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Title of project: MicroRNAs as predictors of gestational diabetes mellitus

ABSTRACT

There is an increase in the number of women, who develop gestational diabetes mellitus (GDM), possibly related to advanced mean maternal age and weight. Besides being associated with pregnancy complications such as preeclampsia, GDM also impose a long-term risk of developing metabolic syndrome and type 2 diabetes for both mother and child. Based on the current Danish selective GDM screening strategy, more than 40% of the pregnant women are referred to a more time-consuming diagnostic oral glucose tolerance test with only 3-5% being diagnosed as having the disease. This points to lack of specificity in the current screening program and open up the possibility for new biomarkers.

Our study will investigate the potential of small non-coding RNA molecules, called microRNAs, as predictors of development of GDM. We will assess the ability of microRNAs to detect risk factors associated with metabolic syndrome and pregnancy complications as wells as their potential to predict future development of gestational diabetes in blood from women with or at risk of gestational diabetes. Hopefully, the study outcome may provide better tools for appropriate and early detection of GDM development and provide opportunities to enhance our understanding of the mechanisms of adiposity, hyperglycaemia and insulin resistance.

ABSTRAKT

Flere kvinder udvikler graviditetssukkersyge (gestational diabetes mellitus; GDM). Dette kan skyldes stigende alder for førstegangsfødende og tiltagende forekomst of overvægt i befolkningen. Kvinder med graviditetssukkersyge har større risiko for graviditetskomplikationer, så som svangerskabsforgiftning, og både mor og barn har øget risiko for at udvikle metabolisk syndrom samt type 2 diabetes senere i livet. Ud fra de nuværende nationale retningslinjer for screening for graviditetssukkersyge, bliver mere end 40% af de gravide kvinder henvist til den mere tidskrævende orale glukosebelastning test. Kun 3-5% af kvinderne diagnosticeres efterfølgende med GDM, hvilket kan give anledning til debat om screeningsprogrammets sensitivitet samt åbne op for nye biomarkører for graviditetsdiabetes.

Vores studie vil undersøge om små ikke-kodende RNA molekyler, kaldet microRNA, kan forudsige hvilke kvinder der vil udvikle graviditetssukkersyge. Endvidere vil vi undersøge sammenhængen mellem udvalgte microRNA og risikofaktorer forbundet med metabolisk syndrom og graviditetskomplikationer. Forhåbentligt, kan dette studie bidrage til udviklingen af screeningsmetoder for tidligere og korrekt identifikation af kvinder med GDM samt øge vores forståelse af de bagvedliggende mekanismer.