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Abstract

High Mobility Group Box Protein 1, Sterile Inflammatory Molecules: Motential Biomarkers for Preeclampsia: Human Study

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Abstract

Background and Aim: Pre-eclampsia (PE) is a rare but serious hypertensive disorder during pregnancy, affecting 5–8% of pregnant women globally. Current prognostic criteria rely on late-stage indicators, including elevated blood pressure, edema, protein urea, and various biomarkers. The absence of clinical signs of inflammation in PE patients poses a challenge. This hypothesis suggests that specific signaling molecules, particularly HMGB1, could serve as early predictive markers for PE.

Materials and Methods: Blood was collected from non-pregnant, pregnant and pregnant women with confirmed PE and after recovery (n=60/gr; aged 20-45 years) as per ACOG criteria. Plasma was separated and circulating nucleic acids (CANs) and SI molecules were assayed.

Results: CANs [i.e. eRNA (3.0 fold); eDNA (1.5 fold)] were significantly ($p<0.05$) up-regulated in women with symptomatic PE when compared to pregnancy with no PE as well as normal control subjects. A significantly higher level of HMGB1 (2.5 fold); vWF (1.5 fold), S100b (1.0 fold), IL6 (1.0 fold) & Decorine (3.0 fold) ($p<0.5$) in women was shown with symptomatic PE compared to control. The neutrophil-lymphocyte ratio (NLR) was significantly higher in PE patients compared to control ($p<0.5$). However, the expression of all the markers returned to normal after recovery from PE. Immunoflurocent study showed a higher level of HMGB1 and Decorin expression in PE in a co-localized manner. ROC and AUC analysis showed that HMGB1 significantly higher rate (99.3%) of predictability and sensitivity as a marker in compared to Decorine (96.5%) & eDNA (85.4%).

Conclusion: HMGB1 could be a predictive bio-markers for early detection for PE with greater sensitivity.

Keywords: *High mobility group box protein 1, Sterile inflammatory molecules, Biomarker, Preeclampsia*

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