

Acute Liver Failure Complicating Pregnancy: A Multidisciplinary Approach to Management**Shilpi Shukla¹, Divyesh Shukla¹, Pankaj Jain², Hardik Patel³, Archit Patel⁴, Manan Mehta⁵, Kush Davda⁶**¹MD, Department of Obstetrics and Gynecology, Isha Hospital, Vadodara, Gujarat²MD, DM, Department of Hepatology, International Gastro Institute, Isha Hospital, Vadodara, Gujarat³MD, FCCCM, Department of Critical Care Medicine, Isha Hospital, Vadodara, Gujarat⁴MD, DM, Nephrology⁵MD, DM, Neurology⁶MBBS, Department of Critical Care Medicine, Isha Hospital, Vadodara, Gujarat

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Abstract:

Acute liver failure (ALF) during pregnancy is a rare but life-threatening condition associated with high maternal and fetal morbidity and mortality. We present a case of a 22-year-old primigravida at 30 weeks gestation who developed ALF with concurrent HELLP syndrome, disseminated intravascular coagulation (DIC), acute kidney injury (AKI), and posterior reversible encephalopathy syndrome (PRES). Despite the complexity of the presentation, a multidisciplinary team comprising obstetricians, intensivist, hepatologist, nephrologist, and neurologist collaborated to provide timely and comprehensive management. This case underscores the importance of a coordinated approach to optimize maternal and neonatal outcomes in such challenging scenarios.

Keywords: Acute Liver Failure, Pregnancy, HELLP Syndrome, DIC, AKI, PRES, Multidisciplinary Approach.

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Introduction

Acute liver failure complicating pregnancy poses significant diagnostic and therapeutic challenges due to its diverse etiologies and potential for rapid deterioration. While the incidence is low, the condition carries substantial risks for both the mother and the fetus. Here, we present a case highlighting the complex management of ALF in pregnancy, emphasizing the crucial role of interdisciplinary collaboration in achieving favourable outcomes.

Case Presentation: A 22 Year old female patient presented with H/O 30 weeks Amenorrhea With additional complaints of - Fever on & off, weakness, decreased oral intake, headache, yellowish discoloration of Sclera & Urine, Abdominal pain, bilateral pedal edema since 6-7 Days. Patient was initially admitted at a primary care centre in the periphery, where she took treatment but still had persistent symptoms. The next day the patient was shifted to Isha Hospital, Vadodara for further management. On arrival the patient was vitally stable, initial examination revealed the patient was icteric with mild tachycardia, FHS was present. Fresh laboratory investigations were sent.

Laboratory Investigations:

- HB: 12.5 / WBC: 14610 / Platelets: 88000 / INR: 2.01 / PCT: 1.50
- S .Bilirubin: Total: 7.47 / Direct: 7.42 / Indirect: 0.5
- SGOT: 73 / SGPT: 104 / ALP: 501
- Total Protein: 5.14 / Albumin: 2.42
- Viral markers: HAV: Negative / HBsAg: Negative / HCV: Negative / HEV: Negative / HIV: Negative

Treatment started: IV crystalloids, IV antibiotics (meropenem + teicoplanin), Antiemetic (Ondansetron), PPI (Pantoprazole), Inj Vit. K, Inj Mucomix (N-Acetyl Cysteine) infusion with other supportive treatments.

On OBGYN reference, Dr Shilpi Shukla noted cervical opening of 4 finger wide and advised Inj Betnesol for fetal lung maturation and trial of normal delivery.

Patient was then shifted to HDU. Preterm delivery with episiotomy was done under local anesthesia and a male baby was delivered weighing 1.3kg at 4:41am on 24/2/24. The premature baby was then handed over to neonatologist for further

management and the patient was shifted to ICU. Later on the patient developed bleeding per vaginum from the episiotomy site. Further examination ruled out postpartum hemorrhage and a local oozer was identified near the episiotomy site. Under local anesthesia resuturing of the episiotomy site was done. Subsequent lab investigations were sent which showed a drop in Hb from 13 to 9, thus multiple blood product transfusion (PRBC/FFP) was started.

Next set of lab investigations showed further drop in Hb to 6.5, Platelets: 57000 / Fibrinogen: 56 / INR: 1.68. Blood product transfusion (PRBC / FFP / SDP / Cryoprecipitate) was started again. Every 12 hours necessary blood investigations were repeated and required blood products were given accordingly. After 2 days bleeding stopped and the patient came out of DIC.

Patient then started going into AKI with low urine output, rising serum creatinine (1.6 to 2.2 to 2.6 to 3.1) and hypoproteinemia. A nephrology reference of Dr Archit Patel was taken. He advised IV albumin and Inj Terlipressin with intermittent diuretics. Patient responded to this regimen and urine output started going up slowly.

