DEMOGRAPHIC PROPERTIES AND CLINICAL OUTCOMES OF ACUTE PANCREATITIS IN PREGNANCY: OUR EXPERIENCE OF 33 PATIENTS

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ABSTRACT

Objective: In this study we aimed to examine the clinical, demographic properties, and outcomes of acute pancreatitis in pregnancy.

Materials and method: Our study included 33 patients with acute pancreatitis in pregnancy (APP) who were followed at the departments of Obstetrics and Gynecology and Internal Medicine at Dicle University Faculty of Medicine between January 2004 and June 2013. Patient information were obtained from the hospital records. Age, gestational age, etiology, complications, laboratory results, diagnostic tests, treatment modalities, mode of delivery (normal vaginal delivery or caesarean section (C/S)), duration of hospital stay, and maternal mortality and morbidity rates were recorded. Hypertriglyceridemia was recorded as the etiological factor when triglyceride level was more than 11.3 mmol/L (1000 mg/dl) and biliary pathology was recorded when there were biliary stones or bile mud. Patients who did not have a history of alcohol abuse or any condition responsible from pancreatitis were classified as idiopathic pancreatitis and grouped accordingly.

Results: This study included a total of 33 patients with APP among a total of 85542 deliveries. Mean age of the study population was 34.8±7.15 (23-46) years and mean gestational age was 25.75±7.49 weeks. The etiology of acute pancreatitis was a biliary pathology in 18 (54.5%) patients, hypertriglyceridemia in 11 (33.3%), and idiopathic APP in 4 (12.2%). Four (12.1%) maternal deaths occurred. Sixteen (48.5%) patients suffered from a maternal complication while 10 (33.3%) patients died. Twenty-nine patients were discharged with cure. All maternal deaths and 50% of maternal complications occurred in second trimester.

Conclusion: In our study APP was most commonly observed in second trimester and it had a more complicated and fatal course during this period. Biliary pathologies were the most fatal etiological group.

Key words: pancreatitis, pregnancy, hyperlipidemia, biliary stones.

Received May 18, 2014; Accepted September 02, 2014

Introduction

Acute Pancreatitis in Pregnancy (APP) is a rare clinical entity with an incidence of 0.3-1/1000 births1,2. Although it may be seen in any stage of pregnancy, more than half of all cases are in third trimester. APP may occur simultaneously with preeclampsia-eclampsia and HELLP (haemolysis, elevated liver enzymes, and low platelets) syndrome, albeit rarely3,4. Common causes of APP include biliary stones (66%), alcohol use (12%), idiopathic (17%), hyperlipidemia (4%), and, less commonly, hyperparathyroidism, trauma, drugs, and acute fatty liver of pregnancy5,6.

APP has been associated with substantially higher mortality until three to four decades ago, and rates as high as 37% and 11-37% have been reported for mother and fetus, respectively. More recent studies have revealed figures as low as below 1% and 0-18% for maternal and fetal mortality rates, respectively. The reduction in mortality rates has been explained by both advanced laboratory and imaging methods and a more widespread availability of neonatal intensive care units7.

In this retrospective study we aimed to investigate the clinical and demographic properties and assess diagnostic and therapeutic approaches and clinical outcomes in patients with APP.
Materials and methods

Our study included 36 consecutive patients with acute pancreatitis in pregnancy (APP) who were followed at the departments of Obstetrics and Gynecology and Internal Diseases at Dicle University Faculty of Medicine between January 2004 and June 2013. Three patients were excluded because of refusing of hospitalisation (2 patient) and unsatisfactory data (one patient). Patient information were accessed from the hospital records and age, gestational age, etiology, complications, laboratory results, diagnostic tests (ultrasonography, magnetic resonance cholangiopancreatography (MRCP)), the applied treatments, mode of delivery (normal vaginal delivery or C/S), duration of hospital stay, and maternal mortality and morbidity rates were assessed.

Complications that developed in the patients were defined as maternal or fetal. According to this classification, maternal complications included pancreatic necrosis, multiorgan failure, pancreatic pseudocyst, hyperglycemia, and disseminated intravascular coagulopathy (DIC). Fetal complications included intrauterine growth retardation, preterm labor, and fetal death (intrauterine exitus or abortion).

