American Journal of Case Reports

e-ISSN 1941-5923
© Am J Case Rep, 2020; 21: e921122
DOI: 10.12659/AJCR.921122

Received: 2019.11.02
Accepted: 2019.11.26
Published: 2020.01.29

# Acute Fatty Liver of Pregnancy: Rare, but Potentially Fatal

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABCDEF Andreia de Vasconcelos Gaspar
BCDE Tânia C. Ascensão
BCEF Isabel Santos Silva

Obstetrics Service B, Bissaya Barreto Maternity, Coimbra University and Hospital Center, Coimbra, Portugal

**Corresponding Author:** Andreia de Vasconcelos Gaspar, e-mail: andreiadevasconcelosgaspar@gmail.com
**Conflict of interest:** None declared

**Patient:** Female, 34-year-old
**Final Diagnosis:** Acute fatty liver of pregnancy
**Symptoms:** Jaundice • nausea • prostration • vomiting
**Medication:** —
**Clinical Procedure:** —
**Specialty:** Obstetrics and Gynecology

**Objective:** Rare disease
**Background:** Acute fatty liver of pregnancy is an obstetric emergency characterized by liver dysfunction, which can lead to severe maternal and fetal complications.
**Case Report:** A 34-year-old woman, 37 weeks and 2 days pregnant, reported symptoms of nausea, vomiting, jaundice, and prostration. Laboratory findings revealed liver dysfunction and coagulopathy. A clinical diagnosis of acute fatty liver was made and an emergency cesarean section was performed. The postoperative period was complicated by disseminated intravascular coagulation, acute hepatic and renal insufficiency, and pancreatitis.
**Conclusions:** Early recognition of this pathology, the interruption of pregnancy, and intensive therapy led to a favorable outcome.

**MeSH Keywords:** Disseminated Intravascular Coagulation • Fatty Liver • Liver Failure, Acute • Pregnancy

**Full-text PDF:** https://www.amjcaserep.com/abstract/index/idArt/921122







Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]

## Background

Acute fatty liver of pregnancy (AFLP) is a rare but potentially fatal disease. The pathophysiology of AFLP remains unknown, but there is some evidence of an association with fatty acid oxidation defects during pregnancy. This condition usually occurs between 30 and 38 weeks of gestation. The clinical signs are nonspecific, with the most frequent symptoms being nausea, vomiting, abdominal pain, and jaundice [1]. This pathology remains an obstetric emergency, requiring early diagnosis and treatment, which currently consists of termination of pregnancy and supportive therapy. Disseminated intravascular coagulation (DIC) is one of the most frequent complications [2,3]. We present a case that was diagnosed early and consequently had a good maternal and fetal prognosis.

## Case Report

A 34-year-old, nulliparous, healthy woman, at 37 weeks and 2 days' gestation, came to the Emergency Department for loss of amniotic fluid. She also referred to nausea and vomiting with 4 days of evolution, associated with prostration since that day. She denied pruritus, headache, epigastric pain, or visual impairment. Pregnancy was monitored without intercurrences. She had no history of travel or ingestion of drugs or medicinal herbs. On admission, the patient was uncooperative, icteric, apyretic, with blood pressure of 118/74 mmHg and lower-limb edema. The analytical study showed hemoglobin 11.5 g/dl, white blood cell count of $29.60\times10^3$/uL with neutrophilia (81.2%) and lymphocytosis (13.5%), platelet count $146\times10^3$/uL, serum lactate dehydrogenase 1114 U/L, aspartate aminotransferase 273 U/L, alanine aminotransferase 370 U/L, alkaline phosphatase 419 U/L, total bilirubin 8.21 mg/dl, bile acids 3.3 mol, serum creatinine 1.69 mg/dl, urea 42 mg/dl, albumin 24 g/L, glucose 59 mg/dl, prothrombin time 32.7 s, and activated partial thromboplastin time of 59.9 s. Hepatitis A, B, C, and E serology were negative. Abdominal ultrasonography revealed "liver with a slight increase of the right lobe, admitting a discrete diffuse heterogeneity with a slight increase in echogenicity, translating diffuse steatosis" (Figure 1). A presumptive diagnosis of acute fatty liver of pregnancy was made. The patient was admitted to the delivery room and, due to fetal distress, underwent an emergency cesarean section. The newborn male, weighing 2810 g, had an Apgar score of 3 at the first minute and 5 at the fifth minute, requiring resuscitation. In the postoperative period, the patient was transferred to the Intensive Care Unit (ICU) for treatment and stabilization of acute hepatic and renal insufficiency and disseminated intravascular coagulation (DIC). She required continuous infusion of 5% dextrose for about 10 days to maintain euglycemia. On the 7th day of hospitalization, due to nausea and vomiting and elevation of amylase (260 U/L) and lipase (948 U/L), she underwent abdominal CT, which revealed "discrete globosity of the pancreatic parenchyma, with dimensions at the upper limit of normality", and acute pancreatitis was diagnosed. She was progressively able to eat, up to the date of discharge. She presented progressive improvement of the analytical parameters of hepatic function (Table 1). Due to DIC, she underwent therapy with fresh frozen plasma, fibrinogen, and vitamin K. She was discharged, clinically improved, on the 22nd postnatal day.

