ejpmr, 2018,5(9), 273-276

SJIF Impact Factor 4.897

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

EFFECT OF SUBLINGUAL VITAMIN D3 ON SERUM VITAMIND3 LEVEL IN HYPERTENSIVE PATIENTS

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Article Received on 12/07/2018 **Article Revised on 01/08/2018** **Article Accepted on 22/08/2018**

ABSTRACT

The present study was aimed to study effect of Sublingual Vitamin D3 on Serum Vitamin D3 level in Hypertensive patients. This was an interventional study conducted in collaboration with Department of Medicine of Pravara Rural Hospital, Loni. All the hypertensive of age 18-60years and either gender, willing to participate in the study were included. Patients on thiazide diuretics and on chronic medications other than antihypertensives were excluded from the study. All volunteers were given sublingual vitamin D(60,000IU) in six doses over 3 months. The subject's serum Vitamin D levels were estimated before and after treatment of sublingual vitamin D3 60,000IU tablets. 55 volunteers were included in the study. There was statistically significant difference in serum vitamin D3 level before (average 17.64, SD±7.20) and after (average 37.85, SD ±7.32) after treatment with Sublingual Vitamin D3(Paired t test, *P value is < 0.0001). Vitamin D deficiency is common among hypertensive patients. Sublingual Vitamin D3 tablets in 6 doses of 60,000IU have definitive role in treatment of Vitamin D deficiency.

KEYWORDS: Sublingual Vitamin D3.

INTRODUCTION

Vitamin D deficiency has recently emerged as a global and public health problem affecting almost 50% of the population Worldwide, between 44% and 95% of persons have been found to be vitamin D deficient with reduced skin synthesis attributable to aging and environmental factors being the most common cause in Saudi Arabia, Egypt, India, Jordan, Lebanon, and Tunisia[1] both genders and all age groups, even in sunny countries.[2] Skin pigment is probably a major factor in the very low 25 (OH)D levels seen in the Indian subcontinent, despite abundant sunshine.[3,4,5] Epidemiologic studies have also linked vitamin D deficiency with increased risk of major adverse CV events[6] it plays an integral physiological role in non-skeletal tissues and have been implicated in a wide range of chronic pathology, including skin and autoimmune disease, diabetes mellitus, hypertension, cancer.[7] Interest in the role of vitamin D in CVD arose from evidence of adverse cardiovascular effects of vitamin D deficiency in animal models[8], and epidemiological studies reporting the increase in cardiovascular events in winter and at increasing distance from the equator.[9,10] Evidences from three epidemiologic studies supports the view that higher vitamin D status, measured as serum, 25-hydroxyvitamin D concentration, is associated with lower mean blood pressure and reduced prevalence of hypertension.[11,12,13] Many epidemiological and experimental studies suggested that hypertensive patients had lower levels of vitamin D. The effect of Sublingual Vitamin D has not been studied in Hypertensive patients.

AIM AND OBJECTIVE

To study effect of Sublingual Vitamin D3 on Serum Vitamin D3 level in Hypertensive patients.

MATERIALS AND METHODS

The study was conducted in collaboration with Department of Medicine. This was an Interventional study, registered in the Clinical Trial Registry of India, it is available in Website: CTRI Website URL - http://ctri.nic.in; Registration number: CTRI/2017/03/008033.

Inclusion criteria

- All the hypertensive patients.
- Adult patients between 18-60years.
- Patients of either sex.
- Patients willing to participate in study.
- Ready to give written informed consent.

Exclusion criteria

- Patients of hypertension on thiazide diuretics (Hypercalcemia).
- Patients on chronic medications other than antihypertensive.

All volunteers fulfilling the Inclusion and Exclusion criteria were given sublingual vitamin D in six doses (60,000IU Tablets) given during 3 months with one tablet every fortnight. The subject's serum Vitamin D levels were estimated before and after treatment of sublingual vitamin D3 60,000IU tablets.

RESULTS

55 volunteers were included in the study. The mean age of the group was 52. Figure-1 shows age wise distribution of the patients. Most of the patients, i.e, out of 55 patients 33 belonged to 51-60 age group. Figure-2 shows Estimation of the Serum level of Vitamin D level before and after sublingual treatment of volunteers (Figure -2). There was statistically significant difference in serum vitamin D3 level before (average 17.64, SD±7.20) and after (average 37.85, SD ±7.32) after treatment with Sublingual Vitamin D3(Paired t test, *P value is < 0.0001).

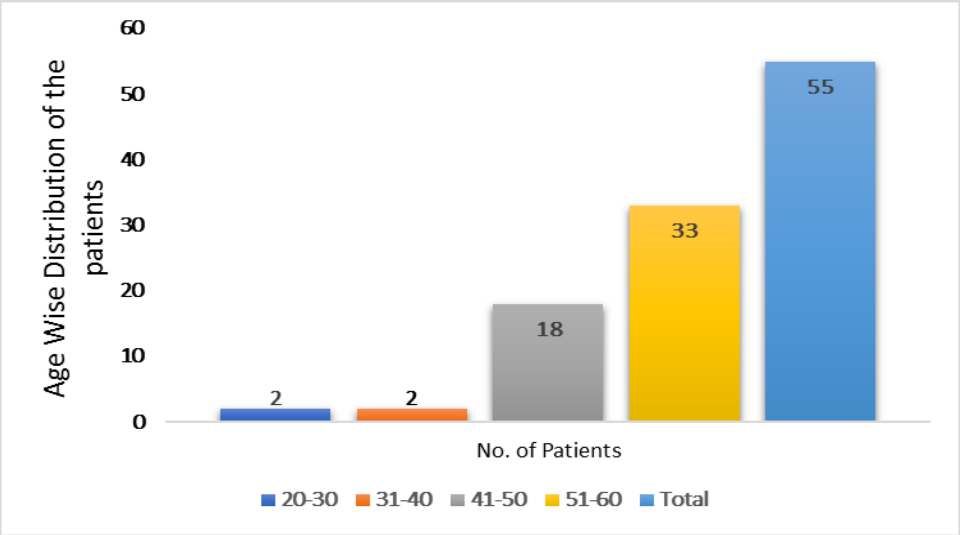

Figure 1: Age Wise Distribution of the patients.

