

To Assess Vitamin D Levels in Patients Diagnosed as Fibromyalgia in Patients Attending Dow University Hospital

1. Akhtar Ali Baloch 2. Munir Hussain Siddiqui 3. Babar Bashir 4. Uzma Majid 5. Afzal Qasim 6. Aurangzaib 7. Jawad-us-Salam 8. Muhammad Masroor 9. Qamar un Nisa

1. Assoc. Prof. of Medicine, DIMC, DUHS, Karachi 2, 3 & 4. Asstt. Profs. of Medicine, DIMC, DUHS, Karachi 5. Asstt. Prof. of Cardiology, Ojha Institute of Chest Diseases, DUHS, Karachi 6. Assoc. Prof. of Medicine, DUHS, Karachi 7. Asstt. Prof. of Neurology, DIMC, DUHS, Karachi 8. Prof. of Medicine, DUHS, Karachi 9. Asstt. Prof. of Neurology, DIMC, DUHS, Karachi

ABSTRACT

Objective: To assess the Vitamin D levels in patients diagnosed as fibromyalgia in patients attending Dow University Hospital Karachi.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at Dow University Hospital, Karachi from 21st January 2013 to 30th December 2013.

Materials and Methods: 83 patients were selected from the outpatient department of medicine OPD. **Results:** among 83 patients who were enrolled in the study 60 (72.71%) were male and 23 were (27.71%) were females ages were between 7 and 70 years. the vitamin D levels ranged between 2 and 58 with mean vitamin D level found to be 12.58 which is counted as moderate deficiency.

Results: 83 patients with fibromyalgia were included in study. Among them who were enrolled in the study 60 (72.28%) were male and 23 (27.71%) were females. The subjects included in study age between 17 and 70 with mean age of 39.69 years. The fibromyalgia was gauged on clinical assessment. Vitamin D levels were classified. Vitamin D levels ranged between 2 and 58 with mean 12.58. As objective of study to assess vit D levels in diagnosed fibromyalgia patients in our population it was found that relationship between two parameters in significant.

Conclusion: Vitamin D deficiency is frequently diagnosed in patients with fibromyalgia and nonspecific musculoskeletal pain in study population.

Key Words: Vitamin D deficiency, fibromyalgia, musculoskeletal pain.

INTRODUCTION

Fibromyalgia (FM) is a common chronic widespread pain disorder that has a worldwide prevalence of between 0.5% and 5%.¹ In 1990 American college of rheumatology (ARC) gave criteria that helped to increase the recognition and classification of the disorder as: At least 3 months of widespread pain defined as axial pain and pain above and below the waist and on the right and left sides of the body. Pain in 11 of 18 tender point sites determined by digital palpation.^{2,5} In 2010, the ACR accepted a clinical case definition to diagnose the disorder: 1. Widespread pain index (WPI) ≥ 7 and symptom severity (SS) scale score ≥ 5 or WPI 3 - 6 and SS scale score ≥ 9 . 2. Symptoms have been present at a similar level for at least 3 months.³ The patient does not have a disorder that would otherwise explain the pain.^{3,4} Comparing to 1990 criteria this criteria did not include a physical or tender point examination, but required that other disorders that would otherwise explain the pain are ruled out. The proposed criteria taking into account other fibromyalgia Symptoms besides pain and are intended to also assess fibromyalgia symptom-related severity. Vitamin D

deficiency is a common problem in Middle Eastern as well as Bangladeshi, Indian, and Pakistani populations.⁵ Vitamin D deficiency is defined by most experts as 25-Hydroxy Vitamin D level less than 20ng/ml (50nmol/ml).^{7,8} With the use of such definitions, it has been estimated that one billion people worldwide have Vitamin D deficiency or insufficiency.⁹ Fibromyalgia as well as non-specific muscle diseases is associated with vitamin D deficiency.⁶ Studies of fibromyalgia and persistent nonspecific musculoskeletal pain have found that a low level of vitamin D is common.¹⁰ As Vitamin D plays an important role in nonspecific musculoskeletal pain and fibromyalgia, and it has also been described in previous studies that fibromyalgia patients were found to have vitamin D deficiency.^{10,11}

MATERIALS AND METHODS

This is a descriptive study data was obtained from medicine OPD at Dow University of Health Sciences, Karachi from the period of January 1st 2013 to 30th June 2013. Informed consent was taken from the patients. Pretested self-administrated questionnaire was used to collect data. 83 patients diagnosed with fibromyalgia were sent to the laboratory to check vitamin d levels.

