

Management of hypertriglyceridemic acute pancreatitis complicated with ARDS in pregnancy: a case report

Severe hypertriglyceridemia in pregnancy

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Abstract

Introduction: Severe hypertriglyceridemia during pregnancy can lead to acute pancreatitis with significant maternal and fetal risk. Although lowering triglyceride levels is the primary goal, treatment options are limited in pregnancy. Triglycerides can be reduced with dietary and pharmacologic therapy, while plasmapheresis is recommended when these measures are insufficient.

Case Presentation: A 35-year-old woman at 11 weeks of pregnancy presented with abdominal pain, respiratory distress, and severe hypertriglyceridemia and was diagnosed with hypertriglyceridemia-induced acute pancreatitis complicated by acute respiratory distress syndrome. She received fluids, insulin infusion, heparin, and omega-3, but inadequate triglyceride reduction required plasmapheresis. Within one week, triglycerides fell below 500 mg/dL with improvement in respiratory and abdominal findings. She recovered without complications and later delivered a healthy infant at 36 weeks.

Conclusion: Timely multimodal management, including plasmapheresis when needed, can achieve rapid triglyceride reduction and favorable maternal-fetal outcomes.

Keywords

hypertriglyceridemia, acute pancreatitis, pregnancy, ARDS

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Introduction

During pregnancy, plasma triglyceride (TG) levels increase fourfold due to increased production of TG-rich lipoproteins and decreased lipoprotein lipase activity. This is called physiological hyperlipidemia of pregnancy [1]. TG levels rarely exceed 300 mg/dl, but significant elevations in TG levels (>1000) occur in women with diabetes and lipid metabolism disorders. Severe hypertriglyceridemia (HTG) during pregnancy can lead to many complications [1] such as acute pancreatitis (AP), hyperviscosity syndrome, preeclampsia, macrosomia, preterm birth, or fetal and maternal mortality. AP caused by hypertriglyceridemia during pregnancy has been associated with poor prognosis [2]. Therefore, early clinical recognition of hypertriglyceridemic acute pancreatitis (HTGAP) is important to provide appropriate treatment and prevent subsequent attacks.

AP is diagnosed by physical examination, laboratory, and imaging methods. Abdominal ultrasonography is a safe option in pregnancy because it does not involve radiation to the fetus and has a higher sensitivity in detecting gallstones compared to computed tomography. Magnetic resonance imaging is also an option for the evaluation of acute pancreatitis and its complications in pregnant women.

One of the most common complications of acute pancreatitis is the development of extrapulmonary acute respiratory distress syndrome (ARDS). In contrast to direct lung injury caused by pulmonary pathogen infection, indirect lung injury in AP patients results from systemic inflammation, leading to lung epithelial cell damage and impaired lung barrier function [3].

In hypertriglyceridemic patients, nutrition, pharmacological treatments, and the use of omega-3 fatty acids are important in preventing further complications and improving outcomes. TG-lowering pharmacological treatment options during pregnancy are limited due to potential teratogenicity.

In this article, a case of a woman who presented with acute pancreatitis due to severe hypertriglyceridemia in the 11th week of pregnancy, complicated with ARDS, and was successfully treated with diet, insulin infusion, plasmapheresis, and non-invasive mechanical ventilatory support is discussed.

Case Presentation

A 35-year-old, 11-week pregnant patient was admitted to the emergency with epigastric pain, nausea, vomiting, and respiratory distress. In her medical history, it was learned that she had familial hypertriglyceridemia and had discontinued her statin-derived medication due to pregnancy. Physical examination revealed diffuse abdominal tenderness and bilateral decreased respiratory sounds. Laboratory test results were amylase: 849 U/L, lipase: 1551 U/L, triglyceride level: 2235 mg/dl. Arterial blood gases were pH: 7.30, pCO₂: 32.6 mmHg, pO₂: 46 mmHg, HCO₃: 22 mmol/L, and lactate level was 1.2 mmol/L. Abdominal ultrasonography showed incomplete visualization of the pancreas, increased liver size, and perihepatic, perisplenic, and intraabdominal free fluid measuring 4.5 cm in the deepest part. Lung ultrasonography showed bilateral B lines and minimal pleural effusion. Echocardiography was unremarkable. Computed tomography was not performed due to the patient's pregnancy.

