

# Cryptogenic liver cirrhosis diagnosed in pregnancy and khat consumption

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## ABSTRACT

We report a case of cryptogenic liver cirrhosis likely due to khat consumption diagnosed in the setting of chronic hypertension and giving the appearance of atypical superimposed preeclampsia.

**Keywords:** Superimposed Preeclampsia; HELLP Syndrome; Liver Cirrhosis; Elevated Liver Enzymes; Khat

## 1. INTRODUCTION

Pregnancies complicated by chronic hypertension are associated with a substantial increase in the risk of superimposed preeclampsia, reaching as high as 25% [1,2]. Patients presenting with elevated liver enzymes in this setting will often be diagnosed to have atypical, superimposed preeclampsia (*i.e.* HELLP syndrome). Because of the variable presentation of patients with HELLP syndrome, and the significant maternal and neonatal morbidity associated with it, other clinical entities associated with elevated liver enzymes may not initially be considered in the differential diagnosis.

We present a case of a 37-year-old pregnant Yemeni patient who was found to have elevated liver enzymes with chronic hypertension and chronic mild thrombocytopenia. An initial diagnosis of atypical, superimposed preeclampsia guided the management; ultimately, however, early liver cirrhosis was diagnosed postpartum following an emergent cesarean section.

## 2. CASE

A 37-year-old G5 P4004 Yemeni patient at 30 weeks' gestation with chronic hypertension (no medication) and well-controlled gestational diabetes mellitus (GDM) Type A2 on glyburide, was admitted for mildly elevated liver enzymes (ALT = 59 IU/L). Hepatic evaluation had previously been undertaken due to new-onset generalized

pruritus at 27 weeks' gestation. The patient's obstetric history was uneventful with no previous history of preeclampsia OR GDM. Her prenatal course was unremarkable including normal aneuploidy screening results. Her medical history was pertinent for thyroidectomy on appropriate hormone replacement. The patient was born in Yemen and immigrated to the United States 14 years ago. She denied history of alcohol, cigarette or illicit drug consumption.

On presentation, the patient denied headaches, epigastric pain or visual symptoms. Her blood pressures ranged from 130 - 170/70 - 90 mmHg. Laboratory work up is listed in (Table 1).

The patient was admitted with a working diagnosis of chronic hypertension complicated by superimposed preeclampsia and possible HELLP syndrome. She received Betamethasone for acceleration of fetal lung maturity. The admission non-stress test was reactive and ultrasound documented a female fetus with an estimated weight of 1839 g (94th percentile), and an amniotic fluid index of 14 cm.

The patient's blood pressure remained mildly elevated yet not requiring medications. Serial blood tests showed stable platelet counts and creatinine level, but her liver enzymes continued to rise slowly reaching a peak after one week of admission as demonstrated in (Table 1).

Her viral hepatitis profile, ANA screen and DNA

**Table 1.** Laboratory values at baseline, on admission and post partum in comparison to baseline 20 week values.

	Hb g/dL	Platelets/ $\mu$ L	24 h Protein mg	AST IU/L	ALT IU/L	Bilirubin Total mg/dL
Baseline	11.2	105,000	320 mg	20	32	0.5
Admission	10.6	83,000	330 mg	34	59	0.8
HD #6	11.3	90,000	420 mg	49	116	0.6
Post Op	8.0	107,000	-	25	23	0.3

antibody were negative. Liver ultrasound was negative except for sludge in the gallbladder. The Hepatology service suggested an abdominal MRI to rule out portal hypertension and liver cirrhosis based on their experience with Yemeni patients, and also due to the presence of thrombocytopenia and mild hypoalbuminemia.

On the 8th hospital day, the patient experienced pre-term premature rupture of membranes; parenteral antibiotics for prolongation of latency were started. The patient went into labor; an emergency cesarean section was done due to fetal mal-presentation. A female infant weighing 1847 g with Apgar scores of 3 at 1 min and 7 at 5 min was delivered; the placenta appeared normal and estimated blood loss was 600 mL.

