ORIGINAL ARTICLE

Acute Pancreatitis in Pregnancy: A 2-year Experience at a Tertiary Care Center

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Abstract

Aim: To present a 2-year experience of acute pancreatitis in pregnancy in our institution.

Background: Acute pancreatitis during pregnancy is a rare event with incidence, ranging from 1:1,000 to 1:10,000. Biliary tract diseases are the most common cause of acute pancreatitis in pregnancy, with gallstone disease being responsible for more than 70% of cases. Gallstone formation during pregnancy is attributed to the lithogenic effect of pregnancy through estrogen and progesterone.

Results: Seven pregnant women with clinical and biochemical diagnosis of acute pancreatitis were studied. The mean gestational age of presentation was 28 weeks, The most common presenting complaint was the upper abdominal pain with vomiting (72%). The maximum amylase level was observed to be 2696 IU/L and the maximum lipase level was 4788 IU/L showing the condition hypertriglyceridemia with the maximum level 757 mg/dL) (28%). One patient had hypocalcemia (5.7 mg/dL) (14%). Six of the seven patients had leukocytosis maximum 22,400/cmm. The corticosteroid-binding globulin (CBG) levels of all patients were normal. The liver function tests (LFTs) of all patients were normal. Three patients had USG features of gallbladder sludge, one patient had gallstones. Three patients required ICU admissions. One patient (14%) had late phase symptoms at 29 weeks gestation requiring UGI Scopy TPN, IV octreotide. Two patients (28%) had moderately severe acute pancreatitis (according to revised Atlanta classification).

Clinical significance: It mimics the symptoms of acute fatty liver of pregnancy (AFLP), preeclampsia/hemolysis, elevated liver enzymes and low platelets (HELLP) syndrome, and GERD. Hence a thorough understanding of the presentation and differences in management of each condition is required to reduce significant maternal morbidity.

Conclusion: Acute pancreatitis in pregnancy is associated with significant maternal morbidity. Early diagnosis, classifying the severity of disease and treatment with multidisciplinary approach was the gold standard treatment.

Keywords: Diagnosis, Pancreatitis in pregnancy, Treatment.

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Background

Acute pancreatitis during pregnancy is quite a rare event with wide difference in the incidence, varying from 1:1,000 to 1:10,000.[1] Biliary tract diseases are the most common cause of acute pancreatitis in pregnancy, with gallstone disease being the cause for more than 70% of cases.[2] The susceptibility of gallstone formation during pregnancy is ascribed to the lithogenic effect of gestation through estrogen and progesterone.[1] About 10% of women may develop stones or sludge during each pregnancy, and in 4% of pregnant women, it persists in the postpartum period, classifying this lithogenic phenomenon as semireversible.[3] Other causes in pregnancy include hypertriglyceridemia, alcohol, hyperglycemia, viral infections, and medicines such as thiazide diuretics and glucocorticoids.[4] The common symptoms are abdominal pain, anorexia, nausea, vomiting, dyspepsia, low-grade fever, tachycardia, and fatty food intolerance.[5] It most ordinarily presents in 2nd and 3rd trimesters. The latest advances in clinical gastroenterology have enhanced the early diagnosis and effective management of biliary pancreatitis.[6]

Materials and Methods

Place of study: Sri Ramachandra Medical College and Research Institute

Period of study: 2017–2019

Parameters studied: Presenting complaints, investigations, course of disease and outcome of pregnancy

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Commonly observed presenting complaints: Upper abdominal pain, vomiting (bilious/non-bilious), fever, chest pain.

Investigations done: Serum amylase, serum lipase, complete blood count (CBC), lipid profile, liver functions test (LFT), serum calcium, USG abdomen/MRI abdomen.