Then the patient started developing fluctuating sensorium, on investigation Arterial ammonia was 57 and Urea was 144 pointing towards Hepatic Encephalopathy. Then on 29/2/24 the patient experienced a General Tonic Clonic Seizure. In response Inj Levetiracetam 1gm loading dose was given followed by 500 mg BD started. A neurologist reference of Dr Manan Mehta was taken. He advised to continue Inj Levetiracetam and asked to perform a CT scan of the Brain. After a detailed discussion of radiological and clinical features between Radiologist and Neurologist, a diagnosis of Posterior Reversible Encephalopathy Syndrome was established.

Same treatment was continued but sensorium did not improve and urine output started to drop again. Generalised anasarca was seen and the patient required oxygen support. Blood investigations were sent which noted increased creatinine and thus the patient went under the first cycle of hemodialysis & plasmapheresis.

On 1/3/2024 the patient's condition remained same, blood investigations sent that day showed altered coagulation markers, platelets were decreased to 39000, Hb was decreased to 7.7, Serum bilirubin went up to 9.99 and serum creatinine went up to 3.2. Thus, 1 unit of SDP was given and the 2nd cycle of plasmapheresis and hemodialysis was started.

On 2/3/2024 the patient started improving clinically with adequate UOP but sensorium still remained drowsy on occasion. 1 unit PRBC transfusion was

done as HB was 7.0. Lab investigations showed raised CRP and PCT, therefore a repeat blood culture and sensitivity & urine culture and sensitivity were sent. A change in antibiotics was made to Tigecycline.

On 3/3/2024 the patient's sensorium improved, patient was conscious, oriented and vitally stable. Peripheral oedema had decreased, UOP was good.

IV antifungals were started as Urine culture and sensitivity showed fungal growth. Foley's catheter was changed and upon discussion with patient and the family, patient was shifted to ward with foley's catheter, Ryles tube and a DLC line in situ.

On 4/3/24 the patient sensorium got even better. Patient's GCS was 15/15 and was vitally stable, afebrile with good UOP. Foley's catheter was removed and a repeat Urine culture and sensitivity was sent. It still showed growth of candida therefore antifungals were continued.

Patient then started complaining of an enlarged abdomen. On P/A- mild distention was noted and a USG abdomen was ordered. It concluded mild ascitic fluid was present in the peritoneal cavity.

On 6/3/24 the patient was conscious, oriented, and vitally stable. Patient's pedal edema had decreased and UOP was good, there was no bleeding per vaginally, lab investigations showed increase in platelets and a decrease in WBC, CRP, bilirubin.

On 7/3/24 DLC was removed the last set of blood sent for culture came back negative for any growth. Thus the patient was discharged with oral medicines on the 11th day.

Medicines prescribed during the entire hospital stay:

- Inj Tigecycline 25 mg + NS 50 ml IV 1-0-1 x 7 days
- Inj Meropenem 1 gm + NS 50ml IV 1-1-1 x 10 days
- Inj Teicoplanin 400 mg IV OD for 10 days
- Inj Fole 400 mg IV 0-1-0 for 2 days followed by Tab Fole 200 mg P/O 1-0-1 for 8 days
- Inj H Albumin 100 ml IV over 4 hours with hemodialysis & plasmapheresis
- Inj Mucomix 10 gm infusion for 5 days
- Syp Duphalac 30ml P/O TDS followed by HS
- Cap Pantop D P/O 1-0-1
- Inj Thiacombo kit + NS 10 ml IV 1-0-1
- Inj Levipil 500mg IV 1-0-1 for 10 days followed by Tab Levipil 500mg P/O 1-0-1 x 3 months
- Inj PRBC 6 units IV
- Inj SDP 3 units IV
- Inj Cryoprecipitate 8 units IV
- Inj FFP 6 units IV with Inj FFP 28 units during plasmapheresis

- Inj Hepamerz 5 amp + NS 50 ml IV infusion over 5 hours
- Inj Dytor 20 mg IV 1-1-1
- Tab Thiotres 500 mg P/O 1-0-1
- Tab Ursocol 300 mg P/O 1-1-1
- Tab Rifaximin 400 mg P/O 1-0-1
- Syp Potklor 15 ml P/O 1-1-1
- Syp Duphalac 30ml P/O 1-1-1
- Lactonic granules 2 TSF + 100ml milk P/O TDS

Discussion

ALF in pregnancy requires a multidisciplinary approach encompassing obstetric, hepatologic, nephrologic, and neurologic expertise as stated by Pandey C et. al in their comprehensive review of the topic. [1] They also state that after a point Liver Transplant seems the only credible option for ALF in pregnancy but if early recognition, aggressive supportive care, and prompt delivery is achieved, it can be paramount in improving outcomes and avoiding such a major surgery for the patient. Challenges such as coagulopathy, renal dysfunction, and neurological sequelae necessitate vigilant monitoring and tailored interventions with

urgent institution of etiology-specific management as stated by Alexander V et al in their informed article. [2]

Conclusion

This case underscores the importance of interdisciplinary collaboration in managing ALF complicating pregnancy. Timely recognition, aggressive supportive care, and coordinated interventions are essential for optimizing maternal and neonatal outcomes in such complex scenarios. Further research is warranted to elucidate optimal management strategies and improve outcomes in this challenging patient population.

References

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