

Vitamin D Levels in OPD Patients in Teaching Hospital, Sukkur

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ABSTRACT

Background: It is well established that low levels of 25 (OH) Vitamin D (<30 ng/dl) are a common finding world over, affecting over a billion of the global population. Aches and pains in joints and muscles are frequently seen in patients with Vitamin D deficiency and patients are misdiagnosed with other diseases.

Objective: To determine the level of Vitamin D in patients attending outpatient department with aches and pains.

Study Design: Prospective and observational.

Place and Duration of Study: This study was conducted at Orthopedic department of Ghulam Muhammad Mahar Medical College Hospital (GMMMCH), Sukkur from February 2011 to March 2012.

Materials and Methods: All patients attending orthopaedic OPD of GMMMCH with aches and pains had their Vitamin D level done. They were divided in three diagnostic categories based on their serum 25 (OH) Vitamin D levels. Those with below 8 ng/dl were categorized to have severe deficiency, levels between 8-19ng/dl as moderate deficiency and levels of 20-29 ng/dl as mild deficiency.

Results: A total of 400 patients were studied. Minimum age was 15 years and maximum age was 75 years. Serum Vitamin D level was found low (<30 ng/dl) in (92%) patients. Their mean age was 44.3±18.3 years, with female to male ratio 4:1. Ten percent (10%) had severe, 60% moderate and 30% had mild deficiency.

Conclusion: We observed high proportion of patients with aches and pains having low levels of Vitamin D. The specific cause(s) for this observed high prevalence of low 25 (OH) vitamin levels are not clear and need to be investigated further upon.

Key Words: 25 (OH) Vitamin D, aches and pains, Vitamin D deficiency

INTRODUCTION

Vitamin D is one of the major players involved in calcium homeostasis in the human body. It has been shown that sufficient serum levels of vitamin D are needed for bone health and development. Vitamin D deficiency has been associated with the development of osteoporosis due to induction of secondary hyperparathyroidism, which mobilizes calcium out of bones increasing the risk of fall related fractures especially in the elderly¹. Other than decreased bone mineral density vitamin D deficiency can present as rickets and osteomalacia, in the pediatric and adult population respectively². It has also been associated with myopathy and may hold key while addressing to unexplained aches and pains presentations in the outpatients setting³.

Along with its proven beneficial role in bone mineralization, the vitamin has been described as having 'steroid like action' as it regulates the function of over two hundred genes⁴. Recent evidence has shown that vitamin D has a role as an immune modulator and tumor suppressor^{5,6,7}. It has been proposed that this vitamin may help in prevention of chronic diseases including type 1 diabetes mellitus, coronary heart disease, multiple sclerosis, rheumatoid arthritis and cognitive impairment⁸⁻¹⁴.

Low levels of vitamin D (<30 ng/dl) is a common finding world over^{15,16}, and varies depending on the population studied, adherence to food fortification policies, demographic features, geographic location and season. It has been estimated that over one billion people globally have low serum vitamin D levels¹⁷. Majority of individuals with vitamin D deficiency are asymptomatic –making it a difficult clinical entity to detect. According to the clinical practice guidelines on vitamin D issued by Endocrine Society¹⁸, vitamin D deficiency has been defined as serum 25(OH) vitamin D levels less than 20ng/dl whereas insufficiency constitutes serum 25(OH) vitamin D levels between 20ng/dl and 30ng/dl. Serum levels greater than 30 ng/dl are deemed sufficient for children and adults.

25(OH) vitamin D is used as the marker of vitamin D status in the body, rather than 1, 25(OH) vitamin D which represents the active metabolite of vitamin D¹⁹.

