Case study

A case study on Acute Fatty Liver of Pregnancy

ABSTRACT:

Acute fatty liver of pregnancy (AFLP) is a rare disease. Usually affecting women in the third trimester pregnancy or post-partum period and with high risk of mortality. The diagnosis AFLP is based on exclusion. In addition, the Swansea criteria is commonly used to diagnosis AFLP.

At the end of this case report we will focus on the diagnosis of acute fatty liver of pregnancy as well as its management.

Keys words: Acute fatty liver of pregnancy.

INTRODUCTION:

Acute fatty liver of pregnancy (AFLP) was first described in 1940 by Sheehan (1) as an "acute yellow atrophy of the liver". It's an uncommon but potentially fatal complication that occurs in the third trimester or early postpartum period. It affects an estimated one in 10,000 to 20,000 pregnancies every year. Primipara, male fetus, and multiparous women are considered as risk factors of AFLP (2). AFLP is a genetic issue causes fat to accumulate in liver cells and possibly in the kidney, placenta, and other sites. The G1528C genetic mutation more commonly known as the LCHAD mutation represents the most common maternal mutation that leads to AFLP, but other mutations can also interrupt or prevent normal cellular handling of fatty acids (3-4).

it was considered to be a deadly disease for many years. However, advancements in the clinical and surgical management of pregnant mothers have lead to a drastic decrease in maternal morbidity and mortality.

The objective of our work is to study the modalities of the diagnosis and management of an acute fatty liver of pregnancy in a case in the gynecological and obstetrical department the Souissi maternity hospital Rabat.

CASE REPORT

Mrs MA, 26 year old female patient, gravida 2, para 1, 1vaginal deliveries, G2 current pregnancy, which estimated at 38 weeks and 4 days. was referred from a peripheral hospital to our tertiary care center in labor with complaints jaundice, epigastric pain and vomiting since 5 days of. There was no other significant past,obstetric, or surgical history.

On examination, the patient was clinically stable, afebrile, the blood pressure was 120/70 mm Hg and pulse rate was 86 per min. She had icterus. Her cardiovascular and respiratory systems were normal on examination. Obstetric examination revealed an active uterine contractions with uterus of 38 weeks, fetus in cephalic presentation and normal active fetal heart rate.

vaginal examination revealed a flexible median cervix, well erased and dilated with 5cm, cephalic presentation and intact membrane. On ultrasound the fetus presents progressive monofetal pregnancy in cephalic presentation fundic placenta estimated at 3200g.

Investigations revealed total leucocyte count of 34,560/mm3 (Neutrophil 80%), hematocrite of 33%, hemoglobin of 11,5 gd/L; platelet 85,000/mm3. The blood sugar was 68 mg/dL Serum levels of bilirubin, aspartate transaminase (AST), alanine transaminase (ALT) and amylase were 34.3 mg/dL, 1011 U/L, 150 IU/L, and 53 IU/L respectively. Coagulogram revealed a prolonged prothrombin time (PT) of 23 s 2, INR 5.7 ; Kidney function tests revealed blood urea 40 mg/dl, serum creatinine 1.7 mg/dl

Hepatitis serology, autoimmune markers and dengue infection screening were negative. Ultrasound abdomen showed normal liver and other organs. A diagnosis of AFLP was made by ruling out HELLP syndrome and acute hepatitis.

The medical team accepted a vaginal delivery with continues fetal monitoring also the consent of the patient was taking, explaining all the risks. After 3 hours, a vaginal delivery of a live born male of 3300g grams and Apgar score 6-10 at first and fifth minutes, respectively. With a blood loss of 300ml, transferred to IUC to optimize the management of her coagulopathy during her initial recovery. During this period, she received two units of packed red blood cells (PRBC), 4 units of FFP, 4 units of platelets. The patient was released after 1 week from intensive care stable.
The patient's consent and the institutional ethical board's permission were taken for the publication of this case report.

