Cholestasis in the First Trimester Associated with Rare ABCG5/8 Variants: A Case Study

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Background:
Obstetric cholestasis, or intrahepatic cholestasis of pregnancy (ICP), is a liver disease that usually presents in the third trimester of pregnancy. It is characterized by pruritis that is associated with elevated liver enzymes and bile acids. This condition can have potentially serious effects on the fetus due to the buildup of serum bile acids resulting from the obstruction of bile flow.

Case Overview:
A 28-year-old patient, who was pregnant for the third time, developed pruritis in the first trimester and presented with blood work that showed elevated total bile acids and liver enzymes. A medical history revealed similar symptoms amongst her female relatives during their pregnancies as well as the patient's own previous pregnancies, suggesting a genetic component in the etiology of the disease. Genetic testing supported this hypothesis and showed variants of unknown significance that indicated a duplication in the ABCG5 and ABCDG8 genes.

Discussion:
This finding was rather unusual as these genes have not yet been clinically associated with ICP. The ABCG5 and ABCG8 genes code for canicular bile transporters in the liver that transport cholesterol into the bile. Overexpression of these transporters due to the duplication in her genes may result in increased transport of cholesterol into bile, disrupting the regular composition of bile. The resulting increased bile viscosity may cause bile stasis or blockage, and this proposed mechanism can possibly explain the pathophysiology behind this unusual case of cholestasis.

Conclusion and Potential Impact:
ICP can have potential serious effects on the developing fetus, and its etiology is still being understood. The novel ABCG5/8 gene duplication is a novel variant that may lead to earlier onset of ICP than commonly known variants.