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Case Report

Psychiatric role in managing postpartum depression after delirium in a patient with acute fatty liver of pregnancy and intrauterine fetal death

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ABSTRACT

Acute Fatty Liver of Pregnancy (AFLP) is a rare but life-threatening metabolic disorder that typically occurs in the third trimester and may lead to hepatic dysfunction, hepatic encephalopathy, and multisystem organ failure. While prompt delivery and intensive care can stabilize the patient physically, significant psychological complications may arise in the postpartum period. We report the case of a 22-year-old primigravida diagnosed with AFLP complicated by intrauterine fetal death (IUFD), hepatic encephalopathy, and delirium. The patient required 10 days of Intensive Care Unit (ICU) management before transitioning to the High Care Unit (HCU). Psychometric evaluation via the Confusion Assessment Method for the ICU (CAM-ICU) confirmed a mixed-type organic delirium, alongside a Positive and Negative Syndrome Scale–Excited Component (PANSS-EC) score of 19. After resolution of the acute organic delirium, the patient developed persistent grief, emotional lability, and severe postpartum depression, evidenced by an Edinburgh Postnatal Depression Scale (EPDS) score of 13. Her psychological distress was exacerbated by unique psychosocial stressors, particularly the concurrent healthy pregnancy of her identical twin sister, which triggered profound feelings of envy, inadequacy, and identity disruption. Management involved a tight multidisciplinary approach including Obstetrics & Gynecology, Internal Medicine, and Psychiatry. Psychiatric treatment focused on hepatic-safe pharmacotherapy using low-dose haloperidol (0.5 mg) during the acute delirium phase, followed by sertraline (25 mg) and structured Cognitive Behavioral Therapy (CBT) combined with grief counseling. At the one-month follow-up, her EPDS score improved to 10, demonstrating the crucial role of integrated medical and psychosocial care in mitigating complex bereavement and promoting neuro-psychiatric recovery following severe obstetric crises.

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INTRODUCTION

Acute Fatty Liver of Pregnancy (AFLP) is a rare but potentially life-threatening metabolic disorder that typically occurs during the third trimester of pregnancy and can lead to severe hepatic dysfunction and multisystem complications. The global incidence of AFLP is estimated to range from 1 in 7,000 to 1 in 20,000 pregnancies, although the prevalence appears higher in several Asian populations. Epidemiological data regarding AFLP in Indonesia remain limited, which may contribute to delayed recognition and diagnosis in clinical practice (Williamson, 2019). The condition is more frequently observed in primigravida women and in pregnancies complicated by hypertensive disorders or multiple gestations (Bakshi et al., 2023).

The pathogenesis of AFLP has been increasingly linked to mitochondrial dysfunction in fatty acid metabolism. In many cases, the disorder is associated with fetal deficiency of the long-chain 3-hydroxyacyl-CoA dehydrogenase (LCHAD) enzyme, which plays an essential role in fatty acid oxidation. This metabolic defect leads to the accumulation of long-chain fatty acids that enter the maternal circulation and overwhelm the maternal liver, resulting in microvesicular hepatic steatosis and progressive hepatic failure (Naoum et al., 2019; Sarkar et al., 2021). Clinically, AFLP may present with nonspecific symptoms such as nausea, vomiting, abdominal pain, jaundice, and hypoglycemia, which can overlap with other pregnancy-related liver disorders such as HELLP syndrome and severe preeclampsia. Consequently, early recognition and prompt intervention are critical to reduce maternal and fetal morbidity and mortality (Terrault et al., 2022).

Severe AFLP can result in significant obstetric complications, including intrauterine growth restriction (IUGR), prematurity, and intrauterine fetal death (IUFD). Progressive hepatic failure may also lead to hepatic encephalopathy due to the accumulation of neurotoxic metabolites such as ammonia, which cross the blood–brain barrier and disrupt normal brain function. These metabolic disturbances may manifest as neuropsychiatric symptoms ranging from confusion and cognitive impairment to severe delirium (Wang et al., 2016).

Although prompt delivery and intensive medical care are essential to stabilize the maternal condition, the postpartum period often presents additional psychological challenges. Women who experience severe obstetric complications or fetal loss are at significantly higher risk of developing postpartum depression (PPD), a mood disorder affecting approximately 10–15% of mothers worldwide (Chow et al., 2021). The psychological burden may be further intensified by prolonged hospitalization, intensive care treatment, and the trauma associated with fetal loss. In such circumstances, the transition from acute organic delirium to persistent depressive symptoms can occur as a result of both physiological stressors—such as hormonal fluctuations and metabolic dysregulation—and psychological trauma (Burns et al., 2024).

