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How do the different types of maternal diabetes during pregnancy influence offspring outcomes?

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Background/Aim of the Study: Exposure to maternal diabetes is considered one of the most common in utero insults that can result in an increased risk of complications later in life with a permanent effect on the offspring health. In this study we aim to assess the level of risk associated with each type of maternal diabetes on cardiovascular diseases, obesity, glucose intolerance and neurodevelopmental disorders in offspring.

Methods: We conducted a systematic review of the literature utilizing PubMed for studies published between January 2007 and March 2022. Our search included human cohorts and case control studies with at least 2 types of maternal diabetes clearly identified. Collected outcomes included prevalence, incidence, odds ratio, hazard ratio and risk ratio.

Results: Among 3579 published studies, 19 cohorts were eligible for inclusion in our review. The risks for overweight, obesity, Type 2 Diabetes (T2D), glucose intolerance, metabolic syndrome and Cardio-Vascular Diseases (CVD) were increased for all types of maternal diabetes. The risk of overweight or obesity in infancy and in young adults was similar between gestational diabetes mellitus and Type 1 Diabetes (T1D). The risk for T2D or abnormal glucose tolerance was double for Offspring from GDM (O-GDM) compared to offspring from T1D (O-T1D). In contrast, the risk for T1D in offspring at any age until young adulthood was increased when mothers had T1D compared to GDM and T2D. The Risk for CVD was similar for all types of maternal diabetes. The risk of ASD and ADHD was increased after in-utero exposure to preexisting T1D, followed by T2D.

Conclusions: Offspring of diabetic mothers are at increased risk for multiple adverse outcomes with the highest risk detected among offspring from T2D mothers. Future work warrants large multiethnic prospective cohort studies to identify the risks associated with each type of maternal diabetes separately.

Biography

Lina Eletri is a neonatologist at the Le Mans Hospital center in France. She is very involved in clinical research in neonatology, specifically in the fields of metabolomics and fetal programming.

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