SERUM ANGIogenIN LEVEL IN PATIENTS WITH BETA THALASSEMA AND SICKLE CELL DISEASE

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INTRODUCTION

Angiogenin, a 14 kDa protein, is one of the most potent angiogenic factors and its secretion is enhanced by hypoxia. Anemia is a cause of tissue hypoxia and results in increased angiogenesis. There are very limited data on the role of angiogenic cytokines in the pathogenesis of sickle cell disease (SCD) and beta-Thalassemia.

OBJECTIVES

The aim of the study is to estimate the serum angiogenin level in children and adolescents with beta thalassemia and sickle cell disease, and its relation to possible risk factors related to increased angiogenesis in those patients.

METHODS

This case control study was conducted at the pediatric Hematology Clinic, Children's Hospital, Ain Shams University on:

- 32 β-Thalassemia major patients (age 14.2±3.8 years; 18 splenectomized)
- 20 β-thalassemia intermedia patients (age of 14.3±4.8 years; two splenectomized)
- 20 sickle cell disease (SCD) patients (mean age of 14.1±2.4 years; 4 splenectomized); subdivided into 8 with (HbSS) and 12 with sickle thalassemia (HbS/β-thalassemia).
- Thirty five age and sex matched healthy individuals served as controls.

After taking informed consent, all patients were subjected to clinical assessment, complete blood count, Hb electrophoresis, serum ferritin and serum angiogenin level was done by ELISA.

Exclusion criteria: Malignancy, Diabetes mellitus, hypertension, connective tissue diseases, ischemic heart disease, peripheral vascular diseases and pregnancy.

RESULTS

Comparison between sickle cell disease, thalassemia, and control groups as regards laboratory findings

<table>
<thead>
<tr>
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<th>SCD No=20</th>
<th>Thalasemia No=52</th>
<th>Controls No=35</th>
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<tbody>
<tr>
<td>Hb (g/dL)</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
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<tr>
<td></td>
<td>8.4±0.6</td>
<td>7.7±0.7</td>
<td>12.6±0.7</td>
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<tr>
<td>HCT (%)</td>
<td>24.6±2.7</td>
<td>24.9±3.3</td>
<td>38.0±1.5</td>
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<tr>
<td>WBC (x10³/cmm)</td>
<td>10.8±3.5</td>
<td>10.4±3.8</td>
<td>8.0±2.0</td>
</tr>
<tr>
<td>PLT (x10³/cmm)</td>
<td>Median (IQR)</td>
<td>284.5 (200-373)</td>
<td>450 (290-788)</td>
</tr>
<tr>
<td>Angiogenin (pg/ml)</td>
<td>250 (100-300)</td>
<td>180 (140-230)</td>
<td>89 (80-103)</td>
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^ ANOVA test, z = Kruskal-Wallis test

Comparison between different study groups as regards angiogenin level

Conclusions

- Higher angiogenin level was detected among patients with SCD especially in severe form of SCD.
- Regular blood transfusion and hydroxyurea therapy may negatively influence angiogenin level in patients with SCD, while early starting age of blood transfusion and chelation therapy may decrease angiogenin level in patients with β-thalassemia major.

CONCLUSIONS

REFERENCES