Redox State Biomarkers in Pregnant Anemic Women and its Relation to the Birthweight.

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Introduction: In pregnant anemic women redox biomarkers values are similar with the values of non anemic patients. But inter-correlations of redox parameters in the anemic group can increase the lipid peroxidation products and decrease some importantly antioxidants componentes.

Objective: The present study was aimed to investigate the oxidant–antioxidant status of pregnant anemic women by iron deficiency in the third trimester of gestation and its relation to the birthweight.

Materials and Methods: The present study comprised of 32 pregnant anemic women aged between 18–42 years and 33 pregnant healthy women as control with a haemoglobin (Hb) >110 g/L ranging in same age. Blood haemoglobin, haematocrit (Hct) and mean corpuscular haemoglobin concentration (MCHC) were determined as haematological parameters. The concentration of iron in plasma was also measured. Ferric reducing potential, albumin, vitamins C, E, A, erythrocyte reduced glutathione concentrations, total extracellular superoxide dismutase and catalase activity were measured as antioxidant indicators, and serum malondialdehyde plus 4-hydroxynonenal concentration as a lipoperoxidation biomarker.

Results: The levels of haematological parameters were significantly reduced in the anemic group, but not iron plasma concentration, however, median was reduced in the anemic group. Except of vitamin E levels, no significant differences between the values of the indicators of redox status between the two groups of pregnant women were found. Vitamin E levels were decreased significantly in pregnant non anemic women. The correlations between haematological parameters showed significant correlation with each other except MCHC which did not correlate significantly with Hct. The levels of Hct showed significant and positive correlation with vitamin C levels, but negative with MCHC levels, that correlates significantly and positively with vitamin A concentrations, so, the levels of this vitamin significantly and positively correlate with vitamin E

concentrations. The levels of vitamin A also correlate with serum catalase activity. This study showed that Extracellular Superoxide dismutase activity significantly decreased with increased of plasma lipid peroxidation products, and significantly increased with increased of erythrocytes reduced glutathione concentrations. Malondialdehyde plus 4-hydroxy-nonenal concentrations correlated significantly and inversely with birthweight, while erythrocyte reduced glutathione and total extracellular superoxide dismutase activity correlated significantly and directly.

Conclusions: On the basis of our results, it may be concluded that in pregnant anemic women redox biomarkers values were similar with the values of non anemic patients, however inter-correlations of redox parameters in the anemic group showed that with an increase of lipid peroxidation products tends to decrease some importantly antioxidants components, which may result in various complications including peroxidation of vital body molecules resulting in increased risk for pregnant women as well as the fetus.

Key words: pregnant anemic women, redox biomarkers