

Acute biliary pancreatitis in pregnancy: Ten year retrospective study

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Abstract

Introduction: The prevalence of pregnancy-related acute biliary pancreatitis (ABPP) is not infrequent especially in the third trimester. Timely intervention of ABPP will reduce the maternal and fetal morbidity and mortality.

Methods: A single center retrospective study was carried out. Randomly selected 1000 medical records of the pregnant mothers who were hospitalized from 2012 to 2022 were retrieved. Selection of patients who had ABPP were done according to exclusion and inclusion criteria. The following parameters were reviewed: the patient's age, pregnancy trimester, ABPP severity, risk factors for ABPP, imaging modalities, biochemical tests, treatment methods, length of hospital stay (LOS), and maternal or fetal morbidity and mortality. Ethical approval was granted by Nawaloka Hospital Research and Education Foundation. No conflict of interest.

Results: In total of 7 with ABPP were identified [0.7% (7/1000)]. Epigastric pain was the main complaint of all ABPP patients. Biliary pathology were detected in abdominal ultra sonography (USG). Majority were in the third trimester [57.1% (4/7)]. The mean age of the patients was 27.6±5.3 (range, 18-44) years. The most of the women were multiparous [71.4%(5/7)]. Out of 7 patients 4 (57.1%) had mild symptoms and 3 (42.8%) had moderate symptoms of pancreatitis. The mean length of hospital stay (LOS) was 4.6±1.5 (range, 3-7) days. All patients were conservatively managed. None reported with a recurrent episode of ABPP during pregnancy. 5 (71.4%) patients in the pregnant group underwent planned laparoscopic cholecystectomy (LC) in the first 6 to 12 months after delivery.

Conclusion: This study sample highlighted that mild to moderate ABPP can be managed with conservative treatment. The recurrence and their severity are unpredictable. Therefore following initial management, early cholecystectomy can be considered as a treatment modality. To generalize these findings further studies are recommended.

Key words: pregnancy, gallstones, pancreatitis, ultrasound scan, cholecystectomy

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Introduction

The incidence rate of pregnancy-related acute biliary pancreatitis (ABP) is between 0.05% and 8%^{1,2}. The incidence of ABP is one in 1000-5000 pregnancies, especially in the third trimester^{1,3,4}. During pregnancy, changes in the bile composition and gall bladder mobility results in the formation of gallstones. A gallstone passing through the ampulla of Vater leads to ABP^{5,6}. Timely and correctly diagnosis of ABP will reduce the risk of pancreatic necrosis, abscess, and multiple organ dysfunction and subsequently maternal and fetal morbidity and mortality⁷⁻¹⁰. Acute biliary pancreatitis related to pregnancy [ABPP] has a relatively high recurrence rate of 70% in pregnant women compared to the general population^{2,6}. In the management of ABPP, the maternal and fetal risks associated with irradiation using endoscopic retrograde cholangiopancreatography (ERCP), imaging methods, medical treatment, general anesthesia, and surgery should be carefully assessed. In this retrospective study, medical data, management, and outcomes of women with ABPP were studied.

Methods

A single center retrospective study was carried out. Randomly selected 1000 medical records of the pregnant mothers who were hospitalized from 2012 to 2022 were retrieved. Those with non-biliary AP and those with acute cholecystitis, choledocholithiasis, or acute cholangitis were excluded from the study. Pregnancy was grouped as the first (0-13 weeks), second (14-26), and third (27-40 weeks) trimesters. For an ABPP diagnosis, at least two of the following three criteria were stipulated: (1) acute abdominal pain; (2) serum lipase activity (or amylase activity) at least three-fold greater than the upper limit of the normal reference range; and (3) radiological AP findings. The ABPP severity was determine using the 0- and 48 h Ranson scores. The following parameters were reviewed: the patient's age, pregnancy trimester, AP severity, risk factors such as hormonal therapy, in vitro fertilization (IVF) procedure, multiparity, obesity and diabetes mellitus, imaging modalities, biochemical tests, treatment methods, length of hospital stay (LOS), and maternal or fetal morbidity and mortality. Ethical clearance granted by Nawaloka Hospital Research and Education Foundation. No conflict of interest.

Statistical analysis

The data analysis was carried out using the Statistical Package for Social Sciences (SPSS®) software, version 20.0 (IBM® Corp., Armonk, NY, USA). The driscriptive statistics were expressed as mean \pm standard deviation or number (percentage). A p-value of less than 0.05 was considered statistically significant.

