Molecular Characterisation of Gene Encoding 5,10-Methylenetetrahydrofolate Reductase (MTHFR) & Methionine Synthase Reductase (MTRR) & Its Correlation with Placental Vasculopathy in Indian Women

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AIM: To evaluate the influence of genetic variants {MTHFR C677T, A1298C}{MTRR 66G>A)} in Indian Women with Placental Vasculopathy

Introduction: Placental vasculopathy is one of the main causes of maternal & fetal morbidity & mortality.Single nucleotide polymorphism(SNP) i.e MTHFR (C677T, A1298C) & MTRR (66G>A) causes alteration in enzyme activity that generates assimilation of folates associated with DNA damage; thus its important to know if SNP's are associated with the pathological characterstics like placental vasculopathies, through a case control study.

Materials & Methods: 25 patients & 25 Controls were recruited at the time of diagnosis of placental vasculopatyhy (preeclampsia BP>140/90 mmHg, Protenuria >300mm/24h) & eclamposia (convulsions). Genotype frequencies of the MTHFR gene at the positions C677T & A1298C & at of MTRR gene 66G>A were ascertained by using PCR-RFLP Method.

Results: Maternal Age of Control & Patient group were 24.64+/-2.447 & 25.04+/-3.259 yrs, Gestational age at delievery 38.5657+/-1.03138& 36.4743+/-3.206(p=0.003), SGA 10(40%) (p=0.005), Histopathological characterstics (patients) Cytotrophoblast proliferation3(12%),Villous hypovascularity4(16%),Villous fibrosis 4(16%) respectively. MTHFR gene, genotype distribution in cases & controls for C677T was CC,CT &TT were 41%,52%,7% & 62%, 38% respectively. In A1298C, frequencies were AA,AC,CC 35%,48%,17% & 42%,52%,6% respectively.For MTRR distribution were GG,GA &AA, were, 26%,52%,22% & for controls 35%,59%&6% respectively.

Conclusions: T677 variant of MTHFR gene is not significant contributor in the risk factor but, C1298 (MTHFR) & A66 (MTRR) variant shows the possibility of a risk factor in tailoring placental vasculopathy in women. Despite relative small size of the study, our work provides the first time in our population, some data regarding the frequency of genetic polymorphism in the MTHFR & MTRR gene & its possible correlation with the placental vasculopathy.

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