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Research Article

**AN ASSOCIATION BETWEEN ASTHMA AND
VITAMIN D: A PROSPECTIVE STUDY IN A VICTORIA
HOSPITAL BAHWALPUR**¹Dr.Maria Nazir, ² Dr. Erisha Komal, ³Dr.Aisha Saddiqui¹Quaid-e-Azam Medical College BWP²Quaid-e-Azam Medical College BWP³Khawaja Muhammad Safdar Medical College Sialkot**Article Received:** February 2020**Accepted:** March 2020**Published:** April 2020**Abstract:**

Introduction- Due prolonged inflammation in airways, one of the most common disease occur which is called asthma. Mast granulations modulated by Vitamin D and raised level of IgE are normally the common causes of asthma.

Materials & Methods- For this study 50 patients were selected from Chest Medicine unit in BVH which were suffering in asthma and at start their Vitamin D level, IgE level, blood eosinophil count and sputum was investigated and in all of them Sputum eosinophil count mean was very high in the 31(10.13 3.8). Likewise raised level of IgE was seen and also the eosinophils level in the serum.

Results- Most of the patients e.g. 14 who were found to be deficient in Vit I, 45.2% were suffering in severe asthma while 9 of them i.e. 29% were suffering in moderate asthma. Intermittent asthma was seen in 2 (6.5%) and mild in 6 (19.4%). 21 patients who were deficient in Vitamin D also had Atopy and 61.6 3.7 was the mean FEVI % in them.

Conclusion- It was concluded that early detection of deficiency of Vitamin D in patients can be very helpful in assessing the asthma, its effective treatment and it's the severity of asthma in early stages. With this hospitalization and cost can also be reduced

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INTRODUCTION:

Asthma is one of the most common and chronic disease nowadays which is related to the airways' hyper responsiveness occurred due to the inflammation in airways which prolonged. In this bronchial tube narrowed as a result of contraction in airways' muscles due to inflamed or swelled airways. The most common symptoms of asthma are chest tightness, cough in morning, dyspnea and wheezing etc. Some severe kind of asthma attack may threaten to life and lead to extensive treatment and prompt care and these kinds of severe attacks may resulted in loss of proper functioning of lungs. In past few decades at worldwide around 300 million people have been affected due to asthma but the main factors behind the asthma had not exactly known and the presentation of asthma in elders and children is not same. Due to the airways' interleukin in asthma patients mast cell granulations, raised IgE levels and eosinophils increased in them, and these all are modulated by receptors of Vit D e.g. macrophages, B cells, activated cells and monocytes and these all suppress the interleukins or anti-inflammatory cells. Vitamin D is very essential vitamin for human body as it balances the calcium in bones, increase immunity and also maintain homeostasis in human organs. Normal level of Vitamin D in human body is 30ng/ mL and if this level is less than this range then Vitamin D will be insufficient and a value less than 20ng/mL is called deficiency of Vitamin D.

In presence of sunshine the level of Vitamin D rises that's why people who lived in tropical countries have high level sufficiency of Vitamin D but nowadays in these countries around 30 to 50% of vitamin D prevalence is found too.

Materials and Methods

For this study 50 patients were selected which were suffering in asthma. A written consent paper was signed by all the patients for this study and the nature of study was explained in all patients. Patients who were suffering and were under treatment carbazapine or theophylline, omega 3 fatty acids, phenytoin, immunosuppressants, sulfasalazine, bisphosphonates and steroids from the past one month were excluded from this study. All the patients were subjected to thorough clinical and physical examination and all the demographic details were collected from all the patients. For obtaining sputum eosinophil count, from the saliva of all the patients stained using Leishman stain. To get the blood eosinophil count blood samples were collected.

At start their Vitamin D level, IgE level, blood eosinophil count and sputum were investigated and in all of them Sputum eosinophil count mean was very high in the 31(10.13 3.8). Likewise raised level of IgE was seen and also the eosinophils level in the serum. IgE was measured with ELISA and by centrifugation serum was separated. All the patients were advised not to use theophylline for 24 hours and bronchodilators for 6 hours.

All the data were collected and analyzed through SPSS software.

RESULTS:

In 50 selected patients 23 were females and 22 were males as in below figure. 32.6 years was the mean age of patients, but some patients were adults and some were children. The mean waist was 75 0.9cm, while hips measured 87.2 2.4 cm and mean BMI was 25.1 3.8. The mean systolic and diastolic pressure was 122.2 1.2 mmHg, 78.3 0.8mmHg respectively.