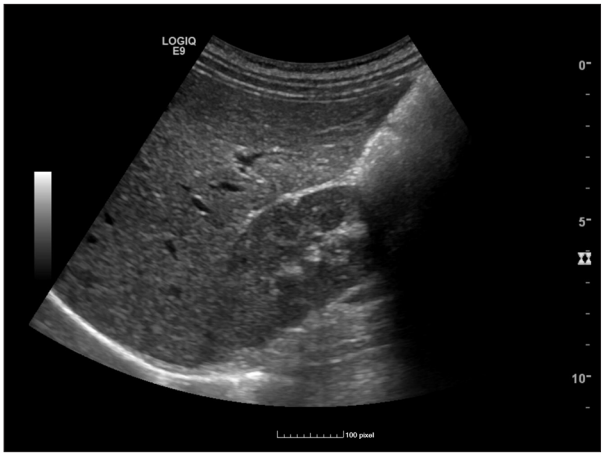


**Figure 1.** Abdominal ultrasound with diffuse hepatic steatosis.

**Table 1.** Evolution of liver function and coagulation tests during hospitalization.

| | Day 1 | Day 7 |
|---|---|---|
| TP, seconds | 32.7 | 16.3 |
| aPTT, seconds | 59.9 | 32.2 |
| AST, U/L | 273 | 120 |
| ALT, U/L | 370 | 126 |
| ALP, U/L | 419 | 217 |
| Total bilirubin, mg/dl | 8.21 | 4.32 |

TP – prothrombin time; aPTT – activated partial thromboplastin time; AST – aspartate aminotransferase; ALT – alanine aminotransferase; ALP – alkaline phosphatase.

## Discussion

AFLP is a rare disease, which usually develops in the third trimester of pregnancy [1]. Its incidence ranges from 1: 7000–15 000 pregnancies [4]. Several risk factors were identified, being more frequent in nulliparas and with male fetuses, as in our case. Other associated risk factors are: previous episode of acute fatty liver of pregnancy, multiple pregnancy, body mass index less than 20 kg/m$^2$, fetal long-chain 3-hydroxyacyl CoA dehydrogenase deficiency, and preeclampsia [5,6]. The pathogenesis





Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]

**Table 2.** Swansea criteria.

| The diagnosis of AFLP is considered if at least 6 of the 15 criteria are met |
|---|
| Vomiting |
| Abdominal pain |
| Polydipsia/polyuria |
| Encephalopathy |
| Elevated bilirubin (>0.8 mg/dl or >14 μ mol/L) |
| Hypoglycemia (<72 mg/dl) |
| Leukocytosis (>11 000 cells/μ L) |
| Elevated transaminases (AST or ALT) (>42 U/L) |
| Elevated ammonia (> 47μmol/L) |
| Hyperuricemia (>5.7 mg/dL or >340 μmol/L) |
| Acute renal insufficiency or creatinine >1.7 mg/dL or >150 μmol/L) |
| Coagulopathy or prothrombin time >14 s |
| Ascites or ultrasound with „bright" liver |
| Hepatic biopsy with microvesicular steatosis |

