

Acute Fatty Liver of Pregnancy

—A Case Report in Grange University Hospital, Wales

Madinah Azeez*, Alice Tayler, Simran Sharma

Grange University Hospital, Cwmbran, Wales, UK

Email: *Madinah.Azeez@boltonft.nhs.uk

How to cite this paper: Azeez, M., Tayler, A. and Sharma, S. (2024) Acute Fatty Liver of Pregnancy—A Case Report in Grange University Hospital, Wales. *Open Journal of Obstetrics and Gynecology*, 14, 1577-1582. <https://doi.org/10.4236/ojog.2024.1410128>

Received: September 2, 2024

Accepted: October 19, 2024

Published: October 22, 2024

Copyright © 2024 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Acute fatty liver of pregnancy (AFLP) is a rare obstetric complication, and despite improvements in recognition and management over recent decades, it still carries a high risk of maternal and fetal morbidity and mortality. Patients typically present in the third trimester with non-specific symptoms, including nausea and vomiting, upper abdominal pain, malaise and anorexia. Initial diagnosis can be challenging due to the sometimes-insidious presentation, as well as the difficulty in distinguishing between AFLP and other conditions seen in pregnancy with overlapping features. We report a case study of a 32-year-old primigravida who presented with mild and non-specific symptoms, and examination findings leading to a timely diagnosis of AFLP were made. This case highlights the importance of early recognition, prompt intervention, and multidisciplinary management to achieve optimal maternal and fetal outcomes.

Keywords

Liver Disease, Coagulopathy, Obstetrics Medicine

1. Introduction

AFLP is a condition unique to pregnancy, characterised by microvesicular fatty infiltration of the hepatocytes [1]. Incidence of this condition is estimated to be around 1 in 20,000 pregnancies in the UK, and is more common in twin or other multiple pregnancies [2]. Since 1980, fetal and maternal mortality rates have improved from around 85% to less than 20%, potentially as a result of better recognition and management [2]. AFLP can progress to acute liver failure, and it accounts for around a third of cases of acute liver failure during pregnancy [3]. Other complications include hepatic encephalopathy, coagulopathy (including disseminated intravascular coagulation (DIC) [4], renal failure, pancreatitis and

profound hypoglycaemia [5]. This paper aims to increase awareness of this pregnancy-associated liver disease and its concomitant risk if unrecognised.

2. Case Report

A 32-year-old primigravida attended maternity triage at 35 weeks and 6 days into pregnancy with monochorionic diamniotic (MCDA) twins. Her presenting complaint was 4 days of general malaise, nausea and vomiting with no relief despite antiemetics. She also described pain in the upper abdomen, reduced urine output and noted slightly reduced fetal movements on the day of presentation. She had experienced swollen legs and hands throughout the third trimester. Examination revealed icteric sclera, bilateral pitting pedal and anterior abdominal wall odema. Abdomen was soft with mild epigastric tenderness. Reflexes were brisk with no clonus. Both twins were in cephalic presentation and their fetal hearts were heard and regular. Cardiotocography demonstrated a non-hypoxic trace of both twins with appropriate baseline fetal heart rates of 125 bpm and 135 bpm.

Urinalysis demonstrated a trace of proteinuria with no ketonuria. Maternal observations, including blood pressure, were all within normal range. She was admitted for observation, haematological and biochemistry blood samples were taken, and she commenced on 1 Litre of Hartmann’s solution over 8 hours with Intravenous cyclizine 50 mg 8 hourly. Blood results revealed deranged liver, renal and coagulation function (Figure 1 and Table 1).