While existing literature thoroughly covers the physical management of AFLP, the neuropsychiatric continuum—specifically the progression from an acute organic delirium due to hepatic encephalopathy into severe postpartum depression compounded by complex grief—remains underreported. This case offers unique educational value by highlighting how an extreme physiological crisis, coupled with rare psychosocial stressors like a twin sister's parallel pregnancy, impacts maternal mental health. Comprehensive management

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of patients with AFLP, therefore, requires not only prompt medical treatment but also careful attention to psychiatric and psychosocial factors. Interdisciplinary collaboration among obstetricians, internists, and psychiatrists is essential to address both the physical and psychological consequences of this condition. This case report aims to highlight the role of integrated psychiatric intervention in managing postpartum depression following delirium in a patient with AFLP complicated by intrauterine fetal death and complex psychosocial stressors.

CASE REPORT

A 22-year-old primigravida woman, a factory worker of Javanese ethnicity, was admitted to Dr. Soetomo General Hospital with suspected Acute Fatty Liver of Pregnancy (AFLP) complicated by hepatic encephalopathy and intrauterine fetal death (IUFD) at 35 weeks of gestation. The patient delivered a female fetus weighing 2300 g and measuring 46 cm through vacuum extraction due to fetal demise associated with intrauterine growth restriction (IUGR). Following delivery, the patient developed progressive hepatic dysfunction and neurological symptoms consistent with hepatic encephalopathy. The patient required approximately 10 days of intensive care unit (ICU) treatment (August 3–12) because of hepatic encephalopathy and multiple organ dysfunction syndrome (MODS) before being transferred to the obstetric high-care unit (HCU) on August 13–14.

During hospitalization, the patient required intensive multidisciplinary management involving the Departments of Obstetrics and Gynecology, Internal Medicine, and Psychiatry. On the twelfth day of hospitalization, a psychiatric consultation was requested after the patient removed several medical devices while being transferred from the intensive care unit to the Obstetrics and Gynecology High Care Unit. On examination, the patient appeared icteric and was attached to multiple monitoring devices, including a urinary catheter and a central venous catheter. She demonstrated spontaneous eye opening but appeared confused and emotionally distressed. The patient cried intermittently and showed difficulty understanding questions. She was disoriented to time, place, and situation, and was unable to recall her pregnancy, marital status, or the reason for hospitalization.

Further mental status examination revealed impaired attention, fluctuating levels of awareness, slowed responses, and difficulty with simple calculations and general knowledge questions. The Richmond Agitation-Sedation Scale (RASS) was not formally assessed. Clinically, the patient appeared awake, alert, and mildly restless, without severe agitation or sedation at the time of the initial consultation, though her behavioral patterns fluctuated significantly across the day-night cycle, indicating a mixed-type delirium. The patient also exhibited dysphagia and difficulty protruding her tongue. During interaction with her husband, she required a prolonged time to recognize him and repeatedly verbalized his name, demonstrating perseveration. The patient showed complete amnesia regarding previous agitation episodes and the removal of medical devices. Psychometric evaluation using the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) confirmed the presence of delirium, while the Positive and Negative Syndrome Scale–Excited Component (PANSS-EC) score of 19 indicated moderate agitation.

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Table 1. Laboratory Findings and Clinical Parameters

Parameter	Patient's Value	Normal Reference Range	Clinical Interpretation
Hemoglobin	10.4 g/dL	12.0 – 16.0 g/dL	Normocytic normochromic anemia
Leukocytes	15,140 cells/µL	4,000 – 10,000 cells/µL	Leukocytosis (Swansea Criteria)
SGOT (AST)	115 U/L	< 35 U/L	Elevated transaminases (Swansea)
SGPT (ALT)	72 U/L	< 35 U/L	Elevated transaminases (Swansea)
Total Bilirubin	6.49 mg/dL	0.2 – 1.2 mg/dL	Hyperbilirubinemia (Swansea Criteria)
Direct Bilirubin	4.47 mg/dL	< 0.3 mg/dL	Conjugated hyperbilirubinemia
Uric Acid	13.4 mg/dL	2.4 – 6.0 mg/dL	Hyperuricemia (Swansea Criteria)
Blood Urea Nitrogen	58.0 mg/dL	8 – 23 mg/dL	Renal impairment
Serum Creatinine	1.4 mg/dL	0.5 – 1.1 mg/dL	Acute Kidney Injury (Swansea Criteria)