MATERIALS AND METHODS

This prospective and observational study was carried out from February 2011 to March 2012 in Orthopaedic OPD of Ghulam Muhammad Mahar teaching hospital Sukkur. Ghulam Muhammad Mahar Medical College & Hospital is a 500 bed tertiary care teaching hospital where patients seen at the outpatient services comprise of not only local people from Sukkur city but also those

referred from neighbouring areas like Panoakil, Rohri, Ranipur, Gambat, Khairpur, Shikarpur, etc. All subjects who presented at Orthopaedic OPD during the study period with unexplained aches and pains were included in the study. Subjects who had known reasons for pain were excluded from study. All subjects were formally explained in detail about the test.

Venous blood sample of 10ml were collected by expert phlebotomists. The samples were placed in ice boxes and were sent to reputable laboratory for 25(OH) vitamin D level. The normal range is 30-100 ng/dl, 20-29ng/dl was taken as mild deficiency, 8-19ng/dl as moderate and <8ng/dl as severe deficiency. All data was collected and analysed using statistical package for social sciences version 17 (SPSS v.17.0)

RESULTS

A total of 400 patients were included in the study. Out of 400; 320 (80%) were females and 80 (20%) were males. Minimum age of the patients was 15 years whereas maximum age limit was 75 years. Their mean age was 44.3 ± 18.3 years with female to male ratio 4:1 (Table 1). Majority of patients were in 30-70 years range.

Out of the 400 patients, the serum vitamin D levels were found low in 368 (92%) patients. The vitamin D level showed mild deficiency in 110 (30%) patients, moderate deficiency in 221 (60%) and severe deficiency in 37 (10%) patients (Table 2).

Table No.1: Frequency of 25(OH) vitamin D deficiency

Group	Number	%age	Male	Female
Total patients	400	100	80	320
25(OH) vitamin D Normal	32	08	10	22
25(OH) vitamin D deficient	368	92	110	258

Table No.2: Severity of 25(OH) vitamin D deficiency in 368 (92%) patients

Severity	Number	%age
Mild deficiency (20-29 ng/dl)	110	30%
Moderate deficiency (5-19 ng/dl)	221	60%
Severe deficiency (<5 ng/dl)	37	10%

DISCUSSION

As seen in our study, low levels of vitamin D (<30 ng/dl) were present in 92% of the patients. Similar findings have been reported from other parts of Pakistan. A 92% prevalence of vitamin D deficiency is reported by Zuberi et. al. in retrospectively studied asymptomatic patients presenting to the endocrinology outpatient service in a tertiary care centre in Karachi²⁰.

Baig et. al. also reported 92% prevalence of vitamin D deficiency in study conducted in Orthopaedic OPDs of different hospitals of Karachi²¹. A cross-sectional study done in Karachi, on employees in a tertiary care centre revealed 90% of the employees having low vitamin D levels¹⁷. Another study from Islamabad by Mufti et. al. showed prevalence of low vitamin D level in 89.3% of patients²². A study by Haque et. al. showed 86% low levels of vitamin D in urban well-fed population from Lahore²³. Similarly studies done in neighboring India report the prevalence of low levels of vitamin D to be ranging between 80-85% in groups of postmenopausal women and local hospital staff^{24,25}. Prevalence of vitamin D deficiency was found out to be 80% in healthy adults living in urban Tehran, Iran²⁶. A study from Saudi Arabia showed that 97% females and 99% males studied were low in vitamin D³.

Various causes for low vitamin D has been postulated and these include lack of sun exposure, drinking of unfortified milk, absence of dietary supplementation with vitamin D^{27,28,4}. Darker skin pigmentation has also been associated with decreased skin synthesis of vitamin D^{4,29} as have been habits of betel and areca nut chewing³⁰. In addition, poverty and cultural habits have been thought to a reason also³.

CONCLUSION

We observed a high proportion of patients presenting with aches and pains having low levels of vitamin D. The role of vitamin D in aches and pains need more detailed research, until proved otherwise it can be presumed that it has a definite role in aches and pains. There is need for measures to increase the awareness of health care professional and public about the importance of vitamin D for health, specifically need for exposure to sunlight and adequate dietary intake of vitamin D and fortification of selected food items.

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