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Research Letter

Acute Fatty Liver of Pregnancy Complicated with Sepsis

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A 25-year-old woman, G1P1, carrying twins (dichorionic diamniotic) was hospitalized for a cesarean section at 38 weeks. Antenatal history was uneventful and all laboratory investigations were normal at five months and eight months. The patient had been normotensive throughout the pregnancy and had suffered no complaints of nausea, vomiting, or pain in the abdomen in the final trimester of pregnancy. The patient came with labor pains with both fetuses in the breech presentation. The patient had no pruritus, headache, vomiting, or other symptoms on admission. Her vitals were within normal limits.

Pre-operative investigations were carried out, including a liver function test, renal function test, and coagulation profile, which were all within the normal range. Pre-operative broad-spectrum antibiotics were given. The patient was taken for a cesarean section. Both newborns were normal on delivery and cried immediately. Urine output was good post-operatively. Thus, the operation was deemed uneventful.

Eighteen hours post-operation, the patient complained of dizziness while standing. Upon physical examination, tachycardia and hypotension were noted. Blood investigations were negative for hemolysis and showed hemoglobin 6.3 g/dL; total count: 28,900 cells/UL with 85% neutrophilia; prothrombin time: 20 sec; international normalised ratio: 1.45; serum random blood sugar: 54 mg/dL; creatinine: 1.8 mg/dL. Notably, her serum glutamic pyruvic transaminase was 2,292 U/L. Transabdominal ultrasonography showed three big mixed echogenic localized areas of collections in the pelvic region, likely due to coagulation defects. Minimal ascites were also noted in the upper abdomen.

Preoperative and postoperative values are shown in Table 1.

The patient tested negative for Hepatitis B surface antigen, hepatitis C, and human immunodeficiency virus. Four units of packed cell volume (PCV), four units of fresh frozen plasma (FFP), and four units of platelets were transfused and IV Meropenem 1 gm and IV clindamycin 600 mg were started. The next morning, the patient developed dizziness and tachycardia and was moved to a tertiary care hospital for further management in an Intensive Care Unit (ICU). On admission, the patient was unstable with a pulse of 150 beats/min and blood pressure of 100/74 mmHg. Potassium was given as a correction for hypokalemia. A gastroenterologist was consulted for an altered liver function test and acute fatty liver of pregnancy (AFLP) was suspected. Three units of PCV, two units of FFP, and four units of platelets were transfused. A postpartum abdominal hematoma and a fatty liver were seen on an abdominal ultrasonogram (USG) (Fig. 1). Intravenous (IV) Meropenem 1 gm and IV clindamycin 600 mg were continued.

The next day, the patient continued to receive intravenous antibiotics along with one unit PCV, two units FFP, and two units platelets. A USG showed B/L parenchymal disease along with ascites. A human albumin of 20% was given on the following day and improvement in her condition was observed. White blood cell count was showing a downward trend so she was moved to the ward and meropenem was discontinued. The next day, the patient had an increased frequency of fever. The white blood cell count was 50,190/mm^3. She was started on IV Aztreonam 1 gm and IV Ceftazidime 2 gm + Avibactam 0.5 mg. O_2 support was continued by nasal cannula.

The computed tomography findings were consistent with early changes in fatty liver and hepatomegaly; ascites were also noted. The patient was now started on Colistimethate sodium 4.5 MIU along with the other antibiotics.

On the 12th day of admission, an improvement in her condition was observed. The blood cultures (CVP line and peripheral) were negative. She was hemodynamically stable and moved out of ICU. Her blood counts, platelet count, and bilirubin levels were returning to normal. SGPT was also back to baseline. A USG carried out the next day showed a decrease in echotexture in the liver, compared to previous reports. Over the next four days, the patient made a steady recovery under observation. She was discharged hemodynamically stable on the 18th day of admission.

This patient was diagnosed with AFLP after the delivery of twins and treated promptly in the ICU. Her condition was complicated by the development of sepsis, which was managed with antibiotics, which resulted in a successful outcome. This case draws attention to the significance of the timely diagnosis of AFLP and the need to manage its complications aggressively.

