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Research Article

**EFFECTIVENESS OF SUPPLEMENTATION OF VITAMIN-D IN
THE PATIENTS SUFFERING FROM BRONCHIAL ASTHMA**¹Dr Sadaf Atta, ²Dr Muhammad Javed Afzal Chaudhry, ¹Dr Pakiza Fatima¹Nishter Institute of Dentistry, Multan²CMH Lahore Medical and Dental College**Abstract:**

Objective: The deficiency of Vitamin-D has positive relationship with various complications of respiration system and bronchial asthma is one among those complications. The purpose of this research paper is to find out the effectiveness of supplementation of Vitamin-D in the patients suffering from the disease of bronchial asthma.

Methodology: This is a cross sectional research work conducted in Nishter Hospital, Multan from July 2019 to September of 2019 in which we divided the 100 patients into two groups; Group-A and Group-B. There were 50 patients in each group. We gave the placebo to the patients of Group-A and we gave the dose of Vitamin-B of 50000 units every day through oral way. We followed the patients of both groups regarding improvement at first, second and third month of treatment.

Results: We found no significant disparity in the patients of both groups regarding body mass index and asthma duration at the onset of this research work. The average pre-treatment level of Vitamin-D in the patients of Group-A was 14.230 ± 1.660 and of Group-B, the level was 15.3 ± 2.05 ng/dl. FEV-1 in the pre-treatment patients of Group-A was 64.350 ± 3.160 and of Group-B was 62.350 ± 2.160 . We did not find any significant disparity regarding FEV-1 in the patients of both groups at first month. Whereas at second month, it was much greater in the patients of Group-B. At third months, the final consequence was present where the after treatment FEV-1 in the patients of Group-A was 66.130 ± 2.750 and in the patients of Group-B, it was 75.150 ± 2.040 with P-value of 0.0010.

Conclusion: The supplementation of Vitamin-D improves the FEV-1 significantly at second months and these outcomes can be more significant if it is prolonged up to 90 days.

KEYWORDS: Respiration, Asthma, average, prolonged, placebo, onset, FEV-1, Vitamin-D.

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INTRODUCTION:

One of the major issue of health is asthma in the whole world affecting all age groups. In accordance with the findings of a survey, greater than twenty-five million populations was the victim of this problem in USA in the year of 2012. It is also one of the most important cause of burden on the health care facilities. There is a major role of the factors of environment on the incidence of asthma but recent research scholars gave more focus on the metabolic as well as nutritional factors, among them level of Vitamin-D is most important. Regardless of the developments in the field of medical, there is no absolute therapy to mitigate this issue. The level of Vitamin-D is a new agent which is under discussion for the treatment of the patients suffering from asthma. Vitamin-D can act in different ways. Lung epithelium contains the alpha hydroxylase which has the capability for the conversion of the calcidiol to the calcitriol and it is estimation that it can interfere in the process of synthesis of various cytokine.

These cytokines are the inflammation markers present in the patients suffering from asthma and they have the capability to enhance the mechanisms of inflammation. Vitamin-D has the capability to reduce the rate of infection because of cathelicidine. According to recent research works, reduced levels of Vitamin-D has association with the high rate of infections of respiratory tract, reduced function of lungs, decreased response of steroids and recurrent exacerbation. This research work carried out to determine the impact of the supplementation of Vitamin-D in the improvement of bronchial asthma.

METHODOLOGY:

This is a cross sectional research work performed in Nishter Hospital, Multan from July 2019 to September of 2019 on 100 patients suffering from bronchial asthma having age from 18 to 50 years. We divided the patients into two groups with fifty patients in each group. We performed the diagnosis of the bronchial asthma with the PFTs in addition with ratio of FEV-1/FVC as 0.70 and reversibility in FEV-1 of greater than 12.0% in the patients having the past history of

breath shortness, cough and tightness of chest. Patients present with the past history of the kidney disease, diseases of liver or female with pregnancy were not the part of this research work. We collected the information of demography as age of the patients, asthma duration, and level of Vitamin-D and body mass index. We asked the patients to choose single shield opaque envelope having label of A or B on it. We treated the patients of Group-A in accordance with the guidelines of GINA depending upon the disease severity with the placebo and the treatment of the patients of Group-B carried out with the anti-asthmatic medicines depending upon severity and dose of Vitamin-D of 50000 units every day through oral way. We followed the patients of both groups in terms of FEV-1 at first month, second month and third month where the final result was available. The assessment of the efficacy carried out in terms of FEV-1 improvement.

