PREECLAMPSIA, TOXEMIA OF PREGNANCY

Study Suggests an Autoimmune Origin

© Elaine Moore
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Researchers at the University of Texas Medical School completed a study that shows pre-eclampsia, a condition of hypertension in pregnancy, may be an autoimmune disease.

The results of the Houston study suggest, for the first time, that the pregnancy complication of pre-eclampsia may have an autoimmune origin and that medical therapies could effectively treat this disorder.

Preeclampsia and its Symptoms

Pre-eclampsia, which is also known as toxemia and pre-eclampsia, is a potentially fatal condition that typically occurs in the last trimester of pregnancy. In the pregnant patient, pre-eclampsia typically causes a sudden increase in blood pressure, excess urine protein, endothelial dysfunction, placental defects, and edema or swelling of the hands, feet and face. Advanced-stage clinical symptoms include cerebral hemorrhage, renal failure and the HELLP (hemolysis, elevated liver enzymes and low platelets) syndrome.

In addition to having a low body weight, infants delivered to mothers with pre-eclampsia may have underdeveloped lungs or poor lung clearance of fluid. These pulmonary conditions necessitate admission to neonatal intensive care units, various respiratory therapies to support breathing, and blood tests to evaluate respiratory competence.

Incidence

Pre-eclampsia is responsible for about 15 percent of all premature babies and occurs in about 1 in every 20 pregnancies. Pre-eclampsia is associated with a high incidence of mother and infant morbidity and mortality in the United States.

Pre-eclampsia is also one of the leading causes of Small for Gestational Age (SGA) infants.

Treatment

Other than delivery, effective treatments for pre-eclampsia are not available. This is thought to be a result of limited knowledge as to the nature of this disease. Risk factors for pre-eclampsia include past history of pre-eclampsia, having multiple births (twins, triplets, etc.), obesity, and gestational diabetes.

The Animal Study
In their study, the Houston researchers induced symptoms similar to those of pre-eclampsia in pregnant mice that had been injected with autoantibodies from women diagnosed with pre-eclampsia. The study design is called adoptive transfer.

Results of the study suggest that angiotensin receptor agonist autoantibodies in pre-eclampsia bind and activate the angiotensin II receptor 1a, which ultimately causes artery constriction. The artery constriction leads to the severe hypertension seen in this disorder. Therefore, some of the mice were treated with angiotensin receptor blocking agents that prevented this autoantibody binding, thereby preventing the development of pre-eclampsia.

**Applications in Humans**

Dr. Yang Xia, who headed the study, and his team report that the research needs to be confirmed with human trials. Human trials would provide information to support these findings, and this would lead to early diagnosis (using tests to detect angiotensin receptor antibodies) and early treatment interventions.

**Resource:**


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