International Journal of General Medicine
and Pharmacy (IJGMP)
ISSN(P): 2319-3999; ISSN(E): 2319-4006
Vol. 4, Issue 1, Jan 2015, 79-82

International Academy of Science,
Engineering and Technology
Connecting Researchers; Nurturing Innovations

CORRELATION OF SERUM IGE AND ABSOLUTE EOSNOPHIL COUNT LEVELS WITH THE SEVERITY OF CHILDHOOD ASTHMA

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ABSTARCT

The present study was examined the relation between serum IgE and absolute eosinophil count levels with the severity of childhood asthma in children aged 6-18 years, who are attended pediatric OPD in tertiary care, academic and research Institute hospitals of Bowring and Vanivilash. which are attached to Bangalore medical college and research institute, Bangalore. The Children were classified based on history and PEFR values. Serum IgE and AEC levels were evaluated and correlate with asthma severity. On analysis, both the parameters increased significantly ($p<0.01$) with the severity of asthma. As per the study serum IgE is a better marker rather than AEC and it was found to be statistically significant.

KEYWORDS: IgE (Immunoglobulin E), AEC (Absolute Eosinophil Count), Bronchial Asthma

INTRODUCTION

Bronchial asthma is a major public health concern affecting 100-150 million people worldwide and results in significant use of health care resources[1]. Asthma is a multi factorial and complex chronic disease characterized by variable airflow obstruction and airway hyperresponsiveness[2]. Asthma is a type 1 hypersensitivity reaction where combination of allergens with IgE antibodies produces the airway inflammation and asthmatic symptoms[3]. Asthmatic patients have an increased airway reactivity to a variety of stimuli such as allergens, irritants, exercise, cold air and viruses. Recent studies reported in the city of Bangalore show a prevalence of 29.5% in children below the age group of 18 years[4]. The increased risk for males in childhood is probably correlate to narrower and increased airways, tone and also possibly higher IgE level found in male children[5].

The allergic diseases including asthma and are characterized by an increase of serum immunoglobulin E (IgE) levels by the process is called as atopy[6]. Serum IgE level is age related factor with affect the peak stage between the age group 8-12 years. It is a trace protein and normally accounts the value is <0.001 % of total serum IgE. In clinical practice, peripheral blood eosinophil counts are widely used to demonstrate the allergic etiology of disease, to monitor its clinical spectrum and to address the choice of therapy[7].

The Global Initiative for Asthma (GINA) reported the proposed classification to rule out asthma severity. This tested scale is based on symptoms and, where possible, pulmonary function data that are present before inception of therapy. Asthma can be subdivided based on severity and into intermittent or persistent disease. A Persistent disease can be further divided into mild, moderate, or severe. In Indian context a very limited approach addressed by the pediatricians, clininician and researcher to evaluate the asthmatic patients with high sensitivity and specificity for the above diagnostic gap, in this denture the present study provides an information about the relation of AEC and serum IgE levels with the

severity of bronchial asthma among children.

METHODS

A hospital based prospective study was conducted at BMCRI. Total 100 children were considered for the study to correlate the serum IgE and absolute eosinophil count levels for the incumbent changes and severity of asthma. A confirmed children treated as inpatient and outpatient at Vanivilas Children and Bowring & Lady Curzon Hospital, which are attached to Bangalore Medical College and Research Institute, All patients meet their inclusion and exclusion criteria; Asthmatics who had taken bronchodilators within 24 hours prior to assessment, Parasitic infection, Immuno compromised children, Chronic respiratory diseases other than asthma were not included for the study. The PEFR was measured before and 20 minutes after giving nebulized salbutamol. An improvement of 25% or more in PEFR (by MINI WRIGHT'S peak flow meter) was taken as a criterion for the diagnosis of asthma. Severity of asthma was assessed for both history and pre-bronchodilator PEFR values in accordance with GINA guideline. It was made sure that they were not on bronchodilators before classifying them based on PEFR reversibility. The children were also dewormed with Tablet- Albendazole, 400mg and other allergic disorders like allergic rhinitis, conjunctivitis, atopic eczema were included for these study, we find the association between these factors with serum IgE and AEC levels. The serum IgE was evaluated by ELISA method and absolute eosinophil count level by using peripheral smear method. Collected data was analyzed by using SPSS 15.0 (2011) statistical software

RESULTS

Present study revealed that, the childhood asthma was commonly seen in males between the age groups 6-12 years. Most of the cases were found to be mild intermittent type (45%) followed by mild persistent type (37%), moderate persistent type (13%) and severe persistent type (5%) respectively. The IgE and AEC levels were noted to increase the significant level ($p<0.01$) with the severity of asthma. However, the serum IgE level is a good marker as when compared to AEC level.