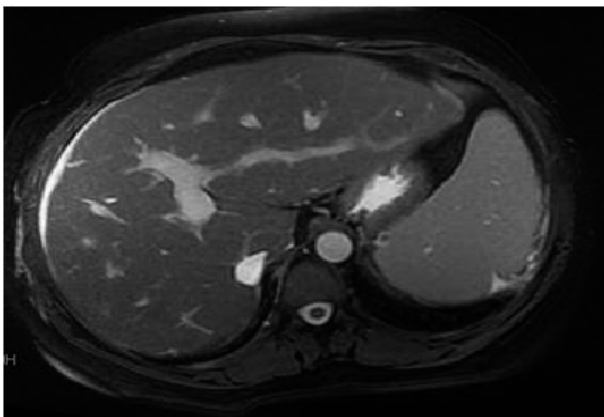
An abdominal MRI was obtained postpartum and showed evidence of early liver cirrhosis (**Figure 1**). Further postpartum maternal evaluation excluded hemochromatosis,  $\alpha$ -1 anti-trypsin deficiency, Wilson's disease and autoimmune hepatitis.

The postpartum course was uneventful except for asymptomatic anemia. The platelet counts remained mildly decreased and her liver enzymes normalized to an AST of 25 IU/L and ALT of 23 IU/L. The patient was discharged home to follow up with the Hepatology service.

Two months after discharge, the patient experienced bleeding from ruptured esophageal varices and underwent endoscopic band ligation. Soon afterwards, she suffered from acute liver decompensation and was placed on the waiting list for liver transplantation.

### 3. CONCLUSIONS

Elevated liver enzymes and thrombocytopenia in pregnancy are frequently associated with adverse perinatal outcomes [3]. The differential diagnosis includes severe preeclampsia, HELLP syndrome, thrombotic thrombocytopenic purpura, acute fatty liver, systemic lupus erythematosus, cholestasis of pregnancy, and underlying



**Figure 1.** MRI of liver showing peri-portal fibrosis, portal hypertension, hepatosplenomegaly, a dilated portal vein of 17 mm, and Cholelithiasis.

hepatic dysfunction [4,5]. As with our patient, it can be very difficult to confirm an accurate diagnosis due to multiple confounding variables (*i.e.* chronic hypertension, proteinuria, chronic thrombocytopenia) [6]. The patient's Yemeni ethnicity prompted the Hepatologist to consider the potential of intrinsic hepatic pathology as has been observed in their practice with this ethnic group [7,8]. We hypothesize that the link could be environmental exposure to hepatotoxic substances related to cultural habits or practices (e.g. khat consumption) [9].

The consumption of Khat leaves (*Catha edulis*) is a widespread recreational custom in East Africa and the Arabian Peninsula. The plant contains the alkaloids cathine and cathinone, with amphetamine-like properties that produces a variety of pleasurable effects [10]. Khat is banned in the United States, but large quantities are nonetheless exported to North America from the United Kingdom, where it is available and used by the immigrant populations. The mechanism of injury is unknown but it is believed that ingestion of this plant induces recurrent episodes of subclinical autoimmune hepatitis that might eventually lead to cirrhosis. Another hypothesis is that the herbicides and fertilizers used to grow these plants could be the offending agent and not the plant itself [10].

We hypothesize that our patient's cryptogenic cirrhosis may have been related to the consumption of food products containing hepatotoxic substances used in Yemen, resulting in her very mixed clinical presentation. It is important for clinicians caring for pregnant patients belonging to certain ethnic backgrounds to be aware of this clinical entity; early referral and management may obviate some of the maternal morbidity attendant to hepatic decompensation [11]. Pregnancy outcomes with liver cirrhosis are favorable when the diagnosis is made early enough to avoid catastrophic outcomes [12,13]. Further studies focused on this ethnic group are needed to identify and confirm the offending agent.

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