After aseptic measures 5ml blood was drawn. The serum 25-ohd concentrations was measured by electrochemiluminescence method. The reference range for 25-ohd was = or > 30 ng/ml as normal, vitamin D deficiency was defined as serum 25-ohd levels < 20 ng/ml while a level between 20.1-20.9 ng/ml was defined as insufficiency. The data was entered in SPSS and analyzed using SPSS version 19, p value at 95% confidence interval was calculated with <0.05 taken as significant. Female patients diagnosed as fibromyalgia according to ARC criteria with normal CBC, ESR, serum calcium, phosphate and alkaline phosphates were included in the study. Females with history of systemic illnesses, history of surgery and hospitalization in last 1 year. Females on hormone replacement therapy, glucocorticoids, bisphosphonates and other drugs affecting bone mineralization were excluded from the study.

RESULTS

83 patients with fibromyalgia were included in study. Among them who were enrolled in the study 60 (72.28%) were male and 23 (27.71%) were females. The subjects included in study age between 17 and 70 with mean age of 39.69 years (table 1). The fibromyalgia was gauged on clinical assessment. Vitamin D levels were classified (table 2). Vitamin D levels ranged between 2 and 58 with mean 12.58 (table 3). As objective of study to assess vit D levels in diagnosed fibromyalgia patients in our population it was found that relationship between two parameters is significant.

Table No. 1: Mean age of patients

Mean	Standard Deviation	95% Confidence Interval	
		Lower	Upper
39.69	14.42	35.54	42.84

Table No. 2: Vitamin D levels classification

Normal vitamin D level	>30
Mild vitamin D deficiency	15 to 20
Moderate vitamin D deficiency levels	11 to 15
Severe vitamin D deficiency level	<10
Vitamin D toxicity	>150

Table No.3: Mean Vitamin D level

Mean	Standard Deviation	95 % Confidence Interval	
		Lower	Upper
12.58	11.58	10.19	14.97

DISCUSSION

Fibromyalgia is a complex problem which has revealed symptoms of low levels of Vitamin D along with anxiety and depression¹². Vitamin D controls over 200 genes and it plays a pivotal role for development and growth of the body. In Pakistan the prevalence of Vitamin D deficiency is on account of poor diet,

cultural practices and poverty. Lack of exposure to sunlight is the major cause of Vitamin D. Every food does not naturally contain Vitamin D and the one that does contain is not adequate to meet the requirements of adults and children alike^{13,14}. Our observations revealed that off 83 patients, 63 (75.9%) had vitamin D deficiency (fibromyalgia) and 20 (24.9%) had vitamin D insufficiency. The patients exhibiting vitamin D deficiency were mostly less than 40 years of age. One study does reveal that younger patients are more vulnerable to Vitamin D deficiency¹⁵. In our study the mean age of patients with decreased levels of vitamin D was 39.69 which is consistent with the findings of another local study¹⁶. Similar results were seen in a study conducted in India which showed prevalence of vitamin deficiency to be of 70%-100% with no difference of prevalence of in rural or urban population²⁴.

Vitamin D levels below normal are found to be linked with nonspecific musculoskeletal pain (R) the results of which are similar to our study. Plotnikoff GA et al suggests that physicians should disregard lab reports lower limit range and that the serum level of vitamin D should be at least 20ng/ml¹⁷. Holick et al suggested that vitamin D deficiency can be treated by administering the patient to an oral dose of Vitamin D of 50,000 IU once a week for 56 days¹⁸. One study conducted revealed that despite abundant sunlight all the year round, subjects with serum 25 hydroxy vitamin D levels below 10 ng/ml revealed normal serum calcium concentration¹⁹.

Vitamin D deficiency has also been found to be related to cardiovascular diseases²⁰ which may serve as evidence towards linking of hypo-vitaminosis to fibromyalgia. More over vitamin D deficiency has been linked with inflammatory reactions, increased stores of calcium in coronary artery, impaired function of endothelium and increased vascular stiffness.²²

The use of vitamin D and calcium supplementation has been found to reduce the risks of fractures in appropriately given doses. However, benefit or harm of vitamin D supplementation for prevention of cancer has not been clarified²¹. In a study that was conducted to see the effects of vitamin D supplementation on diffuse musculoskeletal pain found vitamin D supplementation to be associated with decreased pain scores and improved quality of life.²³

Our study showed that large number of patients was in the hypovitaminosis range.

Patients revealing myositis, fibromyalgia and chronic fatigue should be considered for Vitamin D deficiency and osteomalacia. Health professionals should be well educated and trained, whereas awareness should be created amongst the masses highlighting the severity of the matter. Increased skin pigmentation, ageing and obesity are all associated with vitamin D levels.

