Technology-assisted pregnancies have twice the risk of preeclampsia

February 24 2023

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People who became pregnant using assisted reproductive technologies were found to be over twice as likely to develop preeclampsia than those with traditional pregnancies, according to a study presented at the

American College of Cardiology's Annual Scientific Session Together With the World Congress of Cardiology.

The study, based on an analysis of health records from over 2.2 million patients, is the first to assess how reproductive technologies may affect the risk of cardiovascular complications during pregnancy on a national scale. Preeclampsia is a pregnancy-related complication involving new onset high blood pressure and possible organ damage that poses a serious risk to the pregnant person and the baby.

Assisted reproductive technologies encompass all interventions that involve in vitro handling of extracted eggs, sperm or embryos for the purpose of pregnancy, including in vitro fertilization (IVF), intrauterine insemination and other techniques.

Technology assisted pregnancies, achieved through assisted reproductive technologies, can either be traditional (in which the person carrying the pregnancy has a genetic connection to the embryo) or gestational surrogacy (no genetic connection to embryo). The proportion of pregnancies involving assisted reproductive technologies has doubled in the U.S. over the past two decades.

"The results were surprising—few studies have previously looked into the cardiovascular complications of technology-assisted pregnancies in such detail, and none of them have assessed these complications at a national level," said Ahmad Mustafa, MD, chief resident and upcoming cardiology fellow at Staten Island University Hospital and the study's lead author. "Dedicated cardiovascular care needs to be incorporated into the routine follow-up of patients conceiving through assisted reproductive technologies."

Using data from the National Inpatient Sample Database, researchers assessed the rates of cardiovascular complications for 5,874 technology-

assisted pregnancies and more than 2.2 million traditional pregnancies from 2016-2018.

They first examined rates of various cardiovascular problems, including abnormal heart rhythms, heart attack, heart failure, pulmonary edema, blood vessel-related complications, preeclampsia and gestational diabetes between the two groups. Then, the researchers used statistical methods to match technology-assisted pregnancies with a subset of the traditional pregnancies carried by people with a similar profile in terms of age, race and baseline health conditions (i.e., diabetes, hypertension, kidney disease and autoimmune disease).

Comparing the two matched groups and accounting for baseline risk factors, researchers found people with technology-assisted pregnancies were twice as likely to develop preeclampsia as people with traditional pregnancies.

Preeclampsia causes a variety of symptoms and complications and can lead to eclampsia, a life-threatening condition characterized by seizures and/or coma in the pregnant person, for which the curative treatment is delivering the baby. Having preeclampsia also has long-term consequences, including a high risk of preeclampsia in future pregnancies along with an elevated risk of kidney disease and cardiovascular problems, such as coronary artery disease, stroke and heart failure later in life.

Although the study did not examine the mechanisms behind the association, researchers said that the placenta may develop differently in some pregnancies involving assisted reproductive technologies than in traditional pregnancies, increasing the likelihood of preeclampsia.

"Having twice the risk of preeclampsia compared to traditional pregnancy should not discourage people from considering assisted

reproductive technologies. However, it is important to follow up with a cardio-obstetrician or maternal fetal medicine specialist for appropriate care and timely management if cardiovascular issues arise," Mustafa said.

The initial analysis also found higher rates of supraventricular tachycardia (faster than normal heart rate), pulmonary edema (an abnormal buildup of fluid in the lungs) and gestational diabetes among technology-assisted pregnancies. Researchers said these differences were not statistically significant with the analysis using matched groups, suggesting the pre-match associations were likely due to confounding factors. Additionally, people with technology-assisted pregnancies had a longer length of hospital stay by 33%.

In the vast majority of the 5,874 pregnancies in the assisted reproductive technology group, the pregnant person was genetically related to the embryo, with only 190 involving gestational surrogates. Researchers also said the gestational surrogates were on average younger and healthier than people using IVF or other reproductive technologies to achieve pregnancy with a genetically related embryo, which could partially explain why the analysis found a relatively lower risk of preeclampsia among gestational surrogates.

The researchers plan to further analyze the data to determine whether certain types of reproductive technologies may confer a higher or lower risk of preeclampsia than other technologies. They also recommended closer monitoring for pregnancies using assisted reproductive technologies to enable early detection and appropriate management of complications.

 More information: Conference: accscientificsession.acc.org/