Altered levels of pro-inflammatory cytokines in sickle cell disease patients during vaso-occlusive crises and the steady state condition.

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Abstract

OBJECTIVE:
This study aimed to evaluate serum levels of pro-inflammatory cytokines and TGF-β in sickle cell disease (SCD) patients, and to compare the results during vaso-occlusive crisis (VOC) or steady state (StSt) conditions.

METHODS:
54 SCD patients (37HbSS and 17Sβ(+)Thal) were enrolled in the study and evaluated in two groups as follows; group A consisted of 39 VOC patients and group B comprised 15 StSt patients. Nineteen healthy volunteers were included as controls. Circulating levels of IL-1, IL-6, IL-8, IL-17, TNF-α and TGF-β were measured using ELISA.

RESULTS:
Patients in VOC showed higher mean levels of all cytokines than those found in steady-state patients, but this was only marginally significant for IL-8 levels (P = 0.08). Increased levels of TGF-β and IL-17 were found in StSt patients versus normal controls (P = 0.004 and P<0.0001 respectively). A positive correlation was observed between IL-8 and IL-17 in both groups of patients (P = 0.002 and P = 0.005 respectively). Decreased levels of TNF-α, IL-1β and IL-17 were found in hydroxyurea-treated patients. Additionally, significantly higher levels of IL-6 and IL-8 were observed in hydroxyurea-treated and untreated patients than in controls respectively (P = 0.04 and P = 0.01).
CONCLUSIONS:

Our findings indicate that pro-inflammatory cytokines, especially IL-8 and IL-17, could be used as related markers for assessing disease severity, and consequently therapeutic intervention.

KEYWORDS:

cytokines, pro-inflammatory, sickle cell anemia

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Miscellaneous

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