

## RESEARCH ARTICLE

# Acute Pancreatitis in Pregnancy: Maternal and Fetal Outcomes

<sup>1</sup>GS Jyothi, <sup>2</sup>Shruti R Bhoosanoor, <sup>3</sup>Asha Swarup

## ABSTRACT

**Aim and objective:** To evaluate the maternal and fetal outcomes in patients with acute pancreatitis.

**Materials and methods:** It is a retrospective observational study. A total of three patients were admitted with acute pancreatitis complicating pregnancy between January 2013 and June 2015 in the Department of Obstetrics and Gynaecology, M. S. Ramaiah Medical College and Hospital, Bengaluru, India, and were followed up until after delivery.

**Results:** Incidence of acute pancreatitis in our study was 1 in 1,620. Mean age was 24 years, and 33.3% were multiparous. Mean gestational age at onset was 33 weeks. One patient (33.3%) in our study had hypertriglyceridemia (870 mg/dL), and 66.7% of patients were idiopathic. The most common complaint was epigastric pain radiating to back. All patients showed leukocytosis and elevated amylase and lipase levels. Ultrasound showed [1] enlarged pancreas with decreased peripancreatic echogenicity and [2] pelvic and abdominal cavity effusions, in all the patients. All patients were managed conservatively in the intensive care unit. Mean duration of hospital stay was 7 days; 33.3% patients developed acute respiratory distress syndrome; 33.3% patients went into preterm spontaneous vaginal delivery. Cesarean section rate was 66.7%. Perinatal mortality was 33.3%.

**Conclusion:** Acute pancreatitis in pregnancy remains a challenging clinical problem to manage. The initial assessment, severity, and the initial management of the patient are of great importance in order to support the function and to prevent maternal and fetal mortality and morbidity.

**Clinical significance:** Acute pancreatitis either in its mild or its severe form causes maternal and fetal morbidity. However, these rates are declining due to early diagnosis and greater treatment options. Multidisciplinary approach leads to good maternal and fetal outcomes.

**Keywords:** Acute pancreatitis, Pregnancy, Primary research, Retrospective study, Serum amylase lipase.

**How to cite this article:** Jyothi GS, Bhoosanoor SR, Swarup A. Acute Pancreatitis in Pregnancy: Maternal and Fetal Outcomes. *J South Asian Feder Obst Gynae* 2017;9(2):106-109.

**Source of support:** Nil

**Conflict of interest:** None

**Date of received:** 22 December 2016

**Date of acceptance:** 22 January 2016

**Date of publication:** March 2017

## INTRODUCTION

Acute pancreatitis is a rare and serious complication during pregnancy. It affects approximately 1 in 10,000 individuals, and the frequency of the disorder does not change in pregnancy.<sup>1</sup> The most common cause is gallstones.<sup>2</sup> A very important issue is that up to 10% of women develop stones or sludge during each pregnancy, and 4% of pregnant women maintain them to the postpartum period, classifying this lithogenic phenomenon as semireversible.<sup>3</sup> Rarer causes in pregnancy include hypertriglyceridemia, alcohol, hyperglycemia, viral infections, and drugs like thiazide diuretics and glucocorticoids.<sup>4</sup>

It presents with the same symptoms in pregnant women as in nonpregnant. The usual symptoms are abdominal pain, anorexia, nausea, vomiting, dyspepsia, low-grade fever, tachycardia, and fatty food intolerance.<sup>5</sup> It most commonly presents in 2nd and 3rd trimesters with acute unremitting epigastric pain that may radiate to the back. The recent advances in clinical gastroenterology have improved the early diagnosis and effective management of biliary pancreatitis.<sup>6</sup> This article investigates the pathogenesis and treatment strategies of acute pancreatitis in pregnancy.

## MATERIALS AND METHODS

It is a retrospective observational study. A total of three patients were admitted with acute pancreatitis complicating pregnancy between January 2013 and June 2015 in the Department of Obstetrics and Gynaecology, M. S. Ramaiah Medical College and Hospitals, Bengaluru, India, and were followed up until after delivery.

