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Acute Pancreatitis Secondary to Hypertriglyceridemia in Pregnancy: A Case Report

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ABSTRACT

Acute pancreatitis during pregnancy is a rare yet clinically important complication, with hypertriglyceridemia-induced acute pancreatitis accounting for approximately 4% of cases. A 24 years lady, BMI 22.7Kg/m^2, primigravida at 35 weeks 2 days period of gestation presented to the emergency room with complaints of sudden onset of severe epigastric pain and multiple episodes of vomiting for two days. Reports showed serum amylase and lipase raised to 1014 U/L and 2500 U/L respectively. Triglyceride and cholesterol levels were 825 mg/dl and 325 mg/dl respectively. Ultrasonography of the abdomen showed an enlarged pancreas, and obstetric scan confirmed a live foetus. She was shifted to intensive care unit and managed by multidisciplinary team. She was shifted to obstetrics high risk pregnancy ward following 10 days of ICU admission and underwent induction of labor at 37 weeks of gestation. However, she ultimately required an emergency lower segment cesarean section at 37 weeks and 1 day of gestation due to failed induction. She had a good clinical outcome.

Keywords: *Acute Pancreatitis; Pregnancy; Hypertriglyceridemia.*

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INTRODUCTION

Acute pancreatitis during pregnancy is a rare yet clinically important complication, with incidence ranging from 1 in 1,000 to 1 in 10,000 pregnancies. [1] While gallstone pancreatitis remains the primary cause, hypertriglyceridemia-induced acute pancreatitis is recognized as the second most common etiological factor, accounting for approximately 4% of cases. [2] Hypertriglyceridemia, considered a physiological response to hormonal changes during pregnancy, can lead to pancreatitis when triglyceride levels become excessively elevated. It is associated with high maternal as well as foetal mortality but with recent advancements in diagnosis and management, the mortality rate has declined significantly according to various reports. [3-5]

A 24-year-old lady, prepregnancy weight of 58 Kg, height 160cm (BMI 22.7Kg/m^2), Primigravida at 35 weeks 2 days period of gestation presented to emergency room with complaints of sudden onset of severe epigastric pain and multiple episodes of vomiting for two days with no history of fever and jaundice. There was no history of lower abdominal pain, vaginal leaking, bleeding or hypertension. She was booked at a government hospital where she was on regular antenatal care. She was a known case of dyslipidaemia for which she had been taking fenofibrate daily for 18 months, which she discontinued when her pregnancy was confirmed at 20 weeks of gestation. She had no history of diabetes and gall stone in the past. Her prepregnancy weight was 58 Kg, height 160 cm (BMI 22.7Kg/m^2). Her Weight at presentation was 75 kg, (BMI (29.3 kg/m^2). At the time of examination, she was ill looking, drowsy and dehydrated. Her blood pressure was normal but she was tachypnoeic and tachycardic. On abdominal examination, there was distension with severe tenderness on epigastrium. On obstetric examination, uterus was 34 weeks, relaxed, and foetal heart sound was 140bpm. Pelvic examination confirmed she was not in labour. Abruptio placenta and uterine rupture was ruled out clinically and by ultrasonography. She was kept on oxygen and catheterized. Ringer lactate and Normal saline at 100ml/hour was started. Blood investigations were sent. Reports showed Haemoglobin was 12.5 gm%, total count was 13800/ mm^3, amylase and lipase raised to 1014 U/L and 2500 U/L respectively. Arterial blood gas analysis revealed metabolic acidosis. Renal function test and liver function test were within normal limits. Blood sugar level was raised to 149 mg/dl. Triglyceride and Total cholesterol levels were 825 mg/dl and 325 mg/dl. USG of the abdomen showed an enlarged pancreas with fluid collection in anterior pararenal space and obstetric scan confirmed a live viable foetus.A diagnosis of acute pancreatitis resulting from hypertriglyceridemia was established in a Primigravida who was not in labor.