Discussion

The majority of women who are diagnosed with AFLP are in the third trimester of pregnancy and the mean gestational age is 35 to 36 weeks, with a range of 28 to 40 weeks (5). The pathogenesis of the AFLP, in turn, has some association with inherited (heterozygous or homozygous) defects in the mitochondrial beta-oxidation of fatty acids, specifically small chain acyl CoA dehydrogenase (SCAD), medium chain acyl CoA dehydrogenase (MCAD), and most commonly, long-chain hydroxyacyl-CoA dehydrogenase (LCHAD) deficiencies. Mothers of fetuses that have inherited any of these deficiencies may be predisposed to hepatotoxicity secondary to the build of toxic substrate circulating in the maternal bloodstream. affirm that AFLP typically manifests itself in the third trimester of pregnancy and is thought to always present before delivery, but it is not always diagnosed as such (6).
The clinical overlap between AFLP, HELLP syndrome, and preeclampsia has the potential to make these obstetrical syndromes impossible to differentiate from one another. However, evidence of hepatic insufficiency, such as with hypoglycemia or encephalopathy, and abnormalities in coagulation studies are more consistent with AFLP.
Pregnancy with jaundice has many differential diagnoses like cholestasis, viral hepatitis, pre-eclampsia with or without HELLP syndrome, and AFLP (7).
The Swansea criteria is commonly used to diagnose AFLP, including vomiting, abdominal pain, polydipsia/polyuria, encephalopathy, bilirubin > 0.8 mg/dl (14 kmol/l), hypoglycemia < 72 mg/dl (4 mmol/l), uric acid > 5.7 mg/dl (340 kmol/l), leukocytosis > 11 *106/l, ascites or bright liver on sonogram, aspartate aminotransferase and alanine aminotransferase > 42 IU/l,

ammonia > 27.5 mg/dl (47 kmol/l),creatinine > 1.7 mg/dl (150 kmol/l),coagulopathy (prothrombin time(PT) > 14 s or activated partial thromboplastin time(APTT) > 34 s), microvesicular steatosis on liver biopsy .Six or more of these terms are required to diagnose AFLP (8).

Disease	Trimester	Incidence	Signs and symptoms	Laboratory findings	Complications
Pre-eclampsia and eclampsia	2nd or 3rd	5% to 10%	Nausea; vomiting; epigastric pain; edema; hypertension; mental status changes; jaundice (late presentation)	ALT <500 U/L, proteinuria, DIC (7%)	Maternal: Hypertensive crisis; renal impairment; hepatic rupture/infarct; neurological (seizures, cerebrovascular disease) Fetal: Abruptio placentae; prematurity; IUGR leading to increased perinatal morbidity and mortality
HELLP syndrome	3rd	0.10% (4% to 12% of women with pre-eclampsia)	Symptoms of pre-eclampsia (hypertension, headache, blurred vision); epigastric or right upper quadrant pain; nausea; vomiting; hematuria; jaundice (late presentation)	Hemolysis, ALT <500 U/L, platelets <100×10^9/L, elevated LDH, DIC (20%–40%)	Maternal: Seizures; acute renal failure; hepatic rupture, hematoma or infarct; increased mortality (1% to 3%) Fetal: Abruptio placentae; increased mortality (35%)
Acute fatty liver of pregnancy	3rd (can occur during 2nd)	0.01%	Malaise; upper abdominal pain; nausea; vomiting; jaundice (very common); encephalopathy (late presentation)	ALT <500 U/L; hyperbilirubinemia; hypoglycemia; elevated ammonia; leukocytosis; DIC (>75%) – thrombocytopenia, prolonged PT, hypofibrinogenemia	Maternal: Acute renal failure; encephalopathy; ascites; sepsis; wound seroma; pancreatitis; increased mortality Fetal: Increased mortality (13% to 18%) from asphyxia; prematurity; IUGR; LCHAD deficiency and its complications
Viral hepatitis	Any	Same as general population	Nausea; vomiting; fever	ALT greatly elevated (>500 U/L); elevated bilirubin; positive serology tests	Maternal: Increased mortality with hepatitis E
Intrahepatic cholestasis of pregnancy	2nd or 3rd	0.1% to 0.2%	Intense pruritus; jaundice; (20% to 60%, 1 to 4 weeks after pruritus); steatorrhea	ALT <500 U/L; markedly elevated ALP and GGT; increased bile acids; bilirubin (<103 µmol/L)	Maternal: Predisposed to cholestasis on subsequent pregnancies Fetal: Still birth; prematurity; fetal mortality (3.5%)
Drug-induced hepatitis	Any	Unknown	Usually none; nausea; vomiting; pruritis; jaundice (in cholestatic hepatitis)	Variable	Unknown

