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Lack of Vitamin D in Iraqi Children with Asthma

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ABSTRACT

Vitamins assumes as part of pathology genetic factor in asthma because of the intense immunomodulatory influence following to cell of the distinctive immunities. Additionally it decreases the danger of breathing virus-related to the diseases that were critical originators to breathing difficulties (asthma) intensifications. Additionally, it strengthens the mitigating activity of the steroids that were observed as the best asthma.controller. Finding the relationship between the level and the presence of Vitamin D lack and the asthma in Iraqi kids. 50 asthmatic kids where used and compared to 50 healthy kids (controls). Both are exposed to medication, examinations in addition to investigations in laboratory and clinically, estimation of calcium, alkaline phosphate in serum was also determined through the levels of 25-OH-D. An important association among the deficiency of vitamin D and seriousness of asthmatic kids, in addition to that it was found that there was insignificant correlation among exposure to sun and the level of 25-OH-D. The deficiency of Vitamin D considered being very common in Iraqi the asthmatic children .Low levels of vitamin D in serum usually connected to elevation in asthma seriousness.

Keyword:, Asthma, Iraqi Children, Vitamin D level.

INTRODUCTION

Difficulty in breathing (asthma) is a chronic disease cause inflammation in airway tracts. It described by variable and intermittent symptom of reversible obstruction and bronchospasm. Children have small airway tracts in comparison with adults, which makes asthma particularly genuine for them[1].

Asthma influences about 300 million individuals around the world; it considered as one of the well-known inflammation in children whereas around (90.0 %) of kids are analyzed specially to 6 years age children. Vitamin D is considered as a supplement and also as one of hormones types as well. Bioactivity of vitamin D was known in its directing the level of both phosphorus and calcium in the body in general and contains of minerals inside the bones.

The insufficiency of Vitamin D was highly recorded all over the world, Brehm[2] found that this lack was originate also in the areas with plentiful of sunshine. As a result of the lacking in vitamin D, threat for a large number of endless illnesses connected to westernization, vitamin D insufficiency is a critical general medical issue. The part of vitamin D trendy in obstructing the immunity of TH1 reactions was well examined, yet its impacts on TH2 reactions were much unpredictable and were not completely illustrated.

The receptors of Vitamin (VDRs) and the metabolism of chemicals due to vitamin D was distinguished via numerous different soft tissue beside bones, beside digestive system which recommending contribution in the digestive system and capacity of numerous cell sorts. In particular, the receptors usually communicated inside the cells of the immunity system, for example, dendritic cells and B cells as well were activated via T cells[3]. Dendritic cells likewise were communicated to the 1-á-hydroxylase, recommending the changeover of 25 (OH) D to the activity of metabolic from nearby and in this manner assumes a part in immunity signals. The impacts on adaptively of immune response, recently observed that a part of vitamin D in essential to response immunity towards microbe operators.

Recently, vitamin D takes an interest in Toll-like receptor signaling through controlling the creation of antimicrobial peptides and cathelicidin[4]. This impact of vitamin D is the possible clarification for the perceptions that daylight can treat tuberculosis and different diseases[5]. These impacts of vitamin D on the immunity responses makes it a basic controller to immunity system work, which lacking can leads to asthmatic disease and hypersensitivities via the sight of additional ecological incentives[6] . Subsequently, this review was intended to identify the rate of the vitamin inadequacy in addition to lack in Iraqi children that have asthma and to connect between asthma and the level of the vitamin D.

Methods and Subjects

This research was conducted in September, 2016 to January, 2017; all the cases that includes the controls and the cross sectionals were done in the Pediatric outpatient Chest Clinic in Hilla Teaching Hospital, Iraq.

It included 50 asthmatic children (Group 1) age range between 5-11 years old, and 50 age in addition to sex coordinated well (healthy) kids that were used as group 2 (for control). Cases were chosen by global initiative for asthma ''GINA guidelines".[7]

Group 1 (Asthmatic kids): included 50 children; 21 males and 29 females.

Group 2 (controls): included 50 healthy kids; 24 males and 26 females.

All the kids whose selected in current study were chosen after careful taken the consideration of their exposure to sun and the prescriptions of asthma, laboratory tests and clinical investigations specifically on alkaline phosphatase in serum and calcium as well in addition to the level of vitamin D in serum for both groups (controls and patients). Photometric utilization was achieved, the scope reference of calcium in serum (9-11mg/dl) while the high pH phosphatase is (8.6-10.3mg/dl). The 25(OH) D serum calculated using ELISA (Enzyme linked immunosorbant assay test(this test depends on comparing the presence of 25 (OH) D in samples with 25 (OH) vitamins tracers, in binding protein of vitamin D.

