Acute Fatty Liver in Pregnancy – A Case Report

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Introduction

Acute Fatty Liver of Pregnancy (AFLP) is a rare, life-threatening complication of pregnancy manifested by microvesicular fatty infiltration of the liver and progressive liver failure. It's caused by defects in mitochondrial fatty acid beta-oxidation in the mother: Most commonly caused by foetal deficiency in the long-chain 3-hydroxyacyl-coenzyme A dehydrogenase (LCHAD) enzyme. LCHAD is part of mitochondrial trifunctional protein (MTP) and catalyses the third step in β-oxidation of long-chain fatty acids. Up to 70% of cases result from homozygous LCHAD deficiency in the foetus, with a heterozygous mother. Abnormal concentrations of foetal long-chain fatty acids enter the maternal circulation and have toxic effects in the mother.

Aim and Methods

We aim to spread awareness of this rare condition and to disseminate identifiable learning point .

Case Summary

A 27-year-old pregnant woman who was booked under consultant-led care at 12 weeks for having one previous Caesarean section (emergency Caesarean section at 41 weeks for failure to progress at 5 cm, male baby weighted 4110 grams on 71st centile on customized growth chart), smoking (trying to cut down), anxiety and depression (was on Citalopram at booking) and having a Body Mass Index (BMI) of 34. VTE score was 2. Fetal anatomy ultrasound scan at 20 weeks agreed. Lifestyle changes were discussed along with mode of delivery for this pregnancy (VBAC vs ERCS) and referred to birth choice clinic and perinatal mental health team.

She had few admissions for Hyperemesis Gravidarum . Oral Glucose Tolerance Test was within normal at booking and 26 weeks (COVID -19 Pandemic), had 2 fetal growth ultrasounds examinations which showed linear fetal growth with normal Umbilical Artery Doppler indices and amniotic fluid levels.

She was admitted during second and third trimester 4 times with generalized abdominal pain more pronounced in the upper abdomen, protracted vomiting , ketones in the urine and high ALT.

Last admission at 35 weeks of gestation , she presented with abdominal pain, vomiting and feeling generally unwell. Investigations showed (ALT) 165 U/L, Bilirubin 10 umol/L, Protein 56 g/L, Alkaline Phosphatase 107 U/L). She had a liver screen that included viral hepatitis screen, autoimmune antibodies and abdominal ultrasound scan that excluded structural abnormalities in the liver and Cholelithiasis, showing a normal calibre biliary tree, thinness of the gallbladder and no evidence of gallstones. Referral was done to the gastroenterology team . She had lost 2 Kgm of her booking weight. Her ALT soared up to of 979 U/L around 36+ weeks along with Aspartate Transaminase (AST) peak of 488 U/L, rest of liver function and coagulation profiles were never deranged. Blood pressure and her urinary Protein:creatinine ratio remained normal . No symtoms or signs of HELLP Syndrome . Drug induced liver toxicity was considered given the fact that she was on Ondansetron and Citalopram but she was on low doses of both drugs at that time. Liver ruptured infarction was considered but given that liver enzymes levels were below 1000 it seemed unlikely and CT or MRI wouldn't be justified . There was no family history of any diseases such as Wilson disease or biliary cirrhosis.

A decision for early delivery was taken and she had a caesarean section at 36+3 weeks. She delivered a male baby, weighing 3.1Kg, born in good condition and stayed with his mother who had uneventful recovery. After delivery, her liver enzymes started to decrease gradually. She was discharged and had follow up with Gastroenterology team.

