

Serum total sialic acid levels as an indicator for the humoral immune status in the chemotherapy-treated and untreated patients with acute lymphoblastic leukemia

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Abstract

Forty patients with acute lymphoblastic leukemia (ALL) were tested for the serum levels of total sialic acid (TSA) and the immunoglobulins IgG, IgM, and IgA before and after treatment with six different chemotherapy protocols. While significantly increased ($P < 0.001$) as compared to the healthy individuals group, serum TSA levels in ALL patients were significantly decreased ($P < 0.001$) in response to all chemotherapy protocols as compared to ALL untreated patients. A linear correlation relationship ($r^2 = 0.936$) was found between TSA levels and the period of chemotherapy treatment. Serum levels of IgG, IgM, and IgA showed significant increases ($P < 0.001$) in ALL patients. These levels were dropped significantly ($P < 0.001$) after treatment with each of the six chemotherapy treatment protocols, as compared to ALL untreated patients. A linear correlation relationship ($r^2 = 0.909$) was found between serum IgA levels and the period of chemotherapy treatment. The results of this study support the role of TSA as an indicator for the disease and the humoral immune status in the untreated ALL patients and suggest such a role for TSA in the chemotherapy treated ALL patients as well.

Introduction

Leukemia occupies the first place among the most common malignant diseases in Iraq. The number of leukemia patients doubled in the last decade of the twentieth century (1). Intensive efforts have been made to make progress both in diagnosis and treatment of the disease. Sialic

acid(SA), the terminal component of the carbohydrate chains located in the outermost position of plasma membranes, is of increasing interest in this regard. Elevated levels of serum total SA(TSA) were reported in the majority of patients with various malignant tumors (2), including leukemias

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