SUMMARY

Interleukin-13 (IL-13) is a newly described cytokine thought to regulate the allergic inflammation present in atopic asthma, mainly through induction of immunoglobulin E. (IgE) isotype switching.

This study aimed at evaluating the role of IL-13 in the pathogenesis of bronchial asthma in children, studying the relation of IL-13 to disease state and other laboratory findings and studying the effect of steroid therapy on IL-13 expression.

In the present work we studied 55 children, 40 of them were suffering from acute exacerbation of bronchial asthma. Their ages ranged from 4 $\frac{2}{12}$- 14 years (mean age 7.5 ± 2.8 years). 22 patients (55%) were males and 18 patients (45%) were females, they were attendants at the pediatric outpatient clinic and emergency room of Benha University Hospital. The study included as well 15 healthy children as controls.

Patients and controls were subjected to detailed history taking, complete physical examination, complete blood count, urinalysis, stool analysis and total serum IgE level estimation. In addition chest radiography, peak expiratory flow rate (PEFR) measurement and allergy skin prick testing using common environmental allergens were also done for patients only.

Serum IL-13 was measured for all studied cases (patients and controls). For patients it is measured during acute exacerbation and one week after treatment by using Enzyme Linked Immunosorbent Assay

(ELISA) technique. Taking into consideration that the first sample was withdrawn before giving any medication.

20 asthmatic children were treated by ordinary bronchodilators + steroid (dexamethasone) while the other 20 patients were treated by bronchodilators alone (theophylline + salbutamol).

Based on the presence or absence of atopy, the asthmatic patients were divided into two groups:-

Group I: The atopic asthmatics (no. 27).

Group II: The non-atopic asthmatics (no. 13).

These 2 groups were further classified into **a** and **b** groups according to the treatment given.

Group Ia: (no.14) and **group IIa** (no.6) received treatment in the form of bronchodilators + steroid.

Group Ib: (no.13) and **group IIb** (no.7) received bronchodilators treatment alone.

The control group was assigned as **group III.**

Total serum IgE was higher in asthmatic patients compared to controls. The difference was statistically highly significant.

Total serum IgE was higher in atopic asthmatics compared to non-atopics. The difference was statistically highly significant.

The mean AEC was higher in asthmatic children compared to controls. The difference was statistically highly significant.

No statistically significant difference regarding the AEC was found between the atopic and non atopic asthmatics.

Serum IL-13 was increased in atopic asthmatics during acute attack compared to controls. The difference was statistically highly significant.

Serum IL-13 was increased in atopic asthmatics during acute attack compared to non-atopic group. The difference was statistically highly significant.

There was a positive correlation between mean serum IL-13 during acute attack and total serum IgE in all asthmatic patients, also the same relation was found with AEC.

There was an inverse relationship between IL-13 mean level during acute exacerbation and PEFR in all asthmatic patients.

There was a statistically significant relation between mean serum IL-13 during acute exacerbation and the number of positive skin prick tests in all asthmatic patients. It was observed that house dust and dust mite were the most frequent used allergens that induced positive skin test result with percentages of positivity of 37.5% and 32.5% respectively followed by mixed pollen, mixed mould, egg, feather, grass, wool, cat hair and milk in percentages of 30%,17.5%, 10%, 7.5%, 7.5%, 5%, 5%, 2.5% respectively.

A statistically significant relation was found between mean serum IL-13 level and the severity of asthmatic attack.

A highly significant difference was found between mean serum IL-13 during acute exacerbation and one week after treatment in all asthmatic patients(no.40) and also in both the atopic and non atopic groups separately.

The relationship of the remission level of IL-13 in the atopic group treated with BD + steroid (group Ia) was found to be statistically significant compared to the atopic asthmatics treated with BD alone (group Ib) where the mean ±SD after treatment in group Ia was (33.18± 3.08 pg/dL) while the mean ±SD in group Ib was (35.15± 2.67 pg/dL).

Regardless of the type of treatment given the relationship between mean serum IL-13 level during acute exacerbation and one week after treatment was found to be statistically highly significant in atopic and non atopic groups where there was a significant decline in all groups after treatment. But it was noticed that the decline of mean serum IL-13 in the atopic group was too much greater than that observed in the non-atopic group. Also the decline in group Ia is much greater than the decline in group Ib