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MMP-2 Gene Polymorphism and Its Influence on Serum MMP-2 Levels in Pre-Eclampsia in Indian Population

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Abstract : Introduction: Pre-eclampsia affects 3-5% of pregnancies worldwide and increases maternal-fetal morbidity and mortality. Reduced placental perfusion induces the release of biomolecules by the placenta into maternal circulation causing endothelial dysfunction. Zinc dependent matrix metalloproteinase-2 (MMP-2) may be up-regulated and interact with circulating factors of oxidative stress and inflammation to produce endothelial dysfunction in pre-eclampsia. Aim: To study the functional genetic polymorphism of MMP-2 gene (g-1306 C>T) in pre-eclampsia and its effect on serum MMP-2 levels in these patients. Method: Hundred pre-eclampsia patients and hundred age and gestation period matched healthy pregnant women with their consent were recruited in the study. Serum MMP-2 levels in all subjects were estimated using standard ELISA kits. MMP-2 gene (g.- 1306 C>T) SNPs were genotyped using whole blood by ASO-PCR. Result: The pre-eclampsia patients had higher serum levels of MMP-2 compared to the healthy pregnant ($p < 0.05$). Also the MMP-2 genotype was associated with significant alteration in the serum MMP-2 concentration in these patients ($p < 0.05$). Conclusion: This study results suggest an association of MMP-2 genetic polymorphism and serum levels of MMP-2 to the path physiology of hypertensive disorder of pregnancy.

Keywords : allele specific oligonucleotide polymerase chain reaction (ASO-PCR), enzyme linked immunosorbent assay (ELISA), matrix metalloproteinase-2 (MMP-2), pre-eclampsia
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