Two studies reveal pregnant women bear greater risk of hemorrhagic stroke

February 7 2019, by Victoria Tagg

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Pregnant women face a much greater risk of having a fatal, but less common, type of stroke caused by bleeding into the brain, according to results of two studies presented by The University of Texas Health Science Center at Houston (UTHealth) at the International Stroke Conference 2019.

A study led by senior author Farhaan Vahidy, Ph.D., MBBS, MPH, found that pregnant women and those who recently gave birth were three to 10 times more likely to suffer intracerebral hemorrhage (ICH), which occurs when a blood vessel inside the brain bursts and spills blood into or around the brain. Vahidy is an associate professor of neurology at McGovern Medical School at UTHealth and director of the Population Health & Health Services Research Division at UTHealth Institute for Stroke and Cerebrovascular Disease.

"It's important to remember that stroke is uncommon among the younger female population. Women undergo a number of physiological changes while pregnant, so we hypothesized that pregnancy would confer a higher ICH risk," said first author and presenter Jennifer Meeks, MS, a research coordinator in the Department of Neurology at McGovern Medical School. "However, the scale of the increase was highly significant and strikingly greater than what was anticipated."

Women with a history of other medical conditions such as high blood pressure and diabetes were found to be at a greater risk of ICH. Those who had preeclampsia or eclampsia were 10 times more likely to suffer ICH, according to the study.

Using publicly available administrative data, researchers analyzed more than 3.3 million deliveries among women in hospitals in New York, California, and Florida. The same women, age 28 on average, were followed and served as their own controls when no longer pregnant or postpartum.

"The results showed that the risk of ICH starts to increase during the third trimester and continues to rise into an extended postpartum period. Other attributes, such as race, also appeared to influence the likelihood. For instance, black women were twice as likely as white women to suffer ICH and Asian women were 1.68 times more likely," Meeks said.

"Further research is required to more precisely predict those groups of women who are at an increased risk of ICH during pregnancy so preventive measures may be taken."

There are two types of stroke, hemorrhagic and ischemic, which occurs when a blood vessel carrying blood to the brain is blocked by a clot. Around 15 percent of all strokes are hemorrhagic, but they account for approximately 40 percent of all stroke deaths, according to the National Stroke Association.

In the second study, researchers found women with arteriovenous malformation (AVM), an abnormal tangle of blood vessels in the brain, had increased incidence of ICH from AVM rupture during pregnancy.

Results showed women with AVMs were almost 3½ times more likely to have ICH associated with pregnancy and delivery.

"Researchers have suspected that brain AVMs are more likely to bleed with pregnancy, but because they are uncommon, this connection was hard to prove. In our study, we looked at millions of women; the data confirmed this and were very compelling," said Sunil Sheth, MD, the senior author, who is an assistant professor of vascular and interventional neurology at McGovern Medical School.

The study analyzed data from nearly 6.3 million women, age 28 on average, with first-time pregnancy in hospitals in New York and Florida. Of these patients, 1,024 (0.02 percent) had an AVM, which was linked to a 340 percent increased risk of ICH during the pregnancy period.

"An AVM is like having a little bomb in the head, which creates an explosion of blood in the brain if it ruptures. When this happens it can put the mother and baby in considerable danger," Sheth said.

The abstract called for further research and improved methods to reduce ICH risk.

"We need to understand exactly what is happening—why do AVMs bleed in the first place and what is causing this substantially higher risk among pregnant women who have them?" Sheth said. "These findings could change the conversation of care for a very particular patient group. If we know a woman with a brain AVM is planning a pregnancy, it may be appropriate to treat the AVM before pregnancy or counsel for close monitoring during pregnancy."

Provided by University of Texas Health Science Center at Houston