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Research Article

VITAMIN D STATUS IN YOUNG FEMALES WITH NON-SPECIFIC LOW BACK PAIN

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A B S T R A C T

Introduction: Vitamin D deficiency leads to numerous skeletal disorders including rickets in children and Osteomalcia in adults. Extra-skeletal effects have been linked to development of osteoporosis, cardio-vascular disorders, hypertension, diabetes, autoimmune disorders and cancers, so it is of paramount importance to diagnose Vitamin D deficiency at earliest to prevent development of various disorders at a later age. We evaluated the prevalence of Vitamin D deficiency in younger females who presented with low back pain and its causal association with duration of low back pain.

Methods and Material: A total of 394 patients between the agesof 18- 30 years who presented with back pain were enrolled. Patient with known cause of back pain like lysthesis, sciatica, prolapse intervertebral disc were excluded. 237 patients with non-specific low back pain were finally recruited and subjected to 25 OH Vit D level measurement by chemiluminescence immunoassay method. Patients were further divided into two categories, Group 1 patients having low back pain lasting less than 4 weeks and Group 2 patients having low back pain lasting more than four weeks.

Results: Out of 237 patients,only 26.5%(n=63) patients were found to be having optimal level of Vitamin D, however there was no association between low back pain and Vitamin D deficiency and neither with the duration of low back pain.

Conclusion: We observed young females with high prevalence of Vitamin D deficiency, it further adds up to the existing data and warrants vital steps like awareness program to educate youth regarding Vitamin D deficiency along with implementing effective prevention strategies like food fortification and supplementation.

INTRODUCTION

Vitamin D plays an integral role in calcium homeostasis and governs skeletal development as prolong Vitamin D deficiency can lead to skeletal disorders like rickets in children and Osteomalcia in adults. Vitamin D deficiency has also been linked to development of osteoporosis, cardio-vascular disorders, hypertension, diabetes, autoimmune disorders and cancers(1) at later age, so it is of paramount importance to diagnose Vitamin D deficiency at an early stage to prevent development of various disorders at later age.

Low back pain is one of the commonest musculoskeletal problem as it is estimated that about 80% of individual experiences low back pain at some point of time and its prevalence is increasing steadily in younger age group (2,3,4). In younger age group back pain problems are considered as red flag(5) and treated seriously however majority of the cases have non-specific back pain as no primary cause is observed after getting investigated. We chose a cohort of young females presenting with back pain to our out-door department, majority of them have nonspecific back pain. We tried to find out whether Vitamin D deficiency is present or not and if it is present, how it is distributed in patients presenting with back pain of duration more or less than four weeks.

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METHODS AND MATERIAL

This study was conducted in the Department of Orthopedic Surgery and Department of Obstetrics and Gynecology.A total of 394 female patients between ages 18- 30 years who presented with back painwere enrolled. Informed consent was taken from all patients. All patients were given a questionnaire pertaining to their demographic details including age, weight, height, body mass index, life style and daily activities including use of alcohol, smoking, daily exercise, personnel and family history including history of menarche, marital status, emotional and sleep disturbance, presence of any familial history of low back pain, location of pain and duration of symptoms. Patients with known cause of back pain like lysthesis, sciatica, and prolapse intervertebral disc were

excluded. All patients were subjected to anteroposterior view of affected spine. 237 patients were finally recruited in our study after satisfying our inclusion criteria's. All the patients were evaluated for 25 OH Vit D levels by chemiluminescence immunoassay method. Patients were classified as having severe Vitamin D deficiency with 25 (OH) Vit D level less than 10 ng/ml, Vitamin D deficiency with 25 (OH) Vit D level between than 10-20 ng/ml, Vitamin D insufficiency with 25 (OH) Vit D level between than 21-30 ng/ml and above 30 ng/ml as optimal. Patients were further divided into two categories, Group 1 patients having low back pain lasting less than 4 weeks while in Group 2 patients having low back pain lasting more than four weeks.