In patients with APP the disease severity was assessed using Ranson Scoring System (RS)\(^8\). According to this, two or less criteria were defined as mild pancreatitis and three or more criteria as severe pancreatitis. Patients with postpartum pancreatitis were excluded. APP was diagnosed by abdominal pain accompanied by a three-fold increase in amylase and lipase levels above the upper limit of normal\(^9\). Hypertriglyceridemia was considered as the etiological factor when triglyceride level was above 11.3 mmol/L (1000 mg/dL), and a biliary pathology when there was biliary stone(s) or bile mud\(^10\). Patients with no clear etiology or a history of alcohol use were included in the idiopathic group. The first 14 weeks of pregnancy were defined as first trimester, 15 to 28 weeks as second trimester, and beyond 29 weeks as third trimester. Pregnancies that completed 37th week were defined as term pregnancy\(^11\).

Results

Of 85542 deliveries 33 pregnant patients suffered from APP between January 2004 and June 2013 included to in this study (incidence 1/2592 pregnancy). The mean age of the study population was 34.8±7.1 (23-46) years; the mean gestational age was 25.7±7.4 weeks; and the mean duration of hospital stay was 8.7±2.9 days. The laboratory findings of the study population were presented on Table 1.

![Table 1: Mean laboratory results of the study population.](image)

The pancreatitis etiology was a biliary pathology in 18 (54.5%) patients, hypertriglyceridemia in 11 (33.3%), and idiopathic in 4 (12.2%).

Analysis of the patients based on the gestational period revealed that 3 patients in first trimester had a mean age of 37±9.8 (30-44) years, a mean gestational age of 13±0.5 (12.6-13.4) weeks, and a mean duration of hospital stay of 10.2±2.8 (8-12) days. Twenty-seven (81.8%) patients were multiparous. The mean number of gravity was 4.2±0.8 and the mean number of parity was 3.2±0.6.

Mean demographic data and clinical properties based on the trimester of pregnancy in the whole study group is shown on Table 2.

Maternal death occurred in 4 patients, with a mortality rate of 12.1%. Maternal complications from which our patients suffered were hyperglycemia\(^2\), multiorgan failure\(^3\), pancreatic necrosis\(^10\), pseudocyst formation\(^10\), and DIC\(^11\) (a total of 16 patients, 48.5%). The other 29 patients were discharged with cure. As for the fetal complications, there were three fetal deaths in 3 pregnancies, all of which occurred in third trimester, small gestational age in 3 patients and preterm delivery in 4 patients.

The mode of delivery was C/S in 11 patients and normal vaginal route in 15 patients. Evaluation of the study population by Ranson score revealed mild APP in 15 patients and severe APP in 18 patients.

The treatments applied to patients were conservative therapy, endoscopic retrograde colangiopancreaticography (ERCP), plasmapheresis, and surgical intervention.
Hypertriglyceridemia, IUGG: Intrauterine growth retardation

Table 2: Mean demographic data and clinical properties based on the trimester of pregnancy.

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Cases (n=%)</th>
<th>Complications (n=26)</th>
<th>Treatment</th>
<th>RS</th>
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<td></td>
<td></td>
<td>Maternal (n=16)</td>
<td>Fetal (n=10)</td>
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<tr>
<td>Biliary pathology</td>
<td>18 (54.5%)</td>
<td>DIC (1)</td>
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<td>3.1±0.4</td>
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<td>Pancreatic necrosis (1)</td>
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<td>HTG</td>
<td>11 (33.3%)</td>
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<td>1.5±0.6</td>
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<td>Hyperglycemia (3)</td>
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<td>Mortality (0)</td>
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<tr>
<td>Idiopathic</td>
<td>4 (% 12.1)</td>
<td>Hyperglycemia (2)</td>
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<td>1.2±0.1</td>
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DIC: Disseminated intravascular coagulopathy

Table 3: Etiologies, complications, and treatment outcomes of the whole APP population.