## RESULTS

Incidence of acute pancreatitis in our study was 1 in 1,620. Mean age of occurrence was 24 years, and 33.3% were multiparous. Mean gestational age at onset was 33 weeks. One patient (33.3%) in our study had hypertriglyceridemia (870 mg/dL). The causes in two of the

<sup>1,3</sup>Professor, <sup>2</sup>Junior Resident

<sup>1-3</sup>Department of Obstetrics and Gynaecology, M. S. Ramaiah Medical College and Hospitals, Bengaluru, Karnataka, India

**Corresponding Author:** GS Jyothi, Professor, Department of Obstetrics and Gynaecology, M. S. Ramaiah Medical College and Hospitals, Bengaluru, Karnataka, India, Phone: +91-8023484422 e-mail: drjyothismsrc@gmail.com

**Table 1:** Study results comparing with other studies

Parameters	Aytul et al <sup>13</sup>	Luminata et al <sup>14</sup>	Our study
No. of patients	14	5	3
Incidence	1 in 1,451	1 in 3,333	1 in 1,620
Mean age (years)	28.4	27.3	24
Parity	64% multiparous	60% multiparous	33.3% multiparous
GA at onset	Third trimester	Third trimester	Third trimester
Etiology	Gallstones	Gallstones/hyperlipidemia	Idiopathic/hypertriglyceridemia
Management	Conservative + surgical	Conservative	Conservative
Complications	Pseudocyst	Pseudocyst/ARDS	Preterm/ARDS/fetal demise
Mortality	2	1	Nil
Fetal outcome	Prematurity	Prematurity	Prematurity/fetal demise
Cesarean rate	76%	66%	66.7%

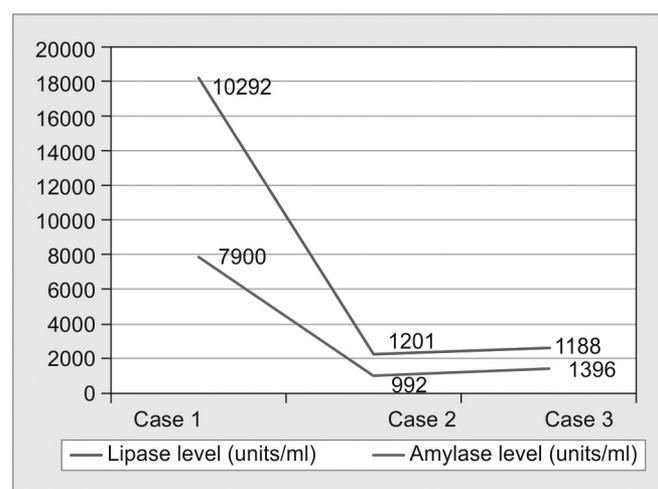
patients (66.7%) were idiopathic. The most common complaint was epigastric pain radiating to back. All patients showed leukocytosis and elevated amylase and lipase levels. Ultrasound showed: (1) enlarged pancreas with decreased peripancreatic echogenicity and (2) pelvic and abdominal cavity effusions, in all the patients. The mean duration of symptoms was 60 hours. The mean admission to delivery interval was 23 hours (1, 48, and 20 hours respectively). All patients were managed conservatively in the intensive care unit (ICU). Mean duration of hospital stay was 7 days. One patient (33.3%) developed acute respiratory distress syndrome (ARDS). One patient (33.3%) went into preterm spontaneous vaginal delivery. Cesarean section rate was 66.7%. Perinatal mortality was 33.3%. Table 1 shows the various parameters of our study comparing with the other studies.

## DISCUSSION

Most common cause of acute pancreatitis is gallstones. The second most common cause noted in pregnancy is hypertriglyceridemia. One patient (33.3%) in our study had hypertriglyceridemia (870 mg/dL). This hypertriglyceridemia can be attributed to increased estrogen due to pregnancy and the familial tendency for some women toward high triglyceride levels. Lipids and lipoprotein (including triglyceride) levels are increased during pregnancy, which increase threefold in the third trimester. Field and Barkin<sup>7</sup> reported up to 50% increase in cholesterol as a result of higher blood levels of estrogen. The level of triglycerides required to induce acute pancreatitis is between 750 and 1,000 mg/dL. The total serum triglyceride level during pregnancy is usually less than 300 mg/dL. After delivery, triglyceride levels usually fall. In our study, the cause in two (66.7%) patients was idiopathic.