Table 1: Severity Based on Gina Classification and PEFR and Mean Values of Serum IgE and AEC

GINA & PEFR	No of Patients (n=100)	%	Serum IgE	Serum AEC
Mild Intermittent	38	38.0	260.21±88.24	347±67.63
Mild Persistent	30	30.0	495.43±76.87	845±113.56
Moderate Persistent	22	22.0	624.77±65.53	1256±162.93
Severe Persistent	10	10.0	899.1±45.14	1850±227.77
Significance	-	-	F=228.628 P<0.001**	F=474.418 P<0.001**

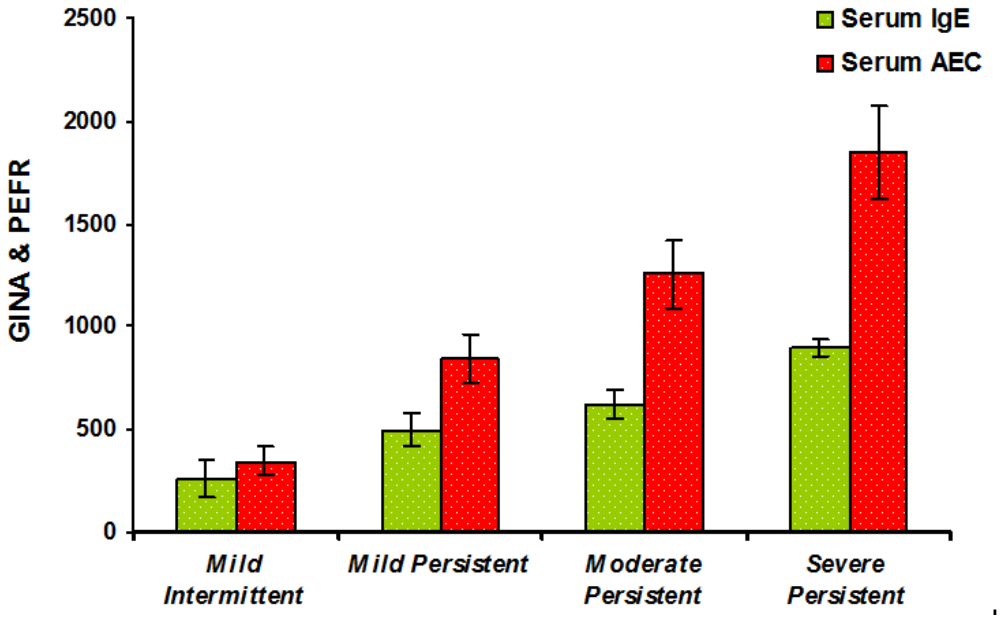

Figure 1: Severity Based on Gina Classification and PEFR and Mean Values of Serum IgE and AEC

Table 2: Comparison of IgE and AEC to Predict the Severity of Asthma

Tests	AUC	SE	95%CI
IgE	0.997	0.007	0.96-1.00
AEC	0.974	0.020	0.92-0.99

DISCUSSIONS

In the present study, among the 100 asthmatic children studied 48% had mild intermittent asthma followed by mild persistent asthma (27%), moderate. Males and young children had higher incidence of asthma. Occurrence of asthma was statistically similar between boys and girls in GINA category of asthma with higher incidence in males. Serum IgE levels were significantly increased with severity of asthma with p value of 0.001. AEC levels were increased significantly with severity of asthma with p value <0.001. Of the total 100 children, 95% had higher IgE values and 85% had eosinophilia. Serum IgE is a better marker than AEC in predicting the severity of asthma.

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