

ORIGINAL ARTICLE

A Study on Correlation of Serum IGE Levels with Diagnosis and Management of Bronchial Asthma in Children

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ABSTRACT

Introduction: Traditional methods for identifying atopic individuals in allergy and respiratory illness studies include the responsiveness of allergy skin tests, serum IgE levels, and peripheral blood eosinophilia.

Objectives: The main objective of the study is to find the association between Raised Serum IgE levels and bronchial asthma in children.

Material and methods: This cross sectional study was conducted in Mayo Hospital Lahore during May 2021 till November 2021. The data was collected from 140 patients of age range 2 to 12 years. The doctor conducted a thorough examination of each patient, after which the required paperwork was completed.

Results: 140 patients provided the data for this study. Gender, a family history of asthma, breastfeeding exclusively for the first six months, or living in a residential setting were not shown to have a significant impact on the amount of total serum IgE. Higher total serum IgE levels in asthmatics and older age groups, cigarette smoke exposure, and higher eosinophil counts are correlated. Asthmatics had higher IgE levels.

Conclusion: It is concluded that there is a correlation between total serum IgE levels and a child's propensity for wheeze and early sensitivity to local aeroallergens. Allergy in children can be accurately predicted by measuring the serum total IgE level.

INTRODUCTION

Allergic illnesses such response aircraft route sickness, allergic rhinitis, atopic dermatitis, and food sensitivity have been increasing in pervasiveness over the last long term and in our surroundings, which might be due to increased natural openness to allergens or genetic tendency. To differentiate atopic participants in studies of sensitivity and respiratory illnesses, researchers have traditionally used skin test reactivity, serum IgE levels, or fringe blood eosinophilia [1]. As well accepted as their analytical merit against positive allergens is, the predictive value of absolute blood IgE levels is up for debate. In addition, a correlation between absolute serum IgE levels and explicit serum IgE levels has been revealed in this study [2].

Endeavors to order, or "aggregate", asthma alluded at first to a solitary component based characterization. There are two types of asthma: "outward" asthma, which often begins in childhood and is triggered by environmental allergens, and "inborn" asthma, which typically begins beyond the age of 30 [3]. Atopy, which is described as a genetic inability to produce IgE antibodies to nonpathogenic ecological antigens, claimed allergens, was included in this underlying clinical phenotyping. A few additional clinical aggregates, such as weight, have also been shown and merged into the overall picture, for example [4].

There were a few case reports showing that kids with intermittent bronchopneumonia had high IgE levels, and that adjustments of IgE levels might correspond with the seriousness of bronchopneumonia in youngsters [5]. In the interim, kids with bronchopneumonia, particularly those with extreme pneumonia, were many times joined by safe brokenness. The event and advancement of lower respiratory plot sicknesses can be impacted by brokenness of insusceptible framework, which might prompt the repeat of bronchopneumonia in youngsters [6].

A significant contributing element for the improvement of bronchial hyper-responsiveness in asthma is immunoglobulin (Ig) E. A touchiness reaction instigated by immunologic mechanisms intermediated by IgE antibodies happens in allergic asthma. IgE assumes a fundamental part in the initiation and scattering of the provocative downpour and thus the allergic reaction. A raised serum IgE levels is viewed as a strong indicator of the development of asthma [7].

Objectives: The main objective of the study is to find the association between Raised Serum IgE levels and bronchial asthma in children.

MATERIAL AND METHODS

This cross sectional study was conducted in Mayo Hospital Lahore during May 2021 till November 2021. There were 140 patients in this research, ranging in age from 2 to 12. The doctor conducted a thorough examination of each patient, and all relevant information was noted on the proforma. As a control group, participants who had no history of respiratory problems or other atopic symptoms were included. Samples of blood were taken using a vein-cutting technique, which was followed by proper analysis. The sera were isolated and kept at 70 degrees Celsius in aliquots until additional testing could be done. Immunoassayometric consecutive examination (Type 4) ELISA kits were used to measure the absolute concentration of IgE in the blood. Using streptavidin-coated wells, one rule of the technique is to immobilise the biotinylated monoclonal antagonist of IgE counteracting agent on the outer layer of the well. It is created when the serum containing the local antigen is enlarged and the counteracting agent antigen is incorporated into it. Addition of another immunizer, this one linked to another epitope, and a chemical given its name complete the procedure. Wells are coated with an antigen-biotinylated-neutralizer combination that serves as a catalyst for this process. When the substrate expands, a tone is created, and this tone may be measured using a small plate spectrophotometer. The conventional bend made using reference tests with a known antigen concentration does not lock in the convergence of the unknown.

MS Excel 2020 was used to assemble and organise the data. The statistical programme SPSS 19.0 was used to perform the statistical analysis.

RESULTS

140 patients provided the data for this study. Gender, a family history of asthma, selective breastfeeding for up to six months, or a private living environment were not shown to have a significant impact on total serum IgE levels. Asthma patients' IgE levels were shown to be significantly greater whether they were older, exposed to cigarette smoke, or had a higher eosinophil count.

Table 1: Demographic and biochemical profile of patients

	Patient's	p value
Age (years)	7.93 ± 1.93	0.91
Male/female	77/63	0.75
Height (cm)	121.03 ± 15.17	0.18
Weight (kg)	17.64 ± 5.01	0.268
Level of total serum IgE (IU/mL)	268.11 ± 149.97	<0.001***

Table 2: Elevated level of total serum IgE (>150 IU/mL)

Characteristics	Total serum IgE, >150 IU/mL (n = 50) (%)	χ^2	p value
2–7 years	24 (60.0)	5.87	0.014*
8–13 years	26 (86.7)		
Male	29 (78.4)	1.89	0.180
Female	21 (63.6)		
Raised	37 (82.2)	7.10	0.008**
Normal	13 (52.0)		

DISCUSSION

Due to the rise in the prevalence of allergic conditions, we need to find lab boundaries that may assist in the diagnosis of sensitivity in addition to conducting analyses based on clinical grounds in the traditional sense. Sensitivity has been better understood thanks to the disclosure of IgE levels in the blood [8]. As a result, analytical tools and studies into allergen extricates have advanced. They have also been normalised. Respiratory sensitivities and elevated IgE levels in the blood have both been linked to asthma [9]. Different examinations have shown higher IgE levels in asthmatic people than in non-asthmatic populaces. IgE assumes a fundamental part in the commencement and spread of the incendiary deluge and subsequently the allergic reaction [10]. Aftereffects of our review showed that serum IgE level was altogether higher in children having asthma reliable with the discoveries of a neighborhood study distributed in JPMA showed that in children complete IgE level is a decent indicator of sensitivity and all out IgE level is additionally major areas of strength for an of sensitivity in asthmatic children [11-14].

This investigation discovered that paying little heed to how IgE levels were defined in children, the occurrence of rehashed hospitalization inside the first 12months of the record hospitalization was fundamentally higher in those with higher IgE levels [15], showing that doctors ought to focus closer on IgE levels in children, and giving another methodology as to avoidance of rehashed hospitalization for this populace of children [16-18].

CONCLUSION

It is concluded that when a kid's IgE levels are high, it indicates that the youngster is more sensitive to local allergens than other children. Sensitivity may be determined by looking at the total IgE level in children's blood serum. Weaning, early container care, and exposure to uninvolved smoking, pollen, cold, and dogs all influence IgE levels. Asthma-prone children had elevated levels of blood eosinophilia and serum absolute IgE, signs of increased susceptibility.

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