Signs and symptoms of acute pancreatitis usually include mild epigastric pain, left upper quadrant pain radiating to left flank, anorexia, nausea, vomiting, decreased bowel sounds, low-grade fever, and associated pulmonary findings 10% of the time (unknown cause).<sup>6</sup> In our study, all patients presented with epigastric pain which radiated to the back. On examination, tachycardia tachypnea, hypotension, and tenderness in epigastric region were also present.

All patients showed leukocytosis and elevated amylase and lipase levels. Diagnostic blood tests for acute pancreatitis include serum amylase and lipase, as well as triglyceride levels, calcium levels, and a complete blood count.<sup>6</sup> Amylase levels in pregnancy range from 10 to 160 IU/L in some laboratories. These values vary depending on each laboratory. Lipase, another enzyme produced by the pancreas, has norms ranging from 4 to 208 IU/L (these also vary depending on the laboratory). The lipase and amylase values in our patients are shown in Graph 1. The serum amylase and lipase levels at the time of discharge were 1,650 units/L and 309 units/L, 102 units/L and 90

**Graph 1:** Serum amylase and lipase level in units/mL

units/L, and 146 units/L and 168 units/L respectively, for all the three women. Ultrasound showed enlarged pancreas; decreased echogenicity; and peripancreatic, pelvic, and abdominal cavity effusion in all patients. One patient (33.3%) received injection octreotide 50 µg TID subcutaneously for 3 days to decrease the pancreatic secretion as per gastroenterologist's advice. All patients were managed conservatively in the ICU. Mean duration of hospital stay was 7 days. One patient (33.3%) developed ARDS. There was no maternal mortality. All women were stable at the time of discharge. Perinatal mortality was 33.3%. One baby succumbed due to increased toxicity and delay in termination of pregnancy, as the patient had high enzyme levels and was referred late. The average neonatal ICU stay was 5 days for the two (66.7%) babies and were put on oxygen hood and incubator care.

The timing of pregnancy termination for patients with severe acute pancreatitis has long been an issue for obstetricians. Indications for pregnancy termination include full-term gestation, deteriorated condition after 24 to 48 hours of treatment, no improvement of paralytic ileus, stillbirth, fetal malformation, and severe pancreatitis. Cesarean section is still the preferred method for pregnancy termination. In our study, cesarean section rate was 66.7%. The indications were severe fetal distress in one case where the baby could not be salvaged and deterioration in the maternal condition with fetal distress in the other. One patient (33.3%) went into preterm spontaneous vaginal delivery. Acute pancreatitis *per se* is not an indication for termination of pregnancy.

Abdominal ultrasonography and endoscopic ultrasonography (EUS) are ideal imaging techniques in pregnancy for diagnosing the disease because they have no radiation risk. Prompt diagnosis and treatment reduces maternal and fetal morbidity and mortality.<sup>8</sup> Ultrasound is the imaging technique of choice for pregnant women because it can distinguish a normal appearing pancreas from one, i.e., enlarged, and it can also identify gallstones. In addition, ultrasound is safer than computed tomography (CT) scan during pregnancy. Abdominal ultrasound, CT, endoscopic ultrasound, and magnetic resonance cholangiopancreatography (MRCP) are available for diagnosing a biliary etiology for acute pancreatitis.<sup>8</sup> Diagnostic endoscopic retrograde cholangiopancreatography is to be avoided whenever possible, owing to the associated risks including bleeding, perforation, and fetal radiation, while abdominal ultrasound, MRCP, and EUS do not carry these risks.

Management of acute pancreatitis in pregnancy is a controversial issue as the initial treatment is similar to the nonpregnant patient, but the subsequent management might differ due to the risk of fetal disturbances or

teratogenesis.<sup>9</sup> Therefore, it is important to have multidisciplinary approach involving the obstetrician, surgeon, gastroenterologist, and radiologist.<sup>10</sup> However, before the initial treatment, it is crucial to predict the severity of acute pancreatitis. The available acute pancreatitis-specific score systems have limited value.<sup>11</sup> The same applies for any laboratory test including the C-reactive protein. A combination of clinical and laboratory findings which could be associated with a severe course of acute pancreatitis used for initial risk assessment has been proposed from the American College of Gastroenterology for the general population.<sup>12</sup> The spectrum of acute pancreatitis in pregnancy ranges from mild pancreatitis to serious pancreatitis associated with necrosis, abscesses, pseudocysts, and multiorgan dysfunction syndromes. Approximately, 10% of cases of acute pancreatitis develop shock. Approximately, 20% have severe pancreatitis, and mortality in these patients reach up to 25%. The group that has the highest rates of maternal mortality and morbidity are in women with hypertriglyceridemia.