Results

In total of 7 with ABPP were identified [0.7% (7/1000)]. Epigastric pain was the main complaint of all ABPP patients. 5 (71.4%) patients were presented with epigastric pain associated with nausea and vomiting. All the patients had high serum lipase and amylase activity and biliary pathology were detected in abdominal ultra sonography (USG). None had Abdominal computed tomography (CT) or MRCP. Majority were in the third trimester [57.1% (4/7)]. The mean age of the patients was 27.6 \pm 5.3 (range, 18-44) years. The most of the women were multiparous [71.4% (5/7)]. Two had undergone IVF treatment for pregnancy. Out of 7 patients 4 (57.1%) had mild symptoms and 3 (42.8%) had moderate symptoms of pancreatitis. According to the Ranson score (RS), 3/7 (28%) patients had a RS of 2, three patients had 1 and one patient had 0. The mean length of hospital stay (LOS) was 4.6 \pm 1.5 (range, 3-7) days. All patients were conservatively managed. None reported with a recurrent episode of ABPP during pregnancy. Five (71.4%) patients underwent planned laparoscopic cholecystectomy (LC) in the first 6 to 12 months after delivery (Table 1).

Discussion

The frequency of pregnancy and multiparity are the major risk factors for cholesterol gallstones. As the number of pregnancies increased, gallstone-related diseases also increased¹¹⁻¹³. In this study, multiparity was detected in most of the patients. ABPP has a high likelihood of recurrence. However, it is possible to prevent the recurrence by the early diagnosis and optimal treatment. For this reason, the etiology should be prioritized in the management of ABPP patients^{8,14}. In the present study, none had recurrent ABPP.

Table 1. The characteristics of patients with pregnancy-related acute biliary pancreatitis (ABP)

Variable	Number (%) or (if) Mean±SD
Age	27.6±5.3
Diagnosed as ABPP (n=1000)	7 (0.7%)
Symptoms	
Epigastric pain only	7 (100%)
Epigastric pain, nausea and vomiting	5 (71.4%)
Bio chemical investigations	
Serum lipase (U/L)	508.4±48.9
Serum amylase (IU/L)	609.3±72.5
Trimester	
1 st	1 (14.2%)
2 nd	2 (28.6%)
3 rd	4 (57.1%)
Parity	
One	1 (14.2%)
Two	1 (14.2%)
More than two	5 (71.4%)
RS score	
Zero	1 (14.2%)
One	3 (42.8%)
Two	3 (42.8%)
Length of hospital stay [LOS] (Days)	4.6±1.5
Laparoscopic cholecystectomy (LC) in the first 6 to 12 months after delivery	5 (71.4%)

USG is a highly reliable with approximately 100% sensitivity and specificity to diagnose gallbladder diseases in pregnant women¹⁵. Therefore, USG is the first-line of imaging to elucidate the etiology of biliary pancreatitis and confirm it in whose diagnosis was compatible with pancreatitis on the clinical and laboratory parameters. In the present study, USG proved to be reliable by detecting biliary pathology in

all patients. Abdominal computed tomography (CT) is not recommended in all trimesters⁸. MRCP is a useful method in detecting gallstones in common bile duct, however non-contrast MRCP and use of gadolinium has limited data^{16,17}. Studies have shown that ERCP can be safely performed in pregnant women¹⁹⁻²². None of our study patients had CT, MRCP or ERCP.

In this study, the ABPP severity was evaluated according to the Ranson score, and most of the patients had mild ABPP. The absence of mortality and morbidity in the patients supported the accuracy of the Ranson scoring. Hospitalization, supportive treatment, intravenous fluid therapy, and nutritional supplements such as probiotics, glutamine, omega-3 fatty acids, and vitamins were administered in the initial ABPP management. Most patients recovered well with the appropriate treatment. In addition, the conservative treatment included pain control and antibiotic therapy when necessary. Antibiotic therapy is recommended when there is a biliary infection or infected necrotizing pancreatitis due to ABPP²³.

According to literature the best choice in the treatment of ABPP can be: conservative treatment and planned LC in the second trimester for patients in the first trimester; LC for patients in the second trimester; and conservative treatment or ES via ERCP and early postpartum planned LC for patients in the third trimester²³⁻²⁵. Furthermore, It is unpredictable to determine when and how severe ABPP can be in case of relapses; therefore, cholecystectomy should be performed at the earliest and best done in experienced hands²³⁻²⁷. In the present study, none had recurrences and all patients had LC after pregnancy.

Conclusion

This study sample highlighted that mild to moderate ABPP can be managed with conservative treatment. The recurrence and their severity are unpredictable. Therefore following initial management, early cholecystectomy can be considered as a treatment modality. To generalize these findings further studies are recommended.

Study limitation

This was a retrospective study which was conducted in a signal center. ABPP had relatively low prevalence. However clinical judgment and management is vital. To generalize these study findings recommended to conduct multi-center study with a large sample size.

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Authors contributions

VA, HD and LG formulated the concept and design of the study, acquisition of data and analysis, and drafted the article. All authors reviewed the manuscript.

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None declared.

Availability of data and materials

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Data collection and ethical approval

Nawaloka Research and Education Foundation, Nawaloka Hospital PLC, Colombo.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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