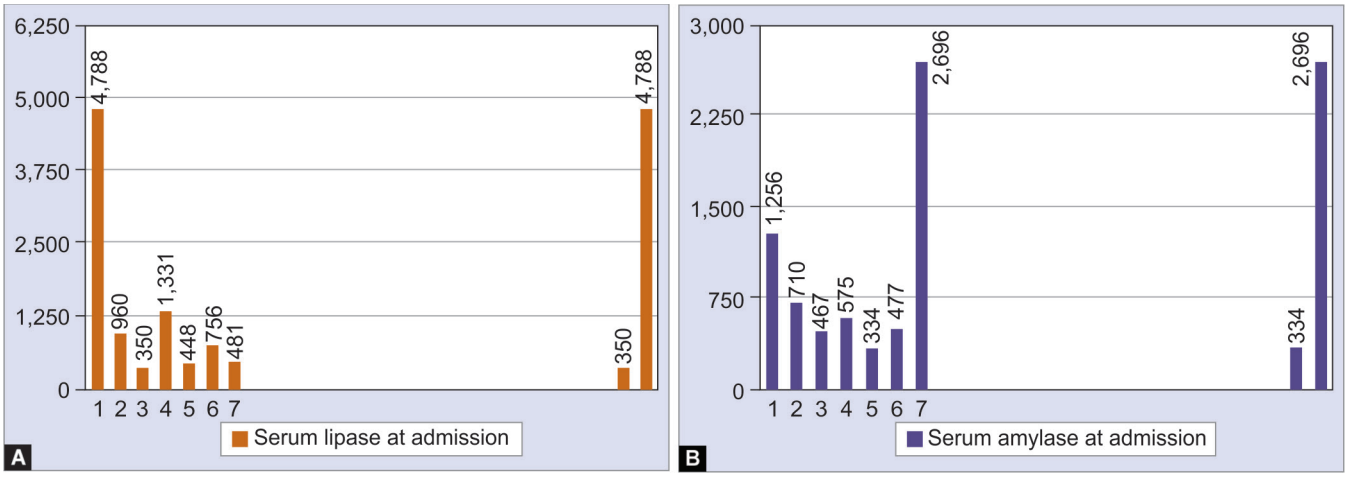
Results

Seven pregnant women with clinical and biochemical diagnosis of acute pancreatitis were studied. About 72% of the patients were between the age of 26 and 30 years. The mean age was 26 years. And 57% of the patients were primigravida. The mean gestational age of presentation was 28 weeks. The most common presenting complaint was upper abdominal pain with vomiting (72%) (Table 1).

Table 1: Results

S. No	*Age*	*Gestational age*	*Parity*	*Clinical manifestation*	*Serum amylase at admission*	*Serum lipase at admission*	*Total count*	*Lipid profile*	*USG finding*	*ICU admissions*	*Complications*	*Maternal outcomes*	*Mode of delivery*	*Further follow-up*
1	28	20w	Primigravida	Upper abdominal pain	1256	4788	2,2400	Normal	Gallbladder sludge and acute pancreatitis	Yes	Sepsis-higher antibiotics	Conservative	SVD with EPI	
2	26	18w	Primigravida	Chest pain and breathlessness	710	960	1,5600	Elevated	Gallstones, acute pancreatitis	Yes	Ascites and pleural effusion	Conservative	SVD with EPI	
3	29	38w	G2L1P1	Upper abdominal pain	467	350	1,0500	Normal	Gallbladder sludge	No		Conservative	NVD with EPI	Repeat labs normal
4	30	38w	G3P1L1A1	Upper abdominal pain	575	1331	1,2800	Normal	Bulky and edematous pancreas with left HUN	No		Conservative	Emergency LSCS in view of suspected preeclampsia	Postpartum acute pancreatitis with abdominal wall collection
5	24	22w	G2A1	Upper abdominal pain, vomitting, abdominal distension	334	448	1,4100	Hpertri-glyceri-demia	Acute pancreatitis mild splenomegaly, ascites	Yes	Dyselec-trolytemia. Hypocalcemia, ascites	Conservative	Emergency LSCS at 37 weeks (fetal distress)	Patient had three admissions from 22–29 weeks
6	21	35w	Primigravida	Vomitting, epigastric pain	477	756	1,5200	Normal	Bulky pancreas	No		Conservative	Emergency LSCS Ivo oligohy-dramnios	Repeat labs normal
7	26	36^{+4} days	Primigravida	Upper abdominal pain, vomitting	2696	481	1,4600	Normal	Acute interstitial pancreatitis	No	Basal atelectasis	Conservative	SVD with EPI	Repeat amylase and lipase normal within a week