RESULTS

Out of 237 patients with mean age 25.3years, only 26.5%(n=63) patients were found to be having optimal level of Vitamin Dwhile 9.2%(n=22) patients had severe vitamin D deficiency, 39.24% (n=93) patients had Vitamin D deficiency while rest 16.45% (n=39) patients had insufficient level of Vitamin D (Fig 1).

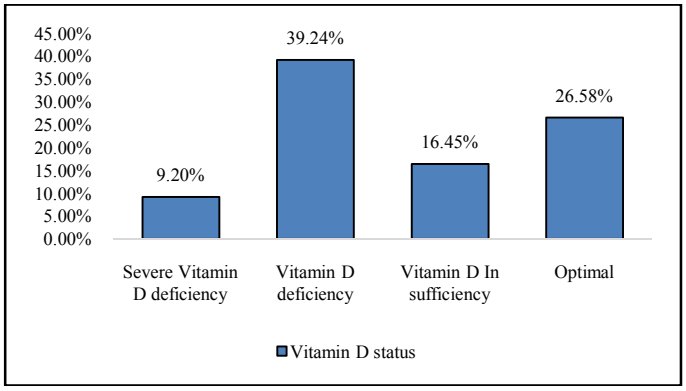

Figure 1

We did not find any significant difference in Vitamin D levels in patients having low back pain less than 4 weeks in comparison to patients with low back pain persisting for more than four weeks (Table 1).

Table 1

Total n=237	Range(ng/ml)	Mean±SD		P <value
		Gr=1	Gr=2	
n=22	<10	(n=9) 7.46±1.49	(n=13) 7.92±0.85	<0.367
n=93	10-20	(n=54) 15.95±4.28	(n=41) 16.19±3.62	<0.773
n=39	<30	(n=25) 24.28±4.41	(n=14) 24.28±3.21	<0.652
n=63	>30	(n=34) 38.51±6.29	(n=29) 37.32±6.45	<0.462

DISCUSSION

We selected a cohort of young females with age group between 18 years to 30 years presented to our OPD with chief complaints of low back pain.We are not able to find out any association between low back pain and Vitamin D deficiency and neither with the duration of low back pain. We selected this cohort as by diagnosing and treating Vitamin D deficiency in younger population will result in preventing development of chronic diseases like cardiovascular diseases, diabetes, cancer, infection and osteoporosis at a later age.

Recent reports have reported prevalence of Vitamin D deficiency from 70-100 % (6), while considering female populations, majority of studies have focused on pregnant females and uniformly reported high prevalence, Pahuja *et al* (7) reported prevalence of 90% among pregnant females, Similar results were reported by Sachan *et al* (8) showed prevalence of vitamin D deficiency among pregnant females to be 84.%. Diwakar *et al* (9) in his study found 97% of pregnant women and 86% of non-pregnant women to be Vitamin D deficient. In our study we took only non-pregnant females with age group between 18 to 30 years, found prevalence of 74% Vitamin D deficiency. Sahu *et al* (10) found 88.6% prevalence of vitamin D deficiency (25OHD < 50 nmol/l) in rural adolescent girls while Marwaha *et al* (11) reported 90% prevalence in urbanadolescent's population.

Vitamin D is a sunshine hormone (12), thoughIndia is tropical country with sunny climate in most of the areas still Vitamin D deficiency is widely prevalent in all age groups. Inadequate sun exposure and poor Vitamin D diet are main factors considered for vitamin D deficiency. To synthesize adequate vitamin D from sun exposure, greater than 45 minutes exposure of direct sunlight ultra violet rays with wavelength 290-310 nm (6), is required. Due to sedentary lifestyle and various religious cultural practice, this much of sun exposure is rarely taken by the individuals. Other steps to prevent and treat Vitamin D deficiency would be food fortification and supplementation. It can be done by implementing effective government policies regarding awareness of Vitamin D deficiency programs, food fortification and supplementation.

CONCLUSION

We observed young females with high prevalence of Vitamin D deficiency, it further adds up to the existing data and warrants vital steps like awareness program to educate youth regarding Vitamin D deficiency along with implementing effective prevention strategies like food fortification and supplementation.

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