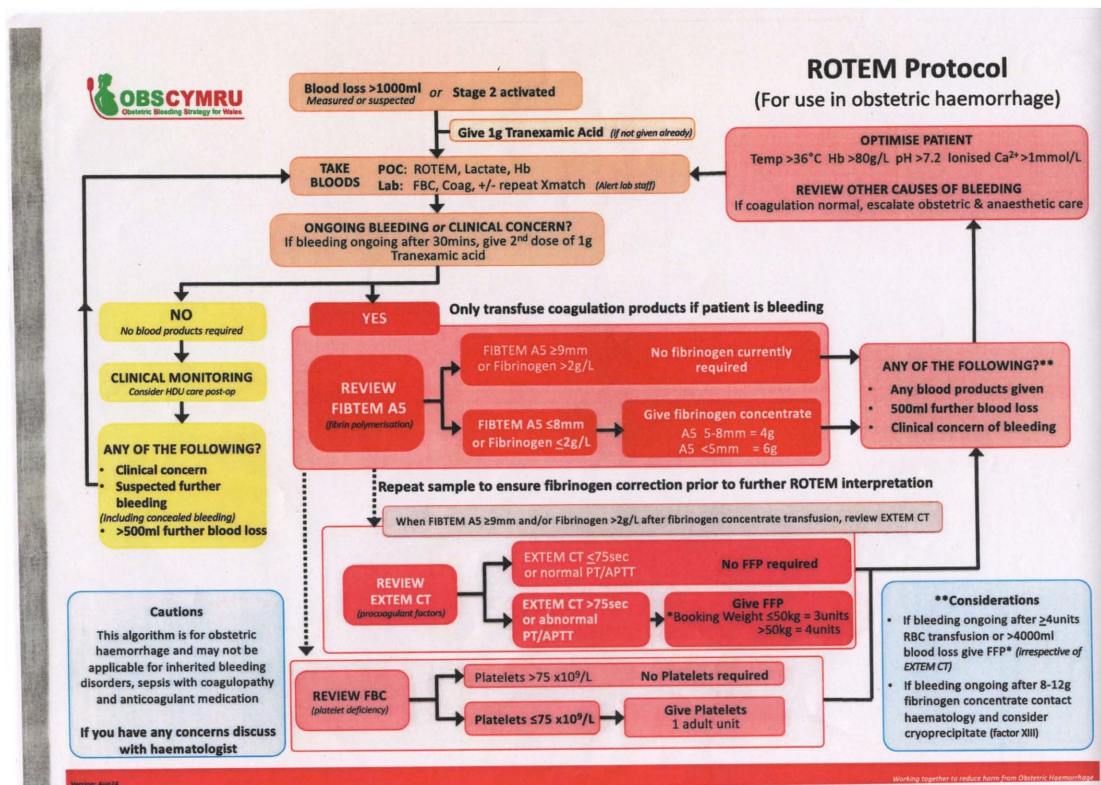


Figure 1. OBS CYMRU ROTEM Protocol is used by the anaesthetist in Wales to correct coagulopathy.

Table 1. Showing the trend of blood results.

	On Admission	On discharge 9 th day post-op	2-week post Delivery	8 weeks post Delivery	12weeks post Delivery
Haemoglobin (115 - 165 g/L)	122	88	101	129	-
White cell count (4.0 - 11.0) × 10 ⁹ /L	35	10	7.9	6.7	-
Platelets (150 - 400) × 10 ⁹ /L	184	274	726	198	-
ALP (30 - 130 U/L)	492	592	286	206	145
ALT (<41 U/L)	347	61	44	52	38
Creatinine (46 - 92 Umol/L)	203	50	Normal	Normal	-
Urea (2.5 - 7.8 mMol/L)	15.6	3.6	-	-	-
Urate (140 - 360 uMol/L)	946	-	-	-	-
Random blood sugar (4 - 6 mmol/L)	2.5	-	-	-	-
Bilirubin (<21 uMol/L)	124	29	19	11	-
Conjugated bilirubin (<5 uMol/L)	91	20	-	-	-
Total Protein (60 - 80 g/L)	52	50	64	70	-
Albumin (35 - 50 g/L)	20	22	31	Normal	-
Prothrombin time (9.0 - 12.0 sec)	14.0	-	-	-	-
APTT (20.0 - 30.0 sec)	37.3	-	-	-	-
Fibrinogen (2 - 4 g/L)	1.3	-	-	-	-
ROTEM					
-Fibtem A5 > 12 mm	11	-	-	-	-
-Extem CT < 77 sec	101				

Note: ALT—Alanine transaminase, ALP—Alkaline phosphatase. Liver Autoantibodies—Negative. Viral Markers for Hepatitis B, C and E—negative.