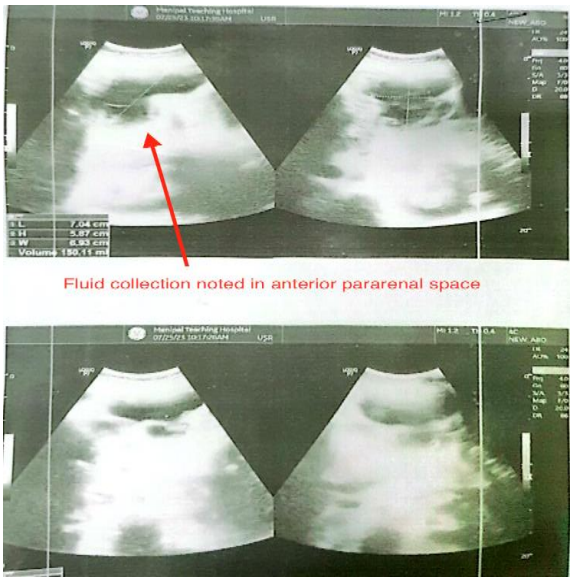

Figure 1: **USG showing acute pancreatitis with fluid collection in anterior pararenal space.**

The patient was admitted to the Intensive Care Unit (ICU) due to the severity of her condition, with critical signs including metabolic acidosis, tachypnea, and tachycardia. Given her drowsy, dehydrated state and elevated pancreatic enzymes, she required close monitoring and intensive management to prevent further complications such as multi-organ failure or maternal-foetal compromise. She was admitted under the supervision of a multidisciplinary team including gastroenterologist, obstetrician, and anaesthesiologist.

Central venous line 6 Fr, double lumen, was accessed to monitor her fluid balance. She as kept nil by oral and stomach was decompressed with nasogastric tube(8Fr), and managed with oxygen, Intravenous fluids, analgesics, fenofibrate (160mg) two tablets once a day, LMWH 60mg subcutaneously once daily, Injection Imipenem +Injection Cilastin). A total of five pints of intravenous fluid (III pints of RL, II pints NS) over 24 hours was given. Injection Paracetamol 1GM IV 8 hourly,

Injection Tramadol 50mg IV 8 hourly for pain relief was given.

Table 1: Laboratory Test Results from Admission to Discharge

Tests	Reference Range	At Admission	24 Hours After Admission	72 Hours After Admission	7 Days After Admission	15 Days After Admission
Amylase (U/L)	30-110	1014	719	620	90	90
Lipase (U/L)	23-300	2500	2468	1800	220	86
Triglycerides (mg/dL)	<150	825	1670	760	560	512

After her condition gradually improved both clinically and biochemically, she was shifted to obstetrics high risk pregnancy ward following 10 days of ICU admission. She underwent induction of labour at 37 weeks of gestation with misoprostol. The patient received epidural analgesia following the onset of labor pain. Nevertheless, she required an emergency lower segment cesarean section (LSCS) at 37 weeks and 1 day of gestation due to unsuccessful labor induction. The outcome was a single live female baby, weighing 2.5 kg at birth, with Apgar scores of 8 at 1 minute and 9 at 5 minutes, no significant congenital anomalies observed. Patient improved gradually and she was then discharged on her 4th postoperative day after 16 days of hospital stay to follow up regularly for postoperative wound care and monitoring of triglyceride levels. On her follow up after 6 weeks post-delivery, blood investigations and ultrasound were done. Ultrasound revealed a normal abdomen and pelvis with normal size of pancreas. Serum amylase and lipase levels were also found to be normal at 58 U/L and 63 U/L respectively. Liver function tests were within normal limits. Serum triglyceride and total cholesterol levels were still elevated with values of 525 mg/dl and 240 mg/dl. Patient was counselled regarding contraception and need for regular follow up for management of hypertriglyceridemia.

DISCUSSION

Acute pancreatitis (AP) during pregnancy is a complex condition that can arise from various causes, including gallstone disease, alcohol abuse, and hypertriglyceridemia. Gallstones are the most prevalent cause of AP during pregnancy, accounting for over 70% of cases. [6] Among these etiologies, hypertriglyceridemia-induced AP remains relatively uncommon but deserves special attention due to its unique pathophysiology and clinical implications. It is more commonly seen in women with pre-existing dyslipidaemia such as in this patient. [7]

Pregnancy involves adaptive changes in lipid metabolism to meet the needs of the

growing foetus and placenta. There is an increased production of triglyceride-rich lipoproteins and reduced clearance of triglycerides due to the suppression of lipoprotein lipase activity in the liver and adipose tissue. Triglyceride levels are at their maximum in the third trimester and may increase two to fourfold as compared to non-pregnant levels. This heightened triglyceride level during late pregnancy contributes to the higher incidence of pancreatitis in the third trimester. While triglyceride (TG) levels reach their highest point during the third trimester of pregnancy, they seldom surpass a concentration of 300 mg/dl (3.3 mmol/L). This level is generally considered insufficient to trigger the development of acute pancreatitis (AP). [8] However, in women with pre-existing abnormal lipid metabolism, these adaptations can lead to severe hypertriglyceridemia (HTG) and may potentially trigger pancreatitis.