The patient diagnosed with HTGAP was transferred to the

intensive care unit due to the need for respiratory support. The patient's vital signs, urine output, electrolytes, arterial blood gas, and serum glucose levels were monitored. Ringer's lactate and normal saline infusions were started. 0.1 U/kg/hour insulin infusion was started along with 80 ml/hour 5% dextrose infusion. The patient was administered low molecular weight heparin (LMWH) at a prophylaxis dose. Omega-3 supplements were started. The patient with hypoxemia and tachypnea was started on high-flow nasal cannula oxygen (HFNO) therapy. She was fed orally with a lipid-poor diet. Therapeutic abortion was recommended to the patient because she was in the first trimester of pregnancy and had high risk, but the patient did not accept it. Plasmapheresis was applied to the patient because effective TG reduction could not be achieved with insulin infusion. Plasmapheresis treatment was terminated when the TG level dropped below 500 mg/dl 1 week later. Oxygen requirement decreased gradually. Oral TG-lowering agents were not used in the treatment. The patient, whose TG level decreased during follow-up, pancreatitis findings regressed, and who had no active complaints, was transferred to the ward. Subcutaneous LMWH treatment was continued throughout the hospital stay. After being discharged from the hospital, she was regularly followed up by the endocrinology and gynecology outpatient clinics without experiencing any complications. A healthy baby was born by cesarean section in the 36th week of pregnancy.

Discussion

Acute pancreatitis cholelithiasis, hypertriglyceridemia, and alcohol are the primary etiologic factors, in pregnancy is a rare and dangerous disease associated with increased fetal and maternal mortality [4]. In our patient, the cause of acute pancreatitis was hypertriglyceridemia. Since it is a rare condition and there are no clear algorithms for treatment, the treatment of severe gestational hypertriglyceridemia is complex. Patients should be managed by an obstetrician-gynecologist, endocrinologist, gastroenterologist, and dietician. AP symptoms in pregnancy are nonspecific and may be masked by pregnancy-related symptoms. The predominant symptom is epigastric pain that may be accompanied by epigastric tenderness and vomiting. Although these findings can be seen at any time during pregnancy.

The aim of AP treatment should be to prevent organ failure and septic complications. It consists of aggressive hydration, analgesia, correction of electrolyte imbalance, and treatment directed at the potential cause (TG-lowering therapy).

Patients are recommended to be fed primarily orally if possible. Isocaloric fat-restricted diet, omega-3 fatty acids, insulin, heparin, antihypertriglyceridemic drugs, and therapeutic plasmapheresis can be used to lower serum TG levels. Studies are showing that TG levels are reduced by 25-30% with a fat-restricted diet and omega-3 fatty acid supplementation in pregnant women [5]. Rapid decrease of excessively high TG levels is the primary goal to prevent severe HTG complications, but treatment options in pregnancy are limited. Statins are contraindicated in pregnancy [6]; fibrates and nicotinic acid are category C in pregnancy and their use is controversial.

In severe hypertriglyceridemia, intravenous insulin infusion is

a recommended treatment method, provided that blood sugar levels are closely monitored, as it activates lipoprotein lipase activity in muscle and fat tissues [7].

Another recommended treatment method for hypertriglyceridemia is IV heparin infusion. Although it is a treatment method that is effective in non-pregnant individuals, IV heparin infusion during pregnancy is associated with an increase in bleeding complications and worsening of pancreatitis [6].

Plasmapheresis is recommended for hypertriglyceridemia that does not respond to other treatment methods. However, its use is limited due to its high cost, risk of thrombosis, and catheter-related complications [6]. Apheresis treatments should be continued daily until fasting TG levels fall below 500 mg/dl or until signs and symptoms of pancreatitis resolve.

In the literature, there is a case in which early plasmapheresis was successfully applied in the first trimester in the treatment of pancreatitis caused by severe hypertriglyceridemia in pregnancy without any adverse side effects on mother and baby [8]. In our case, plasmapheresis treatment was performed because TG levels could not reach the desired level despite a fat-restricted diet, omega-3 supplementation, and insulin infusion. Oral TG-lowering agents were not used in the treatment because of their potential teratogenicity. Plasmapheresis treatment was terminated when the TG level dropped below 500 mg/dl.

Limitations

The main limitation is the lack of universally accepted management guidelines for hypertriglyceridemia-induced pancreatitis in pregnancy, which limits the contextualization of this patient's favorable outcome within broader clinical practice.

Conclusion

Pancreatitis due to hypertriglyceridemia is a rare but serious complication of pregnancy. A combination makes the diagnosis of clinical, laboratory, and imaging methods. Imaging methods should not be used with caution due to radiation exposure. While conservative treatment methods are effective in mild cases, hospitalization, the need for an intensive care unit, and endoscopic or surgical treatment methods should be considered in severe cases.

Gastroenterologists, general surgeons, radiologists, and gynecologists should collaborate for the follow-up and treatment of these patients. We believe that standardized guidelines are needed for the follow-up and treatment of the disease in pregnancy.

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Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content, including study design, data collection, analysis and interpretation, writing, and some of the main line, or all of the preparation and scientific review of the contents, and approval of the final version of the article.

Animal and Human Rights Statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Data Availability Statement

The datasets used and/or analyzed during the current study are not publicly available due to patient privacy reasons but are available from the corresponding author on reasonable request.

Conflict of interest

The authors declare that there is no conflict of interest.

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