A decision was made between the obstetric and anaesthetic teams for urgent delivery to pre-empt worsening coagulopathy as well as renal and hepatic dysfunction. She was transferred to a high-dependency unit in the labour ward for stabilization and continuous monitoring while awaiting transfer to the theatre. Oral labetalol and Magnesium sulphate infusion were commenced as blood pressure had risen to 150/100 mmHg with Protein: Creatinine ratio of 380 mg/mmol while on admission. Two boluses of 10% Glucose at 100 mls were administered to correct the hypoglycaemia. Due to ROTEM results as per Obst Cymru bleeding pathway in **Figure 1**, six units of Fresh frozen plasma within 20 mins before incision on the skin and more intraoperatively. The emergency caesarean was performed within six hours of admission under general anaesthesia with the delivery of a set of live male neonates with meconium-stained liquor, with a good Apgar score and birth weight of 2.48 kg each. The placenta was adherent; hence, it was delivered piecemeal. Bakri balloon was inserted into the uterine cavity before routine 2-layer closure of the uterine incision and an abdominal drain was inserted to assess for intra-abdominal bleeding. Uterotonics were given to aid uterine tone. The total measured blood loss was 3.6 L.

She was transferred to the Critical Care Unit (CCU), where she received care until her renal and hepatic function improved. She was screened for liver autoantibodies and hepatitis, which were negative. While in CCU, she had serial ROTEM and the coagulation factors were corrected as required. Bakri Balloon was removed on the second post-operative day and transferred to the postnatal ward on the following day. She was discharged home on Day 9 post-op. She had a total of Six units of Packed red cells, Sixteen units of Fresh Frozen Plasma, two units of Cryoprecipitate, 8 grams of Fibrinogen and One unit of platelet concentrate. Verbal consent was taken from the patient before discharge. Serial tests were done monthly after discharge to ensure there was further improvement in the liver function test, as shown in **Table 1**. She was seen 8 weeks postnatally, debriefed and referred to the CCU psychologist.

3. Discussion

AFLP remains a serious condition, with its incidence increasing and the associated fetal and maternal mortality decreasing [6]. Its pathogenesis is still poorly understood, but evidence has shown an association between abnormality in mitochondrial fatty acid oxidation in the fetus, and the development of AFLP in the mother [7]. Risk factors include multifetal gestation, nulliparity, and male fetus [6]. Although most of the cases are present in the third trimester, there are a few reported cases in the second trimester [3]. The Swansea Criteria are commonly used as a clinical diagnostic tool for AFLP with a high negative predictive value [8]. Presentation varies from nausea, abdominal pain to hepatic encephalopathy and jaundice. Hypoglycaemia is a poor prognostic sign.

Differential diagnosis of AFLP is HELLP syndrome (haemolysis, elevated liver enzymes, low platelets syndrome) or viral hepatitis. The overlap between presentations of HELLP and acute fatty liver of pregnancy was seen in our patient. The patient presented with malaise, vomiting and abdominal pain, which could have been disregarded as pregnancy symptoms, but gradually developed severe Pre-eclampsia with features of acute fatty liver of pregnancy. It is essential to differentiate between HELLP and AFLP because the former is more common, and the latter has increased maternal mortality risk. AFLP distinctively has low glucose levels, raised bilirubin levels, raised white blood cell count and prodromal vomiting in comparison to HELLP [3]. Most patients with AFLP had coagulopathy in the absence of thrombocytopenia, also suggesting this can be used to discriminate between the two conditions. Other non-pregnancy-related disorders are acetaminophen or drug-related toxicity, primary liver disease, and thrombotic microangiopathy [8]. Liver biopsy is the gold standard of diagnosis but carries risk due to the likelihood of coagulopathy and intraperitoneal bleeding. Diagnosis is, therefore, primarily clinical.