Our patient did not have the usual presenting features of AFLP, like vomiting, abdominal pain, and polydipsia/polyuria; she merely complained of dizziness while standing. Thorough clinical evaluation and a high suspicion index led to its timely diagnosis. The Swansea criteria remains an important tool for the diagnosis of AFLP. The Swansea criteria should only be applied after oth-

Abbreviations: AFLP, acute fatty liver of pregnancy; CVP, Central venous pressure; FFP, fresh frozen plasma; G1P1, Gravida 1 Para 1; ICU, Intensive Care Unit; IV, Intravenous; PCV, packed cell volume; USG, ultrasonogram.

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Table 1. Pre-operative and post-operative values of the patient.

	Pre-operative values	Post-operative values
Hemoglobin	11.6 g/dl	6.3 g/dl
White blood cell count	9,700/mm^3	28,900/mm^3
Platelet count	1,64,000/mm^3	36,000/mm^3
Polymorph count	70%	85%
Random blood sugar	91 mg/dl	54 mg/dl
Creatinine	0.86 mg/dL	1.79 mg/dL
AST	24.0 IU/L	2,548 IU/L
S. bilirubin	0.9 mg/dL	1.8 mg/dL
INR	1.2	1.45
APTT	34.8 s	48 s

AST, aspartate Aminotransferase; APTT, activated partial thromboplastin clotting time; INR, international normalised ratio.