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Parameter	Patient's Value	Normal Reference Range	Clinical Interpretation
D-dimer	2460 ng/mL	< 500 ng/mL	Markedly elevated / Coagulopathy
PT / APTT	Prolonged	Patient vs Control	Coagulopathy (Swansea Criteria)
Serum Albumin	2.7 g/dL	3.5 – 5.2 g/dL	Hypoalbuminemia
Serum Sodium	156 mmol/L	135 – 145 mmol/L	Hypernatremia
Procalcitonin	9.75 ng/mL	< 0.05 ng/mL	Severe systemic infection / Sepsis

The diagnosis of AFLP was firmly supported by a Swansea score of 8. The fulfilled Swansea criteria included hepatic encephalopathy, hyperbilirubinemia, hyperuricemia, leukocytosis, ultrasonographic evidence of fatty liver, elevated transaminases, renal impairment, and coagulopathy. Serum ammonia level was not available in the medical record due to facility limitations; however, hepatic encephalopathy was diagnosed clinically in the context of AFLP, profound jaundice, coagulopathy, renal impairment, and fluctuating consciousness. Advanced neurological workups, including Electroencephalography (EEG) and brain imaging (CT/MRI), were not performed due to the patient's unstable hemodynamic state and the clear presence of systemic metabolic triggers.

Urine culture revealed *Trichosporon asahii*, suggesting fungal infection in an immunocompromised condition. The patient was also diagnosed with sepsis and multiple organ dysfunction syndrome (MODS), including acute pancreatitis and acute kidney injury. Management focused on stabilizing the patient's systemic and hepatic conditions. The patient received comprehensive medical and pharmacological treatment as summarized below:

- **Meropenem:** 1 g IV every 12 hours (Antimicrobial stewardship for sepsis)
- **Vitamin K:** 10 mg IV every 8 hours (Correction of coagulopathy)
- **Metoclopramide:** 10 mg IV every 8 hours (Antiemetic)
- **Ursodeoxycholic acid:** 250 mg PO/NGT 3 times/day (Hepatoprotector/choleretic)
- **Curcuma:** 1 tablet PO/NGT 2 times/day (Adjunctive hepatoprotector)
- **Acetylcysteine:** 200 mg PO/NGT 3 times/day (Antioxidant for liver recovery)
- **Lactulose syrup:** 15 mL PO/NGT 3 times/day (Ammonia elimination/anti-encephalopathy)

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- **Aminofusin Hepar + KA-EN-Mg3:** 500 mL : 500 mL IV per 24 hours (Branched-chain amino acids and fluid maintenance)
- **Haloperidol:** 0.5 mg PO once at night (Low-dose antipsychotic for delirium-induced agitation)
- **Sertraline:** 25 mg PO once in the morning (Initiated later for postpartum depression)

Psychiatric management during the acute delirium phase consisted of environmental modification (reorientation, optimizing room lighting, ensuring a calm environment), supportive psychotherapy, and pharmacological treatment with haloperidol 0.5 mg orally at night to manage behavioral disturbances safely without worsening hepatic encephalopathy.

After approximately five days of multidisciplinary treatment, the patient's delirium gradually resolved as her metabolic and hepatic parameters improved. Once fully conscious and oriented, she began to express profound sadness related to the loss of her infant. Mental status examination revealed a depressive mood with congruent affect, persistent grief, and intrusive memories of hospitalization. She denied suicidal ideation but reported emotional instability, self-blame, and feelings of guilt. Screening using the Edinburgh Postnatal Depression Scale (EPDS) yielded a score of 13, indicating moderate to severe postpartum depression.

Psychiatric treatment was subsequently focused on managing postpartum depression. The patient received sertraline 25 mg daily, supportive psychotherapy, cognitive behavioral therapy (CBT), grief counseling, and relaxation techniques, including mindfulness exercises. Cognitive Behavioral Therapy (CBT) was initiated after the resolution of delirium and stabilization of the patient's medical condition. During the first two weeks following hospital discharge, CBT sessions were conducted twice weekly to address maladaptive guilt cognitions, feelings of emptiness, grief-related distress, and adjustment difficulties following IUFD. Thereafter, sessions were continued weekly until two months post-discharge. Between sessions, the patient was assigned structured homework, including cognitive restructuring exercises, behavioral activation tasks, emotion monitoring, and reflective journaling related to grief processing. Homework adherence was reviewed at each follow-up visit. Family therapy sessions were conducted involving her husband and close relatives to strengthen emotional support and improve communication.