There is a need for a prospective long term study to provide stronger evidence regarding the true prevalence and association of vitamin D deficiency in patients with fibromyalgia.²⁴

CONCLUSION

Vitamin D deficiency is frequently diagnosed in patients with fibromyalgia and nonspecific musculoskeletal pain in our population hence health professionals should be well educated and trained, whereas awareness should be created amongst the masses highlighting the severity of the matter.

REFERENCES

- Choy, et al. Available from A patient survey of the impact of fibromyalgia and the journey to diagnosis. *BMC Health Services Res* 2010;10:102.
- Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, et al. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia: report of the multicenter criteria committee. *Arthritis Rheum* 1990; 33:160-72.
- The American College of rheumatology 2010 criteria for clinical classification of fibromyalgia http://www.rheumatology.org/Practice/Clinical/Classification/Fibromyalgia/2010_Fibromyalgia_Diagnostic_Criteria_-_Excerpt/
- American College of Rheumatology. *Arthritis Care & Research*. 2010;62(5):600–610.
- Hussein FS. Efficacy of daily and monthly high-dose calciferol in vitamin D-deficient nulliparous and lactating women, *Am J Clin Nutr* 2007;85(6): 1565-1571.
- Humeira B. Myalgias or non-specific muscle pain in Arab or Indo-Pakistani patients may indicate vitamin D deficiency, *Clin Rheumatol* 2009;28: 971–973.
- Holick MF. High prevalence of vitamin D inadequacy and implications for health. *Mayo Clin Proc* 2006;81:353-73.
- HA, Giovannucci E, et al. Estimation of optimal serum concentrations of 25-hydroxyvitamin D for multiple health outcomes. *Am J Clin Nutr* 2006; 84:18-28.
- Holick MF. Vitamin D deficiency. *NEJM* 2007; 357:266-81.
- Bhatty SA, Shaikh NA, Irfan M, Kashif SM, Vaswani AS, Sumbhai A. *Gunpat. JPMA* 2010; 60:949.
- AlAllaf AW, Mole PA, Paterson CR, Pullar T. Bone health in patients with fibromyalgia. *Rheumatol* 2003;42:1202-6.
- Armstrong DJ, Meenagh GK, Bickle I, Lee AS, Curran ES, Finch MB. Vitamin D deficiency is associated with anxiety and depression in fibromyalgia. *Clin Rheumatol* 2007;26: 551-4.
- Holick MF, Chen TC. Vitamin D deficiency: a worldwide problem with health consequences. *Am J Clin Nutr* 2008; 87: 1080-6.
- Iqbal R, Khan AH. Possible causes of vitamin D deficiency (VDD) in Pakistani population residing in Pakistan. *J Pak Med Assoc* 2010;60:1-2.
- Zuberi LM, Haque N, Jabbar A, Habib A. Vitamin D Deficiency in Ambulatory patients. *JPMA* 2008; 58: 482-4.
- Bhatty SA, Shaikh NA, Irfan M, Kashif SM, Vaswani AS, Sumbhai A. *Gunpat. Vitamin D deficiency in Fibromyalgia. JPMA* 2010;60:949.
- Plotnikoff GA, Quigley JM. Prevalence of severe hypovitaminosis D in patients with persistent, nonspecific musculoskeletal pain. *Mayo Clin Proc* 2003;78:1463-70.
- Holick MF. Sunlight and vitamin D for bone health and prevention of autoimmune diseases, cancers, and cardiovascular disease. *Am J Clin Nutr* 2004; 80:1678-88.
- Sedran SYL. Low 25-hydroxyvitamin D and normal serum calcium concentrations in Saudi Arabia: Riyadh region. *Ann Nutr Metab* 1984;28:181-5.
- McGreevy C, Williams D. New Insights About Vitamin D and Cardiovascular Disease A Narrative Review. *Ann Intern Med* 2011;155:820-6.
- Chung M, Lee J, Terasawa T, Lau J, Trikalinos TA. Vitamin D With or Without Calcium Supplementation for Prevention of Cancer and Fractures: An Updated Meta-analysis for the U.S. Preventive Services Task. *Ann Intern Med* 2011; 155:827-38.
- GR, Gupta A. Vitamin D deficiency in India: prevalence, causalities and interventions. *Nutrients* 2014;6(2):729-75.
- Kunadian V, Ford GA, Bawamia B, Vitamin D deficiency and coronary artery disease: A review of the evidence. *Am Heart J* 2014;167(3):283-291.
- Le Goaziou MF, Kellou N, Flori M, Vitamin D supplementation for diffuse musculoskeletal pain: Results of a before-and-after study. *Eur J Gen Pract* 2014;20(1):3-9.

Address for Corresponding Author:

Dr. Munir Hussain Siddiqui

B 59, Block N, North Nazimabad Karachi

Cell No. 03452160441