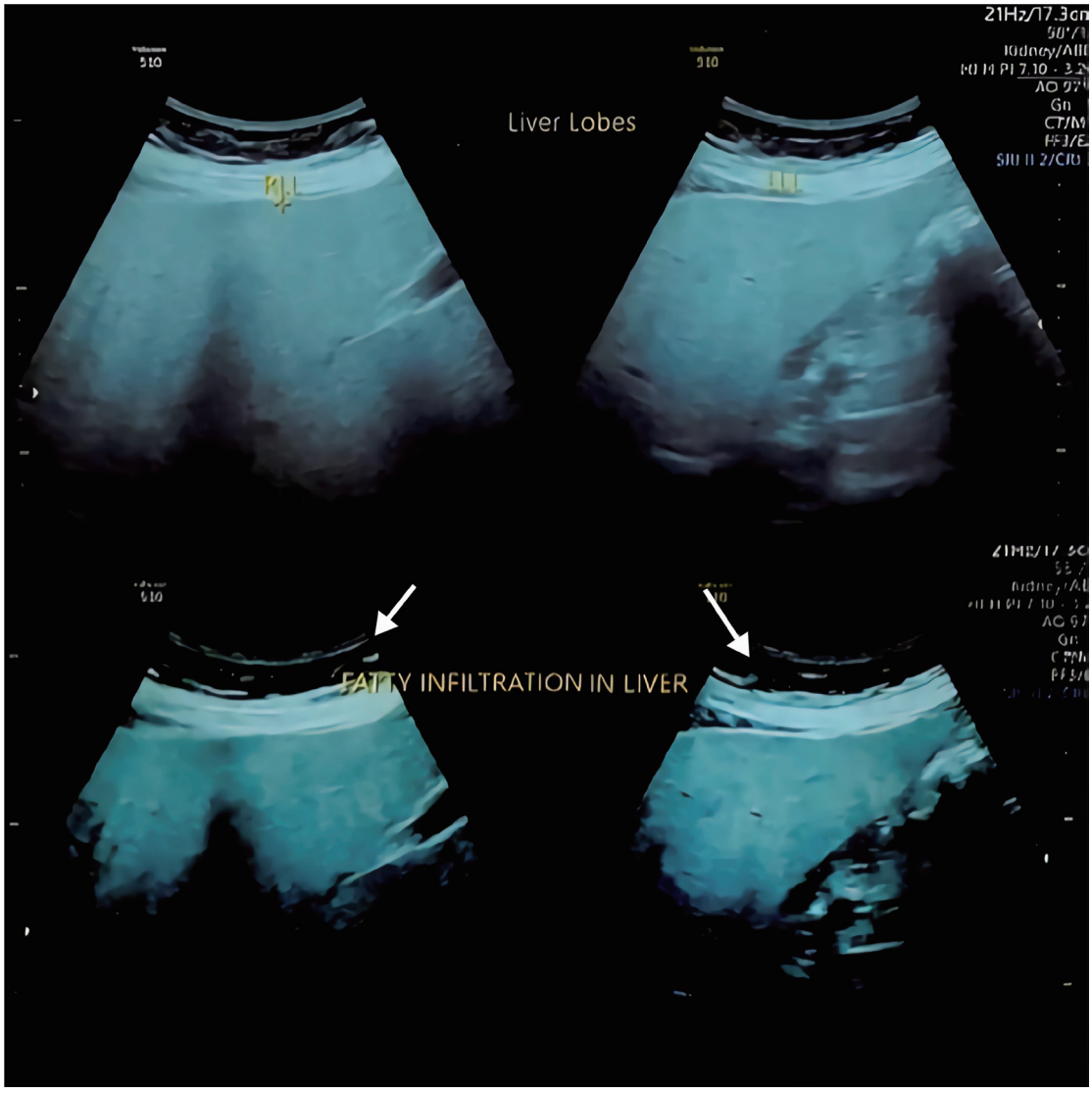

Fig. 1. Ultrasound showing fatty infiltration in the liver. The arrows show increased echoes signifying fatty changes in the liver.

Table 2. Complications and outcomes of patients with AFLP (n = 106)[3]

Variable	No. (%)
Maternal Complication	
Acute Kidney Injury	71 (67)
Disseminated intravascular coagulation	30 (28.3)
Postpartum hemorrhage/wound seroma	29 (27.4)
Sepsis	28 (26.4)
Multiple organ dysfunction syndrome	30 (28.3)
Acute hepatic failure	24 (22.6)
Maternal outcome	
Death	10 (9.4)
Fetal outcome	
Death	16 (15.1)

er potential causes of maternal liver failure have been ruled out because AFLP is a diagnosis of exclusion.[1] As the patient in our case had exceptionally high liver enzyme levels (Aspartate Aminotransferase: 2,292 IU/L and alanine transaminase: 3,318 IU/L), it was crucial to rule out viral hepatitis and medications that cause hepatotoxicity. Preeclampsia was unlikely because she maintained normotensive blood pressure throughout her pregnancy. The presence of impaired hepatic synthetic function, which manifests as hypoproteinemia, high INR, hypoglycemia, and encephalopathy, further distinguishes AFLP from other illnesses.

Surgical management has no role in the management of AFLP. Timely diagnosis, prompt delivery, and intensive supportive management are the pillars of the treatment of AFLP. Usually, there is an improvement within the first two days of delivery, but patients who are critical at presentation or who develop complications should be managed in the ICU.[2]

In a recent retrospective analysis, 106 women were found to have AFLP, and the complications and fatality rates were assessed. Table 2 presents the findings.[3]

Acute kidney injury (67.0%), disseminated intravascular coagulation (28.3%), multiple organ dysfunction syndrome (28.3%), postpartum hemorrhage (27.4%), sepsis (26.4%), and acute hepatic failure (22.6%) were the most frequent severe consequences in addition to death.[4]

Maternal sepsis is a dangerous condition that follows infection and causes organ dysfunction. Some of the most common organisms implicated are *Escherichia coli*, *streptococcus*, *Klebsiella*, *Proteus*, *Acinetobacter*, and *Enterococcus*.[3] This condition occurs during pregnancy, childbirth, after an abortion, or in the postpartum period. The resulting septic shock is due to the release of bacterial endotoxins causing circulatory inadequacy and hypoperfusion.[5]

The prognosis depends on the early and appropriate use of antibiotics. Mortality is known to increase by 7.6% with each hour of delay in proper antibiotic administration in the general population. The piperacillin/tazobactam combination can also be used and viral and fungal pathogens should be covered.[6] *Klebsiella* cultured from our patient's sample was found to be multidrug-resistant, ultimately responding to the addition of Colistin (polymyxin) to her treatment regimen.[7]

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Conflict of interest

The authors have no conflict of interests.

Author contributions

Study design (YS and PC); data analysis (YS); drafting of the manuscript and revision (NS).

Consent for publication

The case study was carried out in accordance with the ethical standards of an ethics committee. Written informed consent was obtained from the patient for publication of this case study.

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