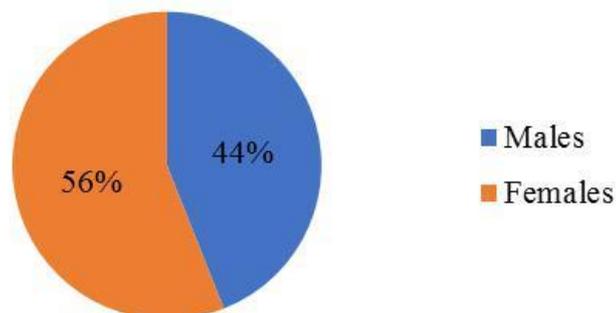


Fig. 1: Patients' gender wise distribution

Table 1: Demographic details of patients

Details	Mean
Age	32.6 1.9
BMI kg/m ²	25.1 3.8
Waist (cm)	75 0.9
Hips (cm)	87.2 2.4
Systolic BP (mm/Hg)	122.2 1.2
Diastolic BP (mm/Hg)	78.3 0.8

Most of the patients e.g. 14 who were found to be deficient in Vit I, 45.2% were suffering in severe asthma while 9 of them i.e. 29% were suffering in moderate asthma. Intermittent asthma was seen in 2 (6.5%) and mild in 6 (19.4%). 21 patients who were deficient in Vitamin D also had Atopy and 61.6 3.7 was the mean FEV1 % in them.

DISCUSSION:

Nowadays vitamin D deficiency in people is increasing day by day due to urbanization and modernization as people wanted to stay indoor

rather than outdoor. Due to modernity and technology children prefer to play video games and spend their time on social media due to which outdoor games as well as outdoors activities have been decreased too much extent which decreased the sunshine exposure in people and made people more vulnerable to Vitamin D deficiency.

The relation of Vitamin D with asthma is not clearly known but some studies have shown that people who suffered in Vitamin D deficiency have greater probability of suffering in asthma.

Table 2: Association of IgE count and eosinophil with Vitamin D

Investigations	Vit D levels	Patients (n)	Mean SD	p value
Sputum Eosinophil count (%)	Deficient	31 19	10.13 3.8 1.97 1.36	0.001
	Sufficient			
Serum eosinophil count	Deficient	31 19	625.4	0.001
	Sufficient			
Serum IgE (units/ml)	Deficient	31 19	798.3	0.001
	Sufficient			

Table 3: Association of Severity of asthma with vitamin D levels

Asthma	Patients with deficient Vit D (n=31)	Patients with sufficient Vit D (n=19)
Intermittent	2(6.5%)	6(31.6%)
Mild	6(19.4%)	9(47.4%)
Moderate	9(29%)	3(15.8%)
Severe	14(45.2%)	1(5.3%)
Atopy	21(67.7%)	5(26.3%)
FEV1 (mean %)	61.6 3.7	83.1 6.4

Some studies have shown that vitamin D increase the sensitivity of steroids in human body and regulate the anti-inflammatory response or interleukins through cytokine production and gene expression which directly affect the airways and due to its deficiency, the regulatory action switched off. This study have shown that female have more preponderance of it over males. The mean age was 32.6 years while systolic, diastolic, and waist ratio was in normal range.

Whereas there was a significant difference was found in eosinophil count of both blood and sputum, among sufficient and deficient patients.

In sufficient Vitamin D group, the IgE level was significantly lower as compared to deficient group and IgE could be good predictor for severity and allergy of asthma.

21 patients who were deficient in Vitamin D also had Atopy and 61.6 3.7 was the mean FEVI % in them. Most of the patients e.g. 14 who were found to be deficient in Vit I, 45.2% were suffering in severe asthma while 9 of them i.e. 29% were suffering in moderate asthma. Intermittent asthma was seen in 2 (6.5%) and mild in 6 (19.4%).

The limitation of this study is that in this study a small number of samples were taken due to which the relationship between asthma and Vitamin D is needed more consideration.

CONCLUSION:

In this study it was seen that there is inverse relation between severity of asthma and Vitamin D. So, it was concluded that early detection of deficiency of Vitamin D in patients can be very helpful in assessing the asthma, its effective treatment and it's the severity of asthma in early stages. With this hospitalization and cost can also be reduced.

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