EPI, expanded programme on immunization; HUN, persistent hydroureteronephrosis; SVD, spontaneous vaginal delivery



Figs 1A and B: Amylase and lipase levels at admission

Two patients (28.5%) presented with chest pain and breathlessness secondary to the ascites. Amylase and lipase levels were elevated in all patients; the maximum amylase level was found to be 2696 IU/L and the maximum lipase level was about 4788 IU/L (Fig. 1). Two patients (28.5%) had elevated lipid profile, showing the condition of hypertriglyceridemia, which is a maximum of 757 mg/dL. One patient had hypocalcemia (5.7 mg/dL) (14%). Six patients (86%) had leukocytosis with the highest value of 22400/cmm. The corticosteroid-binding globulin (CBG) levels of all patients were normal. Liver functions tests of all patients were normal. On abdomen USG, three patients had gallbladder sludge with features of acute pancreatitis, one patient had gallstones. Two patients had ascites with minimal pleural effusion. An MRI was done for one patient which revealed bulky and edematous pancreas with fluid in peripancreatic, anterior pararenal, perinephric space with mild ascites, and left minimal pleural effusion. One patient had right basal lung atelectasis. Three patients required ICU admissions. The complications seen were systemic inflammatory response syndrome (SIRS) in two patients, dyselectrolytemia with acute kidney injury (AKI) in one patient, ascites with pleural effusion and sepsis in two patients.

One patient (14%) had late phase symptoms at 29 weeks gestation requiring UGI scopy (duodenitis), total parenteral nutrition, Inj.octreotide 50 mg IV: three doses, hypokalemia and hyponatremia correction. Two patients (28%) had moderately severe acute pancreatitis (revised Atlanta classification).

Outcomes

Three patients delivered during the acute phase of pancreatitis (2 LSCS +1 NVD), (42.8%). Three patients resolved had a normal course of pregnancy and delivered vaginally (42.8%). One patient had a late phase persistence of elevated enzymes and symptoms with admission at 29 weeks (gestation at diagnosis 22 weeks) with the need for octreotide to reduce exocrine activity of pancreas[7] and total parenteral nutrition. She delivered at term in view of fetal distress.

Discussion

Acute pancreatitis in pregnancy remains a challenging clinical problem to manage, with a comparatively limited but expanding evidence base.[8]

The most common causes of pancreatitis during pregnancy include:

- Cholelithiasis/gallbladder sludge (57%) (4 patients).
- Hypertriglyceride-induced pancreatitis (28%) (2 patients).

Gestational hypertension/preeclampsia also rarely cause acute pancreatitis because of the microvascular abnormalities involving the splanchnic circulation, which results in pancreatic ischemic changes.[9]

Clinical Manifestations and Laboratory Findings of Acute Pancreatitis in Pregnancy[10]

Symptoms

- Abdominal pain
  - Colicky or stabbing in character
  - Rapid onset
  - Focused on epigastrium or right hypochondrium
  - Radiating to the right flank, scapula, shoulder
- Gastrointestinal symptoms
  - Anorexia
  - Vomiting
  - Nausea
  - Dyspepsia
  - Fatty food intolerance
- Circulatory
  - Tachycardia
  - Orthostatic hypotension
- Systemic– Low-grade fever
- Signs
  - Hemorrhagic: Gray Turner, Cullen
  - Pain: Kehr, Murphy

Laboratory Findings

Pancreatic:

- Increased serum lipase activity (up to three times greater than the upper limit of normal).
- Increased serum amylase activity (up to three times greater than the upper limit of normal)

Metabolic:
- Hyperglycemia
- Hypertriglyceridemia
- Hypocalcemia

Cholestatic:
- Increased ALP and γ-GT
- Increased aspartate transaminase (AST)/alanine transaminase (ALT)
- Increased Bilirubin

Hematological:

Markers of acute inflammation:
- Leukocytosis up to 16000/μL
- Elevated neutrophils >75%
- Increased CRP
- Increased ESR

