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Research Article

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MBL serum levels in Syrian children with acute lymphoblastic leukemia

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ABSTRACT

Mannan-binding lectin (MBL) is a key components of the lectin-pathway of complement-activation. only little is known on the influence of the it's role in cancer suppression and promotion . The lectin pathway of complement activation is an important part of innate immunity. The complement system provides immediate defense against infection and has proinflammatory effects. Our study aimed to assess the relationship between MBL serum levels before and after chemotherapy in Syrian children with acute lymphoblastic leukemia, aiming to find a relation, which serve in early forecast of patients response to chemotherapy, where the study has been done at Children University Hospital in Damascus between 2013-2014. This study included 37 children diagnosed with acute lymphoblastic leukemia (ALL). The levels of Mannose-Binding Lectin (MBL) were determined by Enzyme Linked Immuno Sorbent Assay (ELISA). The result was that serum levels of MBL was strongly reduced after chemotherapy in children with acute lymphoblastic leukemia, and a strong correlation between serum marker levels before and after chemotherapy was found.

Key words: Acute lymphoblastic leukemia, Mannose-binding lectin, MBL, innate immunity, complement system.

INTRODUCTION

Mannose-binding lectin (MBL) is a liver-synthesized innate immune molecule that plays an important role in the innate immune defense(1,2). MBL activates the lectin pathway of the complement system by recognizing of carbohydrates on microbial surfaces and activates the lectin pathway of complement.(3,4) The result is direct complement mediated lysis and opsonization of the microorganism followed by phagocytic killing**.** (5)

Due to single nucleotide polymorphisms, deficiencies of MBL, key component of the lectin pathway, are frequent (6,7). In young children, where adaptive immunity is still maturing, innate immunity may play a more important role in carcinogenesis or immunosurveillance(8,9). Despite this, nearly nothing is known on components of the lectin pathway in children with cancer. (10)

This study aimed to explore if serum concentrations of MBL differ between children with cancer and healthy age-matched controls

EXPERIMENTAL SECTION

This study included 37 children diagnosed with acute lymphoblastic leukemia (ALL). Their median age at diagnosis was 5.5 years. Their STD. Deviation was 2.5

The study has been done at Children University Hospital in Damascus between 2013-2014.

Before the start of chemotherapy a blood sample was taken . and after chemotherapy in the day 35 another blood sample was taken again .blood from those two samples was then centrifuged for 10 min at 3000 g, the resulting serum immediately frozen in sterile tubes at _801C.

MBL serum concentration was measured in serum taken at time of ALL diagnosis using a commercially available enzyme-linked immunosorbent assay kit according to the manufacturer's instructions.

Statistical Analysis

The statistical analysis was done by using the program SSPS(version 21, IBM SSPS).

The concentration of MBL levels was made by using Mean± STD. Deviation.

Spearman's rho test was used to compare MBL serum concentrations before and after chemotherapy.

Mann-Whitney U test was used to compare between mean concentrations and to know if the difference between the two groups was significant or it was a result of coincidence .

P-values <0.05 were considered significant.

RESULTS

The table 1 shows the comparison between MBL serum concentrations before and after chemotherapy in children with acute lymphcytic leukemia in this study.

We evaluate MBL serum concentrations in 37 children with acute lymphcytic leukemia their age between 1-14 years (Their median age at diagnosis was 5.5 years and their Std. Deviation was 2.5).

The result was : mean MBL serum concentrations at the time of diagnosis and before starting chemotherapy was **2209.75 ± 1298.5** ng/mL.

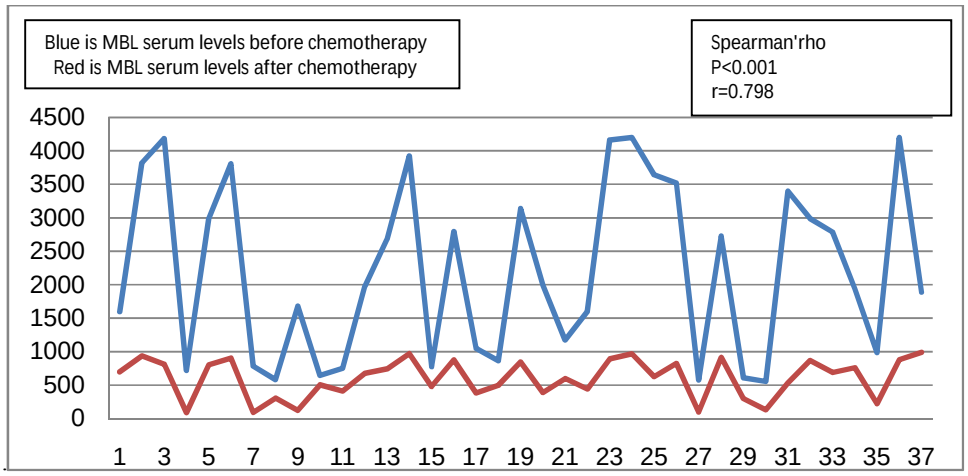
But after chemotherapy (day 35) mean MBL serum concentrations was **600.78 ± 289.96** ng/mL.

P value was considered significant P<0.0001.

Table (1): MBL serum concentrations before and after chemotherapy

MBL leaves (ng/ml)	**Mean ± Std. Deviation**	**N**	**Minimum**	**Maximum**
Before chemotherapy	2209.75 ± 1298.5	37	555	4200
after chemotherapy	600.78 ± 289.96	37	87	988

We found also a strong correlation between MBL serum concentrations before and after chemo therapy, we used Spearman's rho test and r =0.943.



DISCUSSION

This study is the first study in the world which evaluates MBL serum concentrations before and after chemotherapy in children with acute lymphocytic leukemia.

When this study evaluate the relationship between MBL serum concentrations before and after chemotherapy in children with acute lymphocytic leukemia The results showed significant reduction in MBL levels after chemotherapy .

CONCLUSION

These results confirm that we can use MBL levels as new predictor factor to chemotherapy response in children with acute lymphocytic leukemia.

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