We selected fifty patients in each group. We compared the patients of both groups regarding their average age, body mass index, level of Vitamin-D and baseline FEV-1. We stratified the collected information to see the effectiveness in the patients of both groups about the effectiveness. We used the T test and Chi-square test for the comparison in both groups.

RESULTS:

Total 100 patients were the part of this research work and they were divided into two groups with equal amount of patients. There were 52.0% (n: 26) male patients and 48.0% (n: 24) female patients in Group-A and there were 58.0% (n: 29) male and 42.0% (n: 21) patients in Group-B as elaborated in Table-1. The average age of the patients in Group-A was 26.5 ± 5.5 years and the average age of patients in Group-B was 27.6 ± 6.5 years. We found no significant disparity in the patients of both groups about the body mass index and asthma duration. Average pre-treatment level of Vitamin-D in the patients of Group-A was 14.230 ± 1.660 and in the patients of Group-B, it was 15.3 ± 2.05 ng/dl. FEV-1 in the pre-treatment patients of Group-A was 64.350 ± 3.160 and in the patients of Group-B, it was 62.350 ± 2.160 as provided in Table-1.

Table-I: Comparison Between Variables Of Two Groups

Variable	Group-A	Group-B	P-Value
	Mean \pm SD	Mean \pm SD	
Age (years)	26.500 \pm 5.500	27.600 \pm 6.500	1.040
BMI (Kg)	24.750 \pm 3.200	26.700 \pm 6.400	0.960
Duration of asthma	12.400 \pm 3.500	11.660 \pm 3.050	0.660
Pre-treatment vitamin D level	14.230 \pm 1.660	15.300 \pm 2.050	0.230
Pre-treatment FEV 1	64.350 \pm 3.160	62.350 \pm 2.160	0.950

We found no significant disparity regarding the FEV-1 in the patients of both groups at first month. Whereas at second months, it was much high FEV-1 in the patients of Group-B. At third month, we saw the final result where the after treatment FEV-1 in the patients of Group-A was 66.130 ± 2.750 and in the patients of Group-B, it was 75.150 ± 2.040 with P-value of 0.0010 as illustrated in Table-2.

Table-II: Efficacy Comparison Between Two Groups

FEV-1	Group-A	Group-B	Significance
	Mean \pm SD	Mean \pm SD	
FEV 1 at Baseline	64.350 ± 3.160	62.350 ± 2.160	p= 0.950
FEV 1 at 1 Month	65.650 ± 3.050	66.280 ± 1.100	p= 0.320
FEV 1 at 2 Months	65.840 ± 2.950	71.440 ± 2.780	p= 0.040
FEV 1 at 3 Months	66.130 ± 2.750	75.150 ± 2.040	p= 0.0010

DISCUSSION:

There is very high burden of this disease of bronchial asthma on the health care facilities in the countries which are under development as Pakistan. There are many new developments of treatment in this field but still there are many patients which have no response towards the conventional methods of medication. This factor emphasizes on the importance of examining the other factors which can have association the disease. Those factors can have impact on the severity of asthma. The current data is in the favor of the opinion that the recent options for the treatment of asthma are not well-enough and there is requirement of new and modern options for the treatment of the disease.

In this current research work, there was an important disparity of FEV-1 in the patients of both groups at second month. After 90 days, after treatment FEV-1 in the patient of Group-A was 66.130 ± 2.750 and in the patients of Group-B, it was 75.150 ± 2.040 . This result is consistent with the findings of many other research work which discovered that there was an improvement in the symptoms of asthma with the supplementation of the Vitamin-D. Black and Scragg in their research work discovered a positive relationship in the improvement of symptoms of asthma with Vitamin-D3. Gargen in his research work conducted in 2013 reported that there are very less chances of the infections of the respiratory tract and other allergic states in the patients with the Vitamin-D supplementation.

Bergman in his research work stated the reduced prevalence of the infections of the respiratory tract in the patients present in the Vitamin-D augmented group. But the research work carried out by Iqbal also stated the improvement in the patients of asthma present with the inflammation but he was not able to find a positive association with this factor. Dupont in his research work added the leukotriene receptor blocker with the

supplementation of the Vitamin-D and Korn, Shah and Keith also saw a much improvement in the patients of asthma. These research works study their patients for only eight weeks and discovered much significant improvement but after three months we discovered high improvement in our patients.

CONCLUSION:

There was a significant improvement in FEV-1 after eight weeks of treatment and this outcome can be more significant if this treatment is prolonged up to ninety days.

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