of AFLP can be associated with defects in fatty acid metabolism during pregnancy. LCHAD (long-chain 3-hydroxyacyl CoA dehydrogenase) is one of the most commonly affected enzymes. Fetuses with this homozygous defect lead to the accumulation of intermediate products of fatty acid metabolism, which have deleterious effects on maternal hepatocytes [7]. Patients can develop nonspecific symptoms, such as nausea and vomiting, abdominal pain, and jaundice, which progress rapidly to acute liver failure, marked by complications such as coagulopathy, hypoglycemia, and renal failure [1,8]. Rarely, some patients develop pancreatitis [9]. The differential diagnosis should include other diseases, such as pre-eclampsia, HELLP syndrome (hemolysis, elevated liver enzyme levels, and low platelet levels), intrahepatic cholestasis of pregnancy, viral hepatitis, and drug-induced hepatitis. In intrahepatic cholestasis of pregnancy, the predominant symptom is pruritus, with serum bilirubin less than 5 mg/dl and elevated bile acids. AFLP can be distinguished from HELLP syndrome and preeclampsia by hypoglycemia, jaundice, and by signs of systemic hepatic dysfunction such as mild-to-moderate elevation of transaminases, hepatic encephalopathy, and DIC [8]. Viral hepatitis usually has higher aminotransferase values. This pathology was excluded through serologies that turned out to be negative. The use of drugs or medicinal herbs was also excluded by the anamnesis. Other differential diagnoses were excluded based on symptomatology and complementary means of diagnosis. There is no universal approach to diagnosis, and clinical, laboratory and imaging findings, as well as Swansea criteria, should be considered when clinical suspicion is present [5] (Table 2). Our patient had vomiting, bilirubin >0.8 mg/dl, hypoglycemia <72 mg/dl, leukocytes >11×$10^9$/L, alanine aminotransferase >42U/L, and coagulopathy with prothrombin time >14 s, fulfilling 6 criteria. Imaging tests may be helpful in supporting the diagnosis of AFLP, but their role remains unclear [10]. In the present case, the ultrasound scan presented diffuse hepatic steatosis, which is neither a specific result nor a diagnosis [2]. Liver biopsy should only be used when the diagnosis is doubtful [1]. The recommended treatment is the interruption of pregnancy. The mode of delivery depends on the degree of maternal and fetal decompensation and the probability of successful vaginal delivery. Women who require treatment often need to be admitted to the ICU for coagulopathy reversal, ventilation, correction of hypoglycemia, and renal failure [1]. Another possible complication is pancreatitis, so it is important to measure amylase and lipase after suspected AFLP. CT may be useful in this complication. Maternal mortality rates have improved in recent decades, with global mortality now being below 10% [11]. Currently, it is possible to carry out the genetic study of LCHAD deficiency. However, negative tests for the most common mutation, G1528C, do not exclude the condition. In the presence of the enzymatic defect, the newborn's prognosis depends mainly on the clinical manifestations; therefore, molecular diagnosis is not routinely performed at our center unless clinically suspected [7]. There is a possibility of recurrence of this condition in subsequent pregnancies, although the exact risk is unknown [12].

## Conclusions

Decreased maternal and fetal mortality are associated with early recognition of this pathology and timely action in a context of differentiated care.

### Conflicts of interest

None.





Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]

## References:

1. Liu J, Ghaziani T, Wolf J: Acute fatty liver disease of pregnancy: Updates in pathogenesis, diagnosis, and management. Am J Gastroenterol, 2017; 112(6): 838–46
2. Wei Q, Zhang L, Liu X: Clinical diagnosis and treatment of acute fatty liver of pregnancy: A literature review and 11 new cases. J Obstet Gynaecol Res, 2010; 36: 751–56
3. Vigil-de Gracia P, Montufar-Rueda C: Acute fatty liver of pregnancy: Diagnosis, treatment, and outcome based on 35 consecutive cases. J Matern Fetal Neonatal Med, 2011; 24: 1143–46
4. Allen AM, Kim WR, Larson JJ et al: The epidemiology of liver diseases unique to pregnancy in a US community: A population-based study. Clin Gastroenterol Hepatol, 2016; 14: 287–94
5. Knight M, Nelson-Piercy C, Kurinczuk JJ et al: A prospective national study of acute fatty liver of pregnancy in the UK. Gut, 2008; 57: 951–56
6. Hepburn IS, Schade RR: Pregnancy-associated liver disorders. Dig Dis Sci, 2008; 53: 2334–58
7. Ibdah JA, Bennett MJ, Rinaldo P et al: A fetal fatty-acid oxidation disorder as a cause of liver disease in pregnant women. N Engl J Med, 1999; 340(22): 1723–31
8. Vigil-De Gracia P: Acute fatty liver and HELLP syndrome: Two distinct pregnancy disorders. Int J Gynaecol Obstet, 2001; 73: 215–20
9. Moldenhauer JS, O'brien JM, Barton JR, Sibai B: Acute fatty liver of pregnancy associated with pancreatitis: A life-threatening complication. Am J Obstet Gynecol, 2004; 190(2): 502–5
10. Bacq Y: Liver diseases unique to pregnancy: A 2010 update. Clin Res Hepatol Gastroenterol, 2011; 35: 182–93
11. Dwivedi S, Runmei M: Retrospective study of seven cases with acute Fatty liver of pregnancy. Obstet Gynecol, 2013; 2013: 730569
12. Bacq Y, Assor P, Gendrot C et al: Recurrent acute fatty liver of pregnancy. Gastroenterol Clin Biol, 2007; 31(12): 1135–38





Indexed in: [PMC] [PubMed] [Emerging Sources Citation Index (ESCI)] [Web of Science by Clarivate]