The exact pathogenesis of HTG-induced AP is not fully understood, but it involves the accumulation of triglycerides around the pancreas, which are then hydrolysed by pancreatic lipase, leading to the accumulation of high levels of free fatty acids. These fatty acids are believed to be toxic to acinar cells and the capillary endothelium. Concurrently, increased chylomicron concentrations can cause capillary plugging, ischemia, and acidosis. In this acidic environment, free fatty acids activate trypsinogen and trigger the development of acute pancreatitis. [9]

Diagnosing AP during pregnancy can be complicated, as its symptoms often mimic common pregnancy conditions, delaying diagnosis and treatment. The typical symptoms of AP, such as epigastric pain, nausea, and vomiting, can mimic common pregnancy discomforts. However, in some cases, AP may present with severe manifestations like metabolic acidosis, sepsis, and shock.

Early identification of the condition is crucial to prevent maternal and foetal morbidity and mortality. Serum amylase and lipase levels are valuable markers in diagnosing AP, and ultrasound is a safe imaging modality for pregnant women, avoiding ionizing radiation exposure. To ensure an accurate diagnosis, obstetric causes like preeclampsia, abruptio placenta, obstetric cholestasis, acute fatty liver of pregnancy, and uterine rupture should be ruled out.

Enteral tube feeding should be the primary therapy in patients with predicted severe acute pancreatitis who require nutritional support. [10] For patients with hyperlipidaemic pancreatitis, lipid-lowering therapy is recommended, and in some cases, hemofiltration may be necessary. [11]

Managing acute pancreatitis in pregnancy requires a tailored multidisciplinary approach, considering the unique aspects of pregnancy and the patient's specific needs. Close monitoring and individualized treatment plans are essential to ensure the best outcomes for the mother and the developing foetus. The appropriate decision relies on considering both the gestational age and the severity of the acute pancreatitis.

In cases where vaginal delivery is feasible, it is generally preferred to minimize the risk of superinfection and necrosis associated with caesarean sections. This approach is particularly beneficial when dealing with

pancreatitis to mitigate potential complications. However, in situations where hypertriglyceridemia-induced pancreatitis is evident, prompt termination of the pregnancy through a caesarean delivery is recommended. [8] This is necessary due to the significantly heightened risk of maternal and foetal mortality in such cases.

This case presented near to term at 35 weeks 2 days period of gestation, and once she reached term period of gestation, her pregnancy was terminated by emergency caesarean section following failed induction of labour at 37 weeks 1 day period of gestation.

Ultimately, the management of delivery in pregnant women with acute pancreatitis requires individualized assessment, considering the specific circumstances and health status of the patient, in order to make the most appropriate decision that prioritizes the well-being of both the mother and the unborn child.

There are few case reports of pregnancy with hypertriglyceridemia-induced AP. Most cases were presented in the third trimester. A case of acute pancreatitis at term was reported with acute epigastric pain with live pregnancy. Pregnancy was terminated by caesarean section, with good outcomes for the mother as well as the baby. [12] In another case report, a 21-year-old woman at 26 weeks of gestation presented with acute epigastric pain and intrauterine foetal death; she was managed conservatively, and the pregnancy was terminated vaginally. [13] A rare case of acute fatty liver of pregnancy (AFLP) and pancreatitis was reported in a woman with an IVF-induced twin pregnancy, where timely diagnosis and caesarean delivery were crucial in preventing severe complications. [14] A case of acute pancreatitis due to hypertriglyceridemia was reported in a 35 year old pregnant lady at 36 weeks of gestation who presented with acute epigastric pain; despite conservative management, severe foetal distress led to an emergency caesarean section. [15]

Although the incidence of hypertriglyceridemia-induced AP in pregnancy may be increasing due to better diagnostic tools and increased awareness, advancements in medical care have led to a decline in maternal and perinatal mortality rates. Proper management, timely interventions, and multidisciplinary collaboration have significantly improved outcomes for pregnant women with AP.

CONCLUSIONS

Hypertriglyceridemia-induced AP during pregnancy remains a rare and challenging condition. Early recognition, accurate diagnosis, and prompt management are critical in ensuring favourable outcomes for both the mother and the baby.

CONFLICT OF INTERESTS: None

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