One month after discharge, a home visit was conducted to evaluate the patient's recovery. The patient reported improved emotional regulation, although she continued to experience occasional sadness and longing for her infant. Her sleep had improved, with only mild difficulty initiating it, and she remained able to perform daily activities independently. She maintained social interaction with family members and neighbors and adhered to psychiatric medication and follow-up appointments. A repeat EPDS evaluation showed improvement, with a score of 10, indicating mild depressive symptoms.

The patient identified an additional, profound psychosocial stressor contributing to her grief: her identical twin sister was pregnant with a female fetus at a similar gestational age. Although she expressed happiness for her sister, she occasionally experienced feelings of envy, deep inadequacy, and emotional discomfort when discussing pregnancy-related topics. Despite this challenge, the patient reported strong support from her husband and family and remained motivated to continue counseling and maintain her physical and mental recovery.

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DISCUSSION

Acute Fatty Liver of Pregnancy (AFLP) is a rare but severe obstetric complication characterized by microvesicular fatty infiltration of hepatocytes, leading to acute liver dysfunction and potentially life-threatening maternal and fetal outcomes. Several risk factors for AFLP have been identified, including primigravida status, young maternal age, and possible genetic predisposition related to abnormalities in fatty acid metabolism. In this case, the patient was a young primigravida, which is consistent with previously reported risk factors. First pregnancies may present greater physiological stress as the maternal body adapts to profound metabolic and hormonal changes, thereby increasing susceptibility to metabolic disturbances such as hepatic microvesicular steatosis (Naoum et al., 2019).

Recent studies have highlighted the role of mitochondrial fatty acid oxidation defects in the pathogenesis of AFLP. In particular, fetal deficiency of long-chain 3-hydroxyacyl-CoA dehydrogenase (LCHAD) can lead to the accumulation of long-chain fatty acids that are transferred into the maternal circulation. These metabolites overwhelm maternal hepatic metabolism, triggering acute hepatic dysfunction (Sarkar et al., 2021). This metabolic disturbance explains the development of clinical manifestations observed in AFLP, including jaundice, hypoglycemia, coagulopathy, and hepatic encephalopathy.

To formally establish the diagnosis and differentiate AFLP from overlapping conditions like HELLP syndrome or acute viral hepatitis, the Swansea Criteria remain the clinical gold standard. In this patient, a Swansea score of 8 was achieved (threshold ≥ 6), encompassing clinical signs (encephalopathy), biochemical markers (elevated bilirubin, transaminases, uric acid, creatinine, leukocytosis, and prolonged PT/APTT), and imaging (fatty liver on USG). The exclusion of viral hepatitis and the rapid recovery of liver function post-delivery further solidified the diagnosis (Terrault et al., 2022).

The progression of AFLP can result in severe systemic complications. Hepatic failure impairs the detoxification of ammonia and other metabolic by-products, which subsequently accumulate in the bloodstream and cross the blood–brain barrier. This process results in hepatic encephalopathy, characterized by a spectrum of neuropsychiatric disturbances ranging from mild cognitive impairment to severe delirium. In the present case, the patient demonstrated acute delirium with confusion, disorientation, impaired comprehension, and agitation, which are consistent with neuropsychiatric manifestations associated with hepatic encephalopathy (Wang et al., 2016). In the ICU, delirium is often multifactorial; beyond hepatic encephalopathy, severe sepsis, electrolyte imbalances (hypernatremia of 156 mmol/L), and multi-organ dysfunction syndrome (MODS) served as potent precipitating factors for her organic brain syndrome (Burns et al., 2024).

From a differential diagnostic standpoint in psychiatry, the rapid onset of depressive symptoms immediately following the resolution of delirium requires careful delineation using DSM-5 criteria. The clinical presentation overlapped with an Adjustment Disorder, Normal Bereavement, or a Depressive Disorder Due to Another Medical Condition (AFLP/ Hepatic Encephalopathy). However, the persistence of an EPDS score of 13, coupled with pervasive maladaptive guilt, functional impairment, and psychomotor changes that outlasted the metabolic resolution, firmly pointed toward Postpartum Depression (PPD) rather than typical grief or residual hypoactive delirium.

