



Hypoxia Biomarkers, Oxidative Stress, and Circulating Microparticles in Pediatric Patients with Thalassemia in Upper Egypt.

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Abstract:

This study aimed to investigate the oxidative stress, hypoxia biomarkers, and circulating microparticles (MPs) in β thalassemia major. The study included 56 children with thalassemia and 46 healthy controls. Hypoxia biomarkers, oxidative stress biomarkers, and total plasma fragmented DNA (fDNA) were detected by the standard methods. The MPs were assessed by flow cytometry. Hypoxia and oxidative stress biomarkers, fDNA, and MPs were higher and total antioxidant capacity (TAC) was lower in patients with thalassemia than the controls. In splenectomized patients and those who had complications, vascular endothelial growth factor (VEGF), malondialdehyde, fDNA, endothelial, platelet, and activated platelet MP levels were higher while, TAC was lower than the non splenectomized patients. In conclusion, the increased tissue hypoxia, oxidative stress in β thalassemia, and its relationship with DNA damage and MPs release could explain many complications of thalassemia and may have therapeutic implications. The VEGF could serve as an important indicator for adequacy of blood transfusion in thalassemia.

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