

Correlation between Serum Malondialdehyde and sVCAM-1 in Pediatric Thalassemic Patients with Hypercoagulation

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Abstract

Introduction: Repeated blood transfusions with increased intestinal iron absorption in thalassemia causes iron overload, catalyzed production of various reactive oxygen species subsequently trigger oxidative stress. Endothelial as the first organ exposed to reactive oxygen species would suffer a marked increase in adhesion molecule due to endothelial dysfunction that will trigger a hypercoagulation. **Objective:** To investigate the correlation between oxidative stress status (malondialdehyde, MDA) and endothelial dysfunction (serum Vascular Cell Adhesion Molecule-1, sVCAM) in iron overload pediatric thalassemic patients with hypercoagulation. **Methods:** A cross-sectional study was conducted on thalassemic subjects with inclusion criteria: aged 5 - 14 years with iron overload who had hypercoagulation based on TEG (Thromboelastography) examination. The determination of thalassemic degree was based on a Novel scoring system. The correlation between serum MDA and sVCAM-1 was analyzed using Rank Spearman, with a significance value of 5% and 95% confidence intervals. **Results:** Nineteen male and twelve female children were included in the study. All subjects had pretransfusion Hb < 9 g/dL and the nutritional status of moderate malnutrition. The results showed a moderately positive significant correlation between serum MDA and sVCAM-1 levels ($p = 0.02$, $r = 0.416$). The results also showed that there was a significant difference between serum MDA and thalassemic degree ($p = 0.029$, <0.05), whereas levels of serum MDA in severe degree of thalassemic group were higher than in moderate degree group based on analysis using unpaired t-test ($p = 0.026$). **Conclusions:** Serum MDA level as stress oxidative status marker has moderately positive correlation with sVCAM-1 as endothelial dysfunction marker in iron overloaded pediatric thalassemic patients with hypercoagulation.