Figure 1: Characteristics of common liver diseases in pregnancy (8)

The management of AFLP entails a combination of maternal stabilization and prompt delivery of the fetus regardless of gestational age. In most of the cases, jaundice, liver dysfunction, and DIC improve after two to three days of delivery (9-10).

The maternal mortality from AFLP is approximately 18% and deaths are usually secondary to sepsis, renal failure, circulatory collapse, pancreatitis or gastrointestinal bleeding. the liver function tests may have shown continued deterioration for up to one week postpartum but then slowly recover (11). Full clinical recovery usually occurs in several weeks with no long-term sequelae (12). Although the perinatal survival rate has improved in the past decade, still fetal compromise is not uncommon and can be present even while the mother is clinically stable. Therefore, close fetal surveillance and neonatal care are essential.

CONCLUSION :

AFLP is a rare disorder developing in the third trimester of pregnancy or early postpartum period with high risk of mortality. Although it is not clear how pathogenesis is diagnosed, HELLP syndrome and preeclampsia are clinically similar to AFLP. Prompt delivery of the infant and intensive supportive care remain as the mainstay treatment for AFLP.

REFERENCES:

1. Sheehan HL. The pathology of acute yellow atrophy and delayed chloroform poisoning. *J Obstet Gynaecol Br Emp.* 1940;47:49–62
2. Kayem G, Kurinczuk J, Lewis G, et al. Risk factors for progression from severe maternal morbidity to death: a national cohort study. PLoS One. 2011;6:e29077.
3. Rahman TM, Wendon J. Severe hepatic dysfunction in pregnancy. *QJM.* 2002;95:343–57
4. Rakheja D, Bennett MJ, Foster BM, Domiati-Saad R, Rogers BB. Evidence for fatty acid oxidation in human placenta, and the relationship of fatty acid oxidation enzyme activities with gestational age. Placenta. 2002;23:447–450
5. Knox TA, Olans LB. Liver disease in pregnancy. *N Engl J Med.* 1996;335:569–76
6. Acute fatty liver of pregnancy. [Sep;2017]
7. Jwayyed, S.M., Blanda, M. and Kubina, M. (1999) Acute Fatty Liver of Pregnancy. The Journal of Emergency Medicine, 17, 673-677.Ch'ng CL, Morgan M, Hainsworth I, Kingham JG. Prospective study of liver dysfunction in pregnancy in Southwest Wales. Gut. 2002;51(6):876–80
8. Ko, H.H. and Yoshida, E. (2006) Acute Fatty Liver of Pregnancy. Canadian Journal of Gastroenterology and Hepatology, 20, 25-30
9. Usta IM, Barton JR, Amon EA, Gonzalez A, Sibai BM (1994) Acute fatty liver of pregnancy: An experience in the diagnosis and management of fourteen cases.Am J ObstetGynecol 171: 1342-1347.
10. Usta IM, Barton JR, Amon EA, Gonzalez A, Sibai BM. Acute fatty liver of pregnancy: An experience in the diagnosis and management of fourteen cases. Am J Obstet Gynecol. 1994;171:1342–7.
11. McNulty, J. (2004) Acute Fatty Liver of Pregnancy. In: Foley, M.R., Strong, T.H. and Garite, T.J., Eds., Obstetric Intensive Care Manual, 2nd Edition, The McGraw-Hill Companies Inc, New York, 207-215.
12. Jwayyed SM, Blanda M, Kubina M. Acute fatty liver of pregnancy. *J Emerg Med.* 1999;17:673–7.