Urine
- Increased amylase activity

Definition and Classification of Acute Pancreatitis

- Diagnosis: Two of the three features
  - Abdominal pain in line with acute pancreatitis
  - Minimum of three-fold increase than the upper normal levels of serum lipase or amylase
  - Imaging findings characteristic of acute pancreatitis on: Ultrasonography, MRI, CT.
- Onset time of the disease: the beginning time of abdominal pain
- Kinds of acute pancreatitis:
  Interstitial edematous:
  - Diffuse enlargement of pancreas.
  - ± peripancreatic fluid
  - Or both

  Necrotizing:
  - Diffuse enlargement of pancreas
  - Necrosis of peripancreatic tissue
- Phases of the course of acute pancreatitis
  Early:
  Lasts for the initial week and might expend to the second
  Systemic effects of pancreatic inflammation:
  - SIRS
  - Organ failure

  Late:
  Lasts for weeks to months
  - Persistence of systemic inflammation
  - Development of local complications
- Severity: three subtypes
  Mild acute pancreatitis
  - Uncomplicated course
  - Regression through first week at early
  - No organ failure
  - No local or systemic complications
  - Usually no necessity for imaging

  Moderately severe acute pancreatitis
  - Complicated course
  - Transient but no persistent organ failure
  - Local or systemic complications
  - Resolve with or without specific care or intervention

  Severe acute pancreatitis
  - Highly complicated
  - Single or multiple persistent organ failure
  - One or more local or systemic complication

An increased serum amylase level features a diagnostic sensitivity of 81% and adding serum lipase improves this sensitivity to 94%.[11] Abdominal ultrasound is a perfect imaging technique for diagnosing acute pancreatitis in pregnancy.[12]

Management

The initial management of acute pancreatitis is restricted in aggressive intravenous hydration by 250–500 mL/hour of isotonic crystalloid solution, preferably lactated Ringer's solution, for the first 12–24 hours unless cardiovascular, renal, or other comorbidities exist.[13] Fluid requirements should be reassessed at frequent intervals for subsequent 48 hours by evaluating the amount of blood urea nitrogen.[13] The cessation of pancreatic exocrine secretion is achieved by stopping the oral feeding while on the opposite hand nourishing the patient by total parenteral nutrition.[14] Mild acute pancreatitis usually resolves within the initial 7 days and do not need nutritional support since the patient can feed immediately because the nausea, vomiting, and abdominal pain subside.[5,13] A low-fat solid diet appears equivalent to a liquid diet.[13] The newest recommendations on the utilization of antibiotics support that there is no gain in their administration: (1) in mild acute pancreatitis, (2) in normal common bile duct size and with no evidence for cholangitis, (3) in routine use of prophylactic antibiotics in patients with severe acute pancreatitis, (4) and/or sterile necrosis.[13,14] Besides, the indications for therapeutic antibiotic use are extrapancreatic infection (such as cholangitis, catheter – acquired infections, bacteremia, urinary tract infections, pneumonia) and infected necrosis.[13] Multidisciplinary conservative approach was the primary mode of treatment in our study.

Surgical Management

The biliary acute pancreatitis in pregnancy needs surgery only if there is: (1) acute cholecystitis which does not resolve with conventional treatment, (2) peritonitis, (3) obstructive jaundice and severe symptoms which can resolve after the operational interventions.[14] Endoscopic treatment of biliary acute pancreatitis comprises therapeutic endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy, endoscopic sphincterotomy, and biliary stent placement. The indications of endoscopic intervention are severe acute pancreatitis with concurrent cholangitis, sufficient evidence of common bile duct obstruction especially after endoscopic ultrasound or MRCP confirmation.[14] Non-radiation ERCP was used during pregnancy and had good therapeutic effects.[15]

Overall, a multidisciplinary approach that involves obstetricians, surgeons, and gastroenterologists may be a key aspect of severe acute pancreatitis management.[16–19]

Clinical Significance

Acute pancreatitis can mimic the symptoms of:

- Acute fatty liver of pregnancy (AFLP)
- Preeclampsia/hemolysis, elevated liver enzymes and Low Platelets (HELLP) syndrome
- GERD
- Hence, a thorough understanding of the presentation and differences in management of every condition is required to reduce a significant maternal morbidity.

Conclusion

Acute pancreatitis in pregnancy was related to a significant maternal morbidity. Early diagnosis, classifying the severity of disease and treatment with multidisciplinary approach was the gold standard treatment.

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