The cornerstone of management includes 1) prompt recognition and evaluation of the mother and fetus; 2) planning for supportive care, which includes reversal of coagulopathy; 3) preparation for delivery as soon as possible; and 4)

multidisciplinary care with expedited delivery. [8] Although delivery is the definitive treatment, caesarean section should be for obstetric indications. Postnatally, there would be a gradual improvement in laboratory derangement, usually between 1 and 2 days post-delivery. Transaminase declines in a linear fashion to values of < 100 IU and thereafter plateaux for several weeks, as seen in our patient. Some women with persistent liver failure may require liver transplants. A study shows a 21% chance of recurrence in a subsequent pregnancy in the group of women who became pregnant again, with 80% of recurrent cases presenting in a milder form [9].

4. Conclusion

The significant morbidity and mortality of women suffering from AFLP and their babies have improved due to greater awareness of the condition. It remains important to consider AFLP as a differential diagnosis for women presenting with non-specific symptoms and deranged liver function in the later stages of pregnancy. This case demonstrates how early recognition and involvement of obstetric, anaesthetic and neonatal teams can secure good outcomes for mothers and babies.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Sherlock, S. (1983) Acute Fatty Liver of Pregnancy and the Microvesicular Fat Diseases. *Gut*, **24**, 265-269. <https://doi.org/10.1136/gut.24.4.265>
- [2] Knight, M., Nelson-Piercy, C., Kurinczuk, J.J., Spark, P., Brocklehurst, P. and UK Obstetric Surveillance System (2008) A Prospective National Study of Acute Fatty Liver of Pregnancy in the UK. *Gut*, **57**, 951-956. <https://doi.org/10.1136/gut.2008.148676>
- [3] Casey, L.C., Fontana, R.J., Aday, A., Nelson, D.B., Rule, J.A., Gottfried, M., *et al.* (2020) Acute Liver Failure (ALF) in Pregnancy: How Much Is Pregnancy Related? *Hepatology*, **72**, 1366-1377. <https://doi.org/10.1002/hep.31144>
- [4] Castro, M.A., Goodwin, T.M., Shaw, K.J., Ouzounian, J.G. and McGehee, W.G. (1996) Disseminated Intravascular Coagulation and Antithrombin III Depression in Acute Fatty Liver of Pregnancy. *American Journal of Obstetrics and Gynecology*, **174**, 211-216. [https://doi.org/10.1016/s0002-9378\(96\)70396-4](https://doi.org/10.1016/s0002-9378(96)70396-4)
- [5] Usta, I.M., Barton, J.R., Amon, E.A., Gonzalez, A. and Sibai, B.M. (1994) Acute Fatty Liver of Pregnancy: An Experience in the Diagnosis and Management of Fourteen Cases. *American Journal of Obstetrics and Gynecology*, **171**, 1342-1347. [https://doi.org/10.1016/0002-9378\(94\)90158-9](https://doi.org/10.1016/0002-9378(94)90158-9)
- [6] Castro, M.A., Fassett, M.J., Reynolds, T.B., Shaw, K.J. and Goodwin, T.M. (1999) Reversible Peripartum Liver Failure: A New Perspective on the Diagnosis, Treatment, and Cause of Acute Fatty Liver of Pregnancy, Based on 28 Consecutive Cases. *American Journal of Obstetrics and Gynecology*, **181**, 389-395. [https://doi.org/10.1016/s0002-9378\(99\)70567-3](https://doi.org/10.1016/s0002-9378(99)70567-3)

- [7] Davidson, K.M., Simpson, L.L., Knox, T.A. and D'Alton, M.E. (1998) Acute Fatty Liver of Pregnancy in Triplet Gestation. *Obstetrics & Gynecology*, **91**, 806-808. [https://doi.org/10.1016/s0029-7844\(97\)00477-8](https://doi.org/10.1016/s0029-7844(97)00477-8)
- [8] Nelson, D.B., Byrne, J.J. and Cunningham, F.G. (2021) Acute Fatty Liver of Pregnancy. *Obstetrics & Gynecology*, **137**, 535-546. <https://doi.org/10.1097/aog.0000000000004289>
- [9] Sinha, S., Yadav, J. and Pradhan, T. (2023) A Case Report on Acute Fatty Liver of Pregnancy: A Difficult Differential Diagnosis of Liver Disorder. *Cureus*, **15**, e42733. <https://doi.org/10.7759/cureus.42733>