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Morphological and histopathological features of placenta in women with gestational diabetes mellitus and its association with perinatal outcome

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Background: Placenta, a highly vascular structure, acts as a barrier between maternal and foetal circulations, protecting the fetus from the adverse effects of maternal diseases. Placental data from cases with Gestational Diabetes Mellitus (GDM) informs risk stratification in the affected population.

Aim: To understand morphological and histopathological variations of the placenta in GDM pregnancies, and its association with perinatal outcomes compared with normal pregnancies.

Methods: This was a hospital-based cross-sectional study conducted over a period of 2 years (September 2019 to August 2021) involving women with singleton pregnancy at 37 weeks to 40 weeks of gestation with GDM (study group) and women with singleton live pregnancy without GDM (Control). Morphological features of the placenta from histopathological examination and the associated perinatal outcome was compared between groups.

Results: The placental parameters (placental weight, birth weight and fetoplacental ratio) and histopathological parameters (calcification of the placenta, fibrinoid necrosis of villi and immature villous) were increased in the GDM group and statistically significant with the control group ($p=0.001$). Abnormal perinatal outcomes were observed in subjects with the oval-shaped placenta (52.4%), increased cord thickness (61.9%), fibrinoid necrosis of villi (52.4%), syncytial knots (61.9%), immature villous (57.1%). Control subjects with syncytial knots and immature villous also resulted in abnormal perinatal outcomes.

Conclusion: GDM causes variation in morphological and histological features of the placenta associated with adverse perinatal outcomes. Early diagnosis, treatment and glycaemic control are necessary to prevent pathological changes in the placenta and associated incidence of perinatal morbidity and mortality.

Keywords: Placental weight, Gestational diabetes mellitus, Placental shape, Calcification, Infarction, Villous edema

Biography

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