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DIC: Disseminated intravascular coagulopathy, RS: Ranson Score, IUGG: Intrauterine growth retardation

Conservative therapy was composed of cessation of oral intake, analgesia and hydration. Patients with hypertriglyceridemia underwent plasmapheresis while those with stones in biliary tree were managed with ERCP when medical therapy failed. Surgical therapy was chosen when all other treatment modalities failed. Twenty-six (78.7%) patients were managed conservatively. Five (12.1%) patients underwent ERCP, and 6 (18.1%) patients with hypertriglyceridemia were treated with plasmapheresis. One (3%) patient who developed pancreatic necrosis underwent partial pancreatectomy and 1(3%) other with cholecystectomy. Three (9.1%) of 10 patients who developed hyperglycemia were treated with blood glucose monitoring and intensive insulin therapy. Etiologies, complications, and treatment outcomes of the whole APP population were summarized on Table 3.

Discussion

Although the exact relationship between pregnancy and acute pancreatitis has yet to be clarified, more than one factor has been implicated in the etiology. Among them are increased gall bladder volume and slowing of bile flow, bile stasis as a result of relaxation of gall bladder smooth muscle by progesteron, and a 2-4 times increased triglyceride levels in pregnancy. We similarly found that biliary pathologies were responsible from 57.4% of cases and hypertriglyceridemia caused a further 27.3%. In contrast with the literature, none of our patients had alcohol-induced pancreatitis. This may have resulted from a substantially low alcohol consumption in general population and especially among women in our region owing to social and religious reasons.

Twenty-seven (81.8%) of our patients were multiparous. Ighinosa et al. similarly reported that, among 29 pregnant patients with APP, the mean numbers of gravida and parity were 2.7±1.6 and 1.7±1.8, respectively. In our study, on the other hand, 81.8% of the patients were multiparous and
Pregnancy is associated with elevated triglyceride levels. However, triglyceride levels only rarely exceed 300 mg/dl. Nevertheless, the risk of acute pancreatitis is increased once triglyceride level is above 1000 mg/dl. A diet poor of lipid can be used to maintain blood triglyceride level below 885 mg/dl(28). Plasmapheresis can be safely applied to patients with APP who continue to have elevated triglyceride levels despite diet(29). In our study 6 (18.1%) patients with hypertriglyceridemia-induced APP underwent plasmapheresis after a failed attempt to reduce triglyceride levels with diet and no maternal and fetal complications were observed. Therefore, plasmapheresis can be considered safe in this patient population.

Hypertriglyceridemia-induced APP usually has a poor prognosis(16,30,31). Despite a low patient number, our study demonstrated both higher mortality and complication rates in patients with pancreatitis of biliary system origin. Furthermore, mean RS was also higher in patients with biliary pancreatitis. These results differ from the literature data but our study is far from the sufficient power to make a conclusion about the prognosis of this group.

In agreement with the studies showing mortality rates of APP patients at 0-37%, our maternal mortality rate was 12.1% (n=4). All pregnant women who died were in second trimester and their fetuses also died.

Abortus at 29th, 34th, and 36th weeks of gestation was detected in 3 (9.1%) patients with APP. We calculated a perinatal mortality rate of 9.1%. This rate was comparable with the previous literature data. However, a few studies reported that a lower perinatal mortality rates (about 3-4%). This is may associated with features of centers conducted these studies having advanced intensive care unit of newborn and life support unit(34). In order to decreased perinatal mortality rates intensive care units of the newborn should become more widespread. to be effectively used.

There are studies in the literature that suggest vaginal route for delivery due to the contamination risk of intraabdominal fluid collections formed during C/S and the increased risk of impaired pancreas blood supply and exacerbation of pancreatitis owing to hypotension during surgery(32,33). In contrast, some other studies have recommended C/S due to the rupture risk of pseudocysts should they occur(34). Fifteen (45.4%) patients with APP included by our study underwent C/S while 11 (33.3%) delivered their infants via vaginal route.

Limitations

The most important limitation of this study was the small sample size. Other limitations were retrospective nature and single center study.

Conclusion

Our study demonstrated that APP, which is a rare clinical entity in daily practice, is most common-
ly observed in second trimester and cases during this period of pregnancy are more complicated and fatal. Furthermore, it was also concluded that cases of biliary origin are more common and associated with a poorer prognosis, and diagnostic and therapeutic protocols show similarity in pregnant and non-pregnant population, except for radiation safety. For this purpose, studies having a larger sample size and perhaps involving more than one center would guide physicians to clarify diagnostic and therapeutic uncertainties.

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