## CONCLUSION

Acute pancreatitis in pregnancy remains a challenging clinical problem. The initial assessment, severity, and the initial management of the patient are of great importance in order to support the function and to prevent maternal and fetal mortality and morbidity. As we can see, in our first case, the baby succumbed due to increased toxicity and delay in termination of pregnancy, had high enzyme levels, and the patient was referred late. In the second case, we were able to salvage the baby due to timely intervention. In the third case, the patient was stabilized and the fetal condition was stable. She had a spontaneous preterm delivery with good outcome.

This study emphasizes the progressive and fulminant course in severe disease. Acute pancreatitis causes preterm delivery in most cases. Multidisciplinary approach leads to good maternal and fetal outcomes. Every upper quadrant pain with/without vomiting in pregnancy rules out pancreatitis.

## REFERENCES

1. Nanda S, Gupta A, Dora A, Gupta A. Acute pancreatitis: a rare cause of acute abdomen in pregnancy. *Arch Gynecol Obstet* 2009 Apr;279(4):577-578.
2. Wang GJ, Gao CF, Wei D, Wang C, Ding SQ. Acute pancreatitis: etiology and common pathogenesis. *World J Gastroenterol* 2009 Mar;15(12):1427-1430.
3. Ko CW, Beresford SA, Schulte SJ, Matsumoto AM, Lee SP. Incidence, natural history, and risk factors for biliary sludge and stones during pregnancy. *Hepatology* 2005 Feb;41(2):359-365.
4. Qihui C, Xiping Z, Xianfeng D. Clinical study on acute pancreatitis in pregnancy in 26 cases. *Gastroenterol Res Pract* 2012 Nov;2012(7):271925.

5. Stimac D, Stimac T. Acute pancreatitis during pregnancy. *Eur J Gastroenterol Hepatol*, 2011 Oct;23(10):839-844.
6. Juneja SK, Gupta S, Virk SS, Tandon P, Bindal V. Acute pancreatitis in pregnancy: a treatment paradigm based on our hospital experience. *Int J Appl Basic Med Res* 2013 Jul-Dec;3(2):122-125.
7. Fields K, Barkin J. Pancreatic disease. In: Gleicher N, editor. *Principles and practice of medical therapy in pregnancy*. Stamford (CT): Appleton and Lange; 1998. p. 1142-1147.
8. Kim JY, Jung SH, Choi HW, Song DJ, Jeong CY, Lee DH, Whang IS. Acute idiopathic pancreatitis in pregnancy: a case study. *World J Gastroenterol* 2014 Nov;20(43):16364-16367.
9. Sun Y, Fan C, Wang S. Clinical analysis of 16 patients with acute pancreatitis in the third trimester of pregnancy. *Int J Clin Exp Pathol* 2013 Jul;6(8):1696-1701.
10. Jain V, Yegneswaran B, Pitchumoni CS. Biliary pancreatitis in pregnancy. *Pract Gastroenterol* 2009;33:16-30.
11. Gardner TB, Vege SS, Pearson RK, Chari ST. Fluid resuscitation in acute pancreatitis. *Clin Gastroenterol Hepatol* 2008 Oct;6(10):1070-1076.
12. Tenner S, Baillie J, DeWitt J, Vege SS. American College of Gastroenterology guideline: management of acute pancreatitis. *Am J Gastroenterol* 2013 Sep;108(9):1400-1415.
13. Esmer AÇ, Özsürmeli M, Kalelioğlu İ. Maternal and perinatal outcomes of acute pancreatitis during pregnancy. *Gazi Med J*.2012; 23: 133-137.
14. Luminata SCMD; Erin T. Steidl DO; Manuel E. Rivera-Alsina, MD. Acute hyperlipidemic pancreatitis in pregnancy. *Am J Obstet Gynecol* 2008;e57-59.