mellitus was an added complication in the necrotizing pancreatitis, which indicated lysis of pancreatic islet cells and destruction of beta-cells. Hyperglycemia was controlled by oral hypoglycemic agents.

Acute onset of abdominal pain with acute pancreatitis during pregnancy may be confused with contraction pain. When it is associated with symptoms such as nausea, vomiting, or abdominal pain radiating to the back, acute pancreatitis should be considered. In this patient, abruptio placentae and stillbirth may have been avoided if early diagnosis and early intervention had occurred.

References

1. Corlet RC, Mishell DR. Pancreatitis in pregnancy. *Am J Obstet Gynecol* 1972;113:281-90.
2. Steinberg W, Tenner S. Acute pancreatitis. *N Engl J Med* 1994;330:1198-210.
3. Block P, Kelly TR. Management of gallbladder stone pancreatitis during pregnancy and the postpartum period. *Surg Gynecol Obstet* 1989;168:426.
4. Wikinson EJ. Acute pancreatitis in pregnancy: a review of 98 cases and a report of 8 new cases. *Obstet Gynecol Surv* 1973;28:281-303.
5. Ramin KD, Ramin SM, Richey SD, Cunningham FG. Acute pancreatitis in pregnancy. *Am J Obstet Gynecol* 1995;173:187-91.
6. Pritchard JA, Cunningham FG, Pritchard SA, Mason RA. On reducing the frequency of severe abruptio placentae. *Am J Obstet Gynecol* 1991;165:1345-51.
7. Pagliari M. On an unusual case of uterine apoplexy preceded by an acute necrosis of the pancreas. *Quart Clin Obstet Gynecol* 1962;17:589-94.
8. Kramer MS, Usher RH, Pollack R, Boyd M, Usher S. Etiologic determinants of abruptio placentae. *Obstet Gynecol* 1997;89:221-6.
9. Slutsker L. Risks associated with cocaine use during pregnancy. *Obstet Gynecol* 1992;79:778-89.
10. Norman J. The role of cytokines in pathogenesis of acute pancreatitis. *Am J Surg* 1998;175:76-83.
11. Beger HG, Bittner R, Buchler M, et al. Hemodynamic data pattern in patients with acute pancreatitis. *Gastroenterology* 1986;90:74-9.
12. Knoefel WT, Kollias N, Warshaw AL, et al. Pancreatitis microcirculatory changes in experimental pancreatitis of graded severity in the rat. *Surgery* 1994;116:904-13.
13. Beger HG, Rau B, Mayer J, Pralle U. Natural course of acute pancreatitis. *World J Surg* 1997;21:130-5.
14. Buchler MW, Gloor B, Muller CA, Friess H, Seiler CA, Uhl W. Acute necrotizing pancreatitis: treatment strategy according to the status of infection. *Ann Surg* 2000;232:619-26.
15. Sainio V, Kemppainen E, Puolakkainen P, et al. Early antibiotic treatment in acute necrotizing pancreatitis. *Lancet* 1995;346:663-7.
16. Bassi C, Falconi M, Talamini G, et al. Controlled clinical trial of pefloxacin versus imipenem in severe acute pancreatitis. *Gastroenterology* 1998;115:1513-7.
17. Scott LD. Gallstone disease and pancreatitis in pregnancy. *Gastroenterol Clin North Am* 1992;21:803-15.