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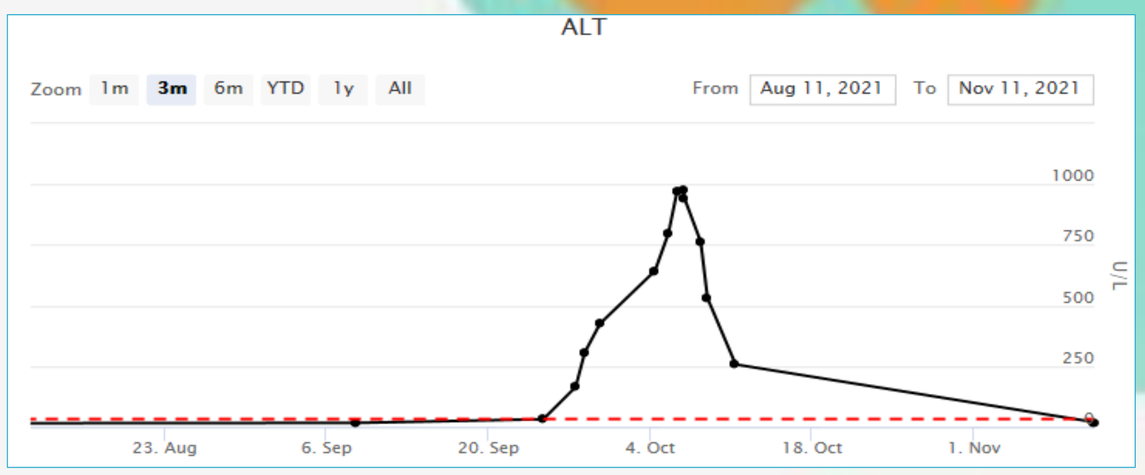

Discussion

AFLP is a rare (UK incidence 5.0 cases per 100 000 maternities or approximately 1 case per 20 000 births) but potentially lethal condition of late pregnancy which may be part of a spectrum of disorders related to pre-eclampsia. It remains a cause of maternal mortality in the UK and elsewhere. Because the condition is rare, it is difficult to study, and the existing literature consists predominantly of small hospital-based case series or historical cohorts identified retrospectively over a number of years.

AFLP's symptoms include headache, fatigue, malaise, nausea, vomiting, and abdominal pain. Jaundice may follow a prodrome. Progressive liver failure, with coagulopathy, encephalopathy, or renal failure, may occur. 20% to 40% of patients have signs of preeclampsia. Serum aminotransferase levels are elevated (usually <500 U/L). Serum alkaline phosphatase and bilirubin levels are mildly or moderately increased. Swansea criteria for diagnosis are useful with 85% positive predictive value and 100% negative predictive value.

AFLP has a maternal mortality rate of 8-18%, foetal mortality rate of 9-23% and recurrence in mother in the order of 20% to 70% if she is an LCHAD mutation carrier.

Delivery of the infant is important and gestational age should be considered. Most women improve, but fulminant hepatic failure may occur and treatment with liver transplantation has been reported. Screening for a fatty acid oxidation defect is indicated in affected patients.

Swansea Criteria for Diagnosing Acute Fatty Liver of Pregnancy

Six or more of the following features in the absence of another explanation:

- Vomiting
- Abdominal pain
- Polydipsia/polyuria
- Encephalopathy
- Elevated serum bilirubin level
- Hypoglycaemia
- Elevated serum uric acid level
- Leucocytosis
- Elevated serum aminotransferase levels
- Elevated plasma ammonia level
- Renal impairment
- Coagulopathy
- Ascites or bright liver on ultrasonography
- Microvesicular steatosis on liver biopsy specimen

Conclusion and Learning Points

Acute fatty liver in pregnancy is rare, associated more with male foetuses and multiple pregnancies, with potential for maternal and perinatal mortality, 2% and 11% as per UK Obstetric Surveillance Study. Diagnostic overlap exists with Pre-eclampsia/HELLP syndrome with pointers for acute fatty liver including more pronounced vomiting, elevated liver enzymes, hypoglycaemia, hyperuricemia and disseminated intravascular coagulopathy. Other differential diagnoses include viral hepatitis, drug-induced hepatotoxicity, gallstones, autoimmune chronic active hepatitis and obstetric cholestasis. Management strategy involved expeditious delivery, multidisciplinary team input, including early liaison with Gastroenterology specialists, and admission to an intensive care unit. Our patient had fairly good outcome but that does not negate the fact that referral to Gastroenterology team was done a bit late. We also would like to reiterate the importance of searching the literature when faced with ambiguous clinical situations .

References

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