Predicting, Diagnosing, And Treating Nausea And Vomiting Of Pregnancy And/Or Pregnancy Loss

Tech ID: 28782 / UC Case 2017-439-0

SUMMARY
UCLA researchers have identified genes associated with nausea and vomiting of pregnancy (NVP), which can be used to predict, diagnose and treat NVP and pregnancy loss.

BACKGROUND
Nausea and vomiting of pregnancy (NVP) affects 50-90% of pregnant women. Hyperemesis gravidarum (HG) is the most severe form and occurs in 0.3-2% of pregnancies. HG was a significant cause of maternal death until the introduction of intravenous hydration and, to this day, remains the second leading cause of hospitalization during pregnancy. HG is associated with a higher risk of miscarriage and poor fetal outcomes including preterm birth, neurodevelopmental delay, and vitamin K deficient embryopathy.

Despite the prevalence of NVP and the gravity of HG, decades of research have failed to identify the cause, and a clinically proven safe and effective treatment has yet to be found. Evidence for a genetic predisposition has been provided by classic twin studies. Heritability estimates for presence of NVP are as high as 73%.

INNOVATION
UCLA researchers have used genetic analyses to identify genes associated with NVP and HG. Genetic association tests were performed and Single Nucleotide Polymorphisms (SNPs) with strong associations were identified by Genome-Wide Association Study (GWAS) and confirmed in a replication cohort. 2 genes were found to be significantly associated with NVP. Protein levels from the 2 genes were confirmed to be aberrant in individuals affected with HG. A few other genes and their associated proteins may also be relevant.

APPLICATIONS
Genes and pathways identified in this invention are novel targets for prediction, diagnosis and treatment of NVP and HG.

ADVANTAGES
- This is the first GWAS study that identifies new genes and associated proteins and pathways related to NVP and HG.
- The link between the 2 genes and NVP/HG is of particular importance because it highlights a novel non-hormonal pathway involved in the etiology of the condition.

STATE OF DEVELOPMENT
GWAS and replication studies were performed and genes and their associated proteins strongly associated with NVP and HG were identified.

PATENT STATUS

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>Number</th>
<th>Dated</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patent Cooperation</td>
<td>Published Application</td>
<td>WO201818776</td>
<td>10/11/2018</td>
<td>2017-439</td>
</tr>
</tbody>
</table>

Additional Patent Pending

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS
- Frozen Tissue Microarray Technology for Analysis of RNA, DNA, and Proteins