Circulating Microparticles in Children With Sickle Cell Anemia in a Tertiary Center in Upper Egypt

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Abstract:

Sickle cell disease (SCD) is a genetically inherited hemolytic anemia increasingly appreciated as a chronic inflammatory condition and hypercoagulable state with high thrombotic risk. It is associated with disturbed immune phenotype and function and circulating microparticles (MPs) derived from multiple cell sources. This study was carried out to determine MPs profiles in patients with sickle cell anemia (either on hydroxyurea (HU) therapy or those with no disease-modifying therapy) and to compare these profiles with healthy children. Moreover, our study assesses the potential impact of HU on other aspects of circulating MPs. We performed a cross-sectional study on 30 pediatric patients with SCD divided by treatment into 2 groups (those receiving HU or no therapy) attending Hematology Clinic and 20 age-matched healthy children. The blood samples obtained were analyzed for MPs by flow cytometry. Sickle cell disease group with no therapy showed elevated levels of total, platelet, and erythroid MPs. In contrast, therapy with HU was associated with normalization of MPs. This study provided additional evidence that HU is an effective treatment option in pediatric patients with SCD, as it seems that it decreases the abnormally elevated MPs in those patients.

Keywords:

Sickle cell disease, hydroxyurea, microparticles, children

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