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TITLE

PLACENTAL MATERNAL AND FETAL VASCULAR CIRCULATION IN PREGNANT WOMEN WITH VARIOUS OBESITY PHENOTYPES:

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ABSTRACT

Background: Obesity in pregnancy is associated with hyperinsulinemia, impaired endothelial function, inflammatory up-regulation and higher risk of placental pathological lesions. However not all obese individuals demonstrate similar metabolic profiles. The present study was designed to investigate placental histopathology in lesions that are associated with maternal and fetal circulation abnormalities, in nonobese and obese women with and without metabolic alterations.

Methods: 332 pregnant women were divided into three groups according to presence of obesity and metabolic risk factors: Group 1 included 163 non-obese metabolically normal (NOMN); Group 2 included 106 obese metabolically normal (OMN); Group 3 consisted 63 obese metabolically abnormal (OMA) subjects.

Results: Placental weight was significantly higher in OMN compared to NOMN ($p < 0.000$). Maternal vascular supply (MVS) abnormalities of the placental bed differed significantly across groups, and increased from Group 1 to Group 3 in a continuous fashion (31%, 38% and 54% respectively, $p < 0.005$). Fetal vascular supply (FVS) abnormalities rate increased from group 1 to group 3, and was significantly higher in obese subjects with and without metabolic abnormalities, compared to non-obese subjects (9%, 20% and 22% respectively, $p < 0.021$). Willous maturation defect (WMD) rate was higher in OMN subjects compared to NOMN ($p < 0.018$). In the logistic regression analysis, obesity emerged as a significant predictor of fetal vascular supply abnormalities ($p = 0.001$) and WMD ($p = 0.011$).

Conclusion: We demonstrated that obesity, per se, is associated with an increased rate of fetal vascular malperfusion abnormalities, Willuos maturation defect, as well as higher placental weight and lower FPR, compared to non-obese subjects.

INSTITUTE

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