Table 1: Clinical characteristic of patients and controls

Clinical data		Patients (no=50)	Controls (no=50)
sex	Male	21 (42%)	24 (48%)
	Intermittent	3 (14.3%)	
	Mild	6 (28.6 %)	
	Moderate	4 (19.1%)	
	Severe	8 (38.1 %)	
	Female	29 (58%)	26 (52%)
	Intermittent	5 (17.2%)	
	Mild	8 (27.6%)	
	Moderate	7 (24.1%)	
	Severe	9 (31.1%)	
Age (years)		7 ± 4.1	7 ± 3.8

- Standard Range to 25-OH vitamin D:
- Standard range (20-100 ng/ml).
- Deficiency (< 20 ng/ml).
- Insufficiency between (21-29 ng/ml).

Statistical analysis

Data were entered to computer and analyzed using computer facility of SPSS-18 (Statistical Package for Social Science – version 18)"PASW Statistics".

The results were expressed as numbers, range and mean ± SEM (standard error of mean). Significance of difference was assessed using 2 sample t- test for two independent means or paired t-test for two dependent means. Correlation and regression was applied for the relationship between two quantitative variables, taking P d— 0.05 lowest limit of significance[8].

RESULTS

The statistical data was gathered for both groups (control and patients) as appeared in table (1). Twenty percent 20% of the patients group suffer from intermittent asthma, 24% moderate, 26% had severe, while 30% had mild persistent, 24% had moderate persistent and 26% had severe persistent asthma as indicated by Genetic Information Nondiscrimination Act (GINA rules)

Table 2: Level of serum in 25(OH) D, calcium and alkaline phosphatase in both control group and patient group

Compound	Means of 50 patients ±SD	Means of 50 Controls ±SD	P-value
25(OH) D (ng/ml)	2.05 ± 0.4	5.4 ± 1.8	0.001*
Alkaline phosphatase (mg/dl)	12.58 ± 1.75	9.87 ± 1.52	0.05*
Serum calcium (mg/dl)	13.43 ± 1.55	10.04 ± 0.94	0.05*

Note: *: significant

Table 3: Level of 25 (OH) D serum in four asthmatic grades

Grade of asthma	Serum25(OH) D (ng/ml) Mean ±SD	P value
Intermittent	3.4 ± 2.2	0.001*
Mild	3.03 ± 1.54	
Moderate	2.1 ± 0.92	
Severe	1.85 ± 1.27	

Note: *: significant.

It was noticed that the actual percent of vitamin D was lesser than its estimation in control, while both serum calcium and alkaline phosphatase were higher than control groups, as shown in Table 2.

There was a adverse relationship among serum level of vitamin D with estimations of asthmatic cases seriousness as in Table 3, however, no noticeable changes among lack of daylight

Table 4: Vitamin D levels according to sun light exposure

Variable		Patients no.	Serum25(OH) D (ng/ml)Mean ±SD	P value
Sun light exposure	Yes	31	2.058 ± 0.09	0.09 NS
	No	19	2.14 ± 0.14	

Note: NS: non-significant.

exposure which lead to insufficiency of vitamin D Table 4.

DISCUSSION

The current research observed the occurrence of vitamin D inadequacy regarding serum 25(OH) D among 50 Iraqi asthmatic kids in contrast with 50 normal children as control to correspond the relation between seriousness of asthma and vitamin D level.

The average of 25(OH) D in patients with asthma was lesser compared to control group. Different reviews study the status of vitamin D in children, Baroncelli[9] found in a study done in Egypt that around 37% of Egypt kids had insufficiency vitamin D, while Prentice[10] demonstrated that asthmatic children have (25.3±10.3) as an average level of serum 25(OH)D which is inadequate. Moreover Fuleihan[11] study the status of vitamin D in South and North Africa, Fuleihan expressed that incorrect concentration of vitamin D was because of constrained to sun because of social habits, delayed feeding depending on breast encouraging short of vitamin D feeding (as supplement), restricted open air movement, absence of government direction for vitamin D fortress of sustenance, diminished maternal administration of vitamin D during pregnancy and expanded weight of irresistible malady whereby its usage expanded. In current research, patients with higher levels of alkaline phosphatase serum compared with control group indicate the lack in vitamin D which lead to secondary hyperpara-thyroidism prompting the expand which eventually lead to osteoid tissue turnover and the raises in the level of alkaline phosphatase serum[12]

The present study exhibited a profoundly critical correlation between asthma and the insufficiency of vitamin D and the seriousness. The study exhibit also the asthma also related to the levels of serum 25(OH) D, the data was in concurrence with Brehm[2] moreover; Manbir Thomas[13], described that low concentration of the vitamin in serum could cause to more serious danger of torment extreme asthma attacks compared to high elevated concentrations.

CONCLUSION

1. The current research presumed that the inadequacy in vitamin D inadequacy is predominant in asthmatic kids live in Iraq.
2. The asthma in Iraqi children has a direct relationship with the concentration of vitamin D in serum, high concentration of it in control group with normal concentration of the vitamin in their serum received it during their pre-childhood and pre-adulthood.
3. The research also concluded that the low concentration of the vitamin in serum with lead to developed asthma seriousness in Iraqi children.
4. The children nutrition must be monitored and a periodic investigation has to be made specially to the concentration of vitamin D in their serum.

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