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The development of postpartum depression in patients with AFLP can be explained by a combination of biological and psychological mechanisms. From a biological perspective, abrupt hormonal fluctuations following delivery, compounded by hepatic dysfunction and metabolic disturbances, may disrupt neurochemical regulation in the brain and contribute to mood instability (Radford-Smith, 2022). Additionally, the extreme physiological stress associated with critical illness, intensive care hospitalization, and multi-organ dysfunction may further increase vulnerability to depressive disorders (Burns et al., 2024).

Psychological and psychosocial factors also play an important role in the development and persistence of postpartum depression. The traumatic experience of intrauterine fetal death represents a profound emotional loss that can trigger complicated grief reactions. Mothers may experience guilt, self-blame, and a perceived loss of maternal identity following fetal loss. In this case, the patient also faced a unique and compelling psychosocial stressor: her identical twin sister was experiencing a healthy pregnancy at a similar gestational age. In twin attachment psychology, identical twins share a deeply intertwined sense of self and developmental milestones. The divergence in pregnancy outcomes disrupted the patient's maternal identity and triggered an intense psychological conflict. The patient struggled to reconcile genuine sisterly affection with profound survivor-like guilt, social comparison, and envy. This ongoing environmental trigger served to amplify her grief, prolonging the bereavement process and intensifying her depressive state.

The significant improvement observed in this patient highlights the importance of interdisciplinary management in complex obstetric cases. Effective collaboration between obstetricians, internists, and psychiatrists allowed comprehensive care addressing both the physical complications of AFLP and the psychological consequences following fetal loss. Pharmacotherapy during the acute delirium phase required careful consideration; low-dose haloperidol (0.5 mg) was selected due to its minimal sedative properties and safety profile in metabolic encephalopathies compared to benzodiazepines, which could worsen hepatic coma. For her PPD, sertraline (25 mg) was chosen as the first-line Selective Serotonin Reuptake Inhibitor (SSRI) due to its well-established safety profile, lower hepatic clearance disruption, minimal drug-drug interactions, and low excretion into breast tissue or general systemic toxicity in recovering patients (Ushkalova & Ushkalova, 2023).

In addition to safe pharmacotherapy, structured psychotherapeutic interventions such as Cognitive Behavioral Therapy (CBT) and grief counseling helped the patient process her loss and restructure maladaptive negative thoughts (Milgrom et al., 2015; Danaher et al., 2021). The structured CBT framework—moving from twice-weekly intensive sessions focusing on cognitive restructuring of guilt to weekly behavioral activation and reflective journaling—provided a scaffold for her emotional recovery. Family support also played a critical role. Involving the patient's husband and close relatives in therapy sessions improved communication and strengthened emotional support systems. Family-based interventions are particularly beneficial in cultures, such as the Javanese community, where extended family relationships significantly influence emotional coping and recovery after traumatic events.

A limitation of this case study is its relatively short follow-up duration of one month. While a clear positive trend was noted (EPDS score

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decreasing from 13 to 10), longer-term tracking is required to fully assess long-term recurrence risks of depression, chronic grief resolution, and full functional rehabilitation. Nonetheless, this case demonstrates that integrating proactive mental health screening and intensive multidisciplinary care into severe obstetric protocols is essential for overall recovery.

CONCLUSION

This case highlights the complex interaction between severe obstetric complications and postpartum mental health disorders in patients with Acute Fatty Liver of Pregnancy (AFLP). AFLP can lead to life-threatening systemic complications, including hepatic encephalopathy and delirium, which require prompt multidisciplinary management to stabilize maternal health. However, recovery does not end with physical stabilization. The transition from acute organic delirium to postpartum depression may occur due to the combined effects of hormonal fluctuations, metabolic disturbances, traumatic birth experiences, and psychosocial stressors such as fetal loss. In this case, additional emotional challenges arose from the patient's social environment, particularly the concurrent pregnancy of her identical twin sister, which intensified feelings of grief and inadequacy. Comprehensive management involving obstetric, internal medicine, and psychiatric collaboration—supported by hepatically safe pharmacotherapy (low-dose haloperidol and sertraline), structured psychotherapy (CBT), and family-based interventions—was essential to facilitating the patient's gradual recovery. This case underscores the importance of integrating psychiatric evaluation and psychosocial support into the routine management of severe pregnancy-related medical conditions. Future clinical approaches should emphasize early identification of psychological distress and structured interdisciplinary care to improve long-term maternal well-being following complicated pregnancies.

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