



# Separating from the Pack: Preeclampsia-Induced Liver Dysfunction

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# Preeclampsia-Induced Liver Dysfunction (PILD)

- Preeclampsia is a well-known disorder of pregnancy
  - Affects up to 7% of gestational courses
  - Responsible for more than 70k maternal deaths per year worldwide<sup>1</sup>
  - Estimated 25% of cases involve end-organ damage to the liver<sup>2</sup>
- HELLP Syndrome, a variant of Preeclampsia with Severe Features (PESF)
  - Prevalence of 0.5% amongst all pregnancies
  - Diagnostic criteria include microangiopathic hemolytic anemia with schistocytes on peripheral smear, platelets < 100k, AST > 70 I/U, LDH > 600 I/U, and total bilirubin > 1.2 mg/dL
- Acute Fatty Liver of Pregnancy (AFLP), a catastrophic illness of the third trimester
  - Prevalence of 0.01% amongst all pregnancies
  - Characterized by hepatic micro-vesicular steatosis, frequently diagnosed using the Swansea Criteria
- **Early identification is essential given the associated morbidity, however the extent of overlap among these states proves medical management difficult during the early stages of disease**

## *Clinical Case*

- 24-year-old G1P0 at 40w1d otherwise healthy with a BMI 33 who presented for scheduled induction of labor
- Initial evaluation was significant for new-onset hypertension
  - Hgb 9.9, Plt 270, Cr 0.81, UPCR 0.277, ALT 868, AST 543, and Alk Phos 262
- Given hypertension and elevated liver function tests, a diagnosis of PESF was made
  - A labor epidural was uneventfully placed given stable platelet count, coagulation not assessed
- LFTs, blood pressure, and creatinine continued to rise as labor progressed
- Vaginal delivery of unremarkable newborn was complicated by post-partum hemorrhage necessitating transfusion of 2 units of red blood cells
  - Post-delivery labs: INR of 2.3 and LDH 822 with persistently elevated LFTs, prompting immediate concern for rapidly declining liver function and impending coagulopathy
- Serial labs showed resolved coagulopathy and LFTs declined linearly over the ensuing 4 days prior to discharge

# Implications for Practice

- Explicit differentiation of PILD subtypes, including AFLP
- Must rule out acute liver failure (ALF) based on the presence:
  - Enzymes greater than 10x normal level, encephalopathy, and coagulopathy with an INR > 1.5
- Diagnosis of ALF mandates consultation of maternal-fetal medicine and a transplant evaluation
  - Among parturients meeting criteria for ALF, an estimated 16% will require transplant and another 11% will die<sup>4</sup>
- ALFP, HELLP, and preeclampsia exist on a spectrum of end-organ disease processes that are associated with significant perinatal morbidity and mortality
- Multidisciplinary efforts, with a focus on timely recognition and recruitment of consultants as needed, are essential to high value care

## Swansea Criteria

|                                                                                                                       |                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Symptoms                                                                                                              | Abdominal pain<br>Encephalopathy<br>Polydipsia/ polyuria<br>Vomiting                                                                                   |
| Laboratory                                                                                                            | Coagulopathy<br>Elevated ammonia<br>Elevated bilirubin<br>Elevated transaminases<br>Elevated urate<br>Hypoglycemia<br>Leukocytosis<br>Renal impairment |
| Imaging Pathology                                                                                                     | Ascites on ultrasound<br>Microvesicular steatosis on liver biopsy                                                                                      |
| Diagnosis requires 6 or more features in absence of other liver disease<br><i>Adapted from Gut. 2002; 51:876-880.</i> |                                                                                                                                                        |

*Cited sources available upon request*