Effective medical treatment of gestational diabetes could reduce long-term complications for the child

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Researchers at Cardiff University have found that women taking metformin and/or insulin during gestational diabetes could reduce the

risk of long-term complications for their child.

The team discovered that the placentas of women treated with the drugs didn't exhibit DNA alterations associated with type 2 diabetes, while those of women not treated with the drugs did.

The finding suggests that a child born to a woman receiving the treatment may be protected against the increased risk of developing type 2 diabetes normally associated with exposure to gestational diabetes.

One in seven births is affected by gestational diabetes (GDM), and the International Diabetes Federation predicts that this number will increase in the years ahead. While GDM can be controlled by diet or drugs, uncontrolled GDM increases the risk of having a large baby and a caesarean section delivery.

Women diagnosed with GDM are more likely to experience pregnancy related depression and seven times more likely to develop type 2 diabetes mellitus (T2DM) later in life. GDM can also have a significant impact on their children, making them less likely to reach timely developmental milestones, more likely to be overweight, with a six-fold increased risk of TD2M.

"Given the increasing prevalence of maternal obesity worldwide, understanding the markers and consequences of GDM is of great significance," explained Professor Rosalind John, from Cardiff University's School of Biosciences.

"Previous studies have shown that individuals with T2DM have shorter telomeres – a DNA sequence that acts as a 'cap' at the ends of chromosomes and helps maintain genomic stability. One study also suggested changes in placental telomeres after gestational diabetes, a pregnancy condition linked to a higher risk of T2D. This suggests that

shorter telomeres might be acquired during pregnancy and contribute to the development of T2D.

"Using high-resolution telomere length analysis developed by Professor Duncan Baird, we confirmed the original finding that GDM exacerbates telomere erosion in the placenta and remarkably we found that this occurred only in placenta from male babies. We further showed that GDM mothers who were treated with metformin and/or insulin do not demonstrate this placental telomere shortening. This treatment pathway may protect against telomere erosion, an observation with potentially important clinical implications.

"Our study was on a small number of samples and further work in this area is necessary, but our research suggests that early adoption of targeted medical treatment in GDM pregnancies where the foetus is known to be male could offer an effective strategy for preventing adverse outcomes for children."

Provided by Cardiff University