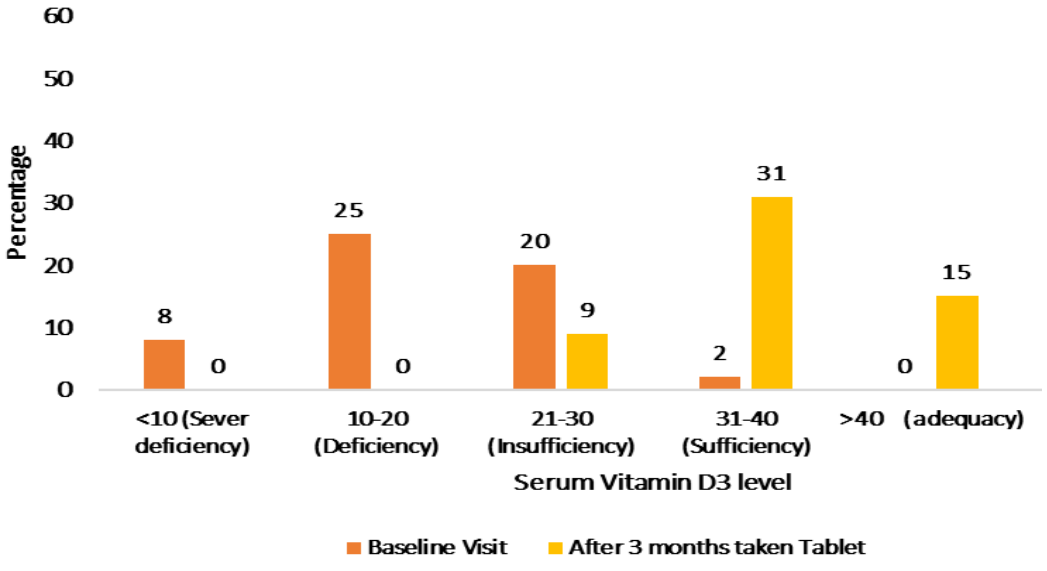

Figure 2: Estimation of the Serum level of Vitamin D level before and after.

DISCUSSION

The aim of present study was to study effect of Vitamin D therapy on the serum vitamin D levels after treatment of hypertensive patients with sublingual Vitamin D therapy.

In a study by Ryan et al[14], 2 out of 22 subjects (9%) were classified as having insufficient (50–75 nmol/l) levels of vitamin D in hypertensive patients. In another study by Fatemeh et al[15], About 67% of the hypertensive participants in study suffered from vitamin D deficiency. The deficiency was more common in females as compared to males. While there was no

literature found on the prevalence of vitamin D deficiency in hypertensive patients, a study by Pathak S Ket al[16] revealed 51.5%, 27% and 20% of participant suffered from mild, moderate and severe Vitamin D deficiency, respectively. In the present study, the percentage of vitamin D deficiency Mild, Moderate, Severe deficient was to in Vitamin D Serum level 25ng/mL, 20ng/mL, 8ng/mL respectively in the present study, Vitamin D was prescribed by sublingual route. The dose of 60000ID Vitamin D was given at an interval of 15 days for 3 months. The mean serum Vitamin D levels raised from 17.64+7.20 to 37.85, +7.32ng/mL, which was statistically significant.

Marium studied[17] effect of oral Vitamin D in the dose of 60000IU every 2 monthly for 4 months. The mean serum vitamin D before treatment was 27.1±7.7ng/mL, which increased to 42.0±9.1ng/mL. there was a statistically significant increase in serum Vitamin D levels after treatment. In a study of 16 weeks by Ryan et al study[14], hypertensive patients were treated with oral Vitamin D 2000IU daily. There was statistically significant increase in mean serum Vitamin D from 34.3±2.2 to 100.9±6.6ng/mL.

Davide studied[18] the effect of oral Vitamin D 2800ID daily dose on hypertensive patients after a period of 2 months. The mean serum vitamin D levels before treatment was 18.3±2.8ng/mL, which increased to 38.4±3.2ng/mL, which was statistically significant. Similarly, Stefan observed statistically significant increase in mean serum vitamin D levels from 22.0±5.5 to 36.2±7.3ng/mL after treatment of patients with hypertension with Vitamin D 2800IU daily for 2 months.

Despite of change in the route of administration of Vitamin D therapy from oral to sublingual, there was similar raise in the serum Vitamin D levels in our study. Hence, Vitamin D sublingual therapy is equally effective when compared with oral therapy.

CONCLUSION

Vitamin D deficiency is common among hypertensive patients. Sublingual Vitamin D3 tablets in 6 doses of 60,000IU have definitive role in treatment of Vitamin D deficiency.

Sponsored by: Director of Research (Pravara Institute of Health Sciences).
Duram Pharmachem Private Limited

REFERENCE

1. Holick MF. Vitamin D deficiency. *N Engl J Med*, 2007; 357: 266–281.
2. Hodgkin P, Kay GH, Hine PM, Lumb GA, Stanbury SW. Vitamin D deficiency in Asians at home and in Britain. *Lancet*, 1973; *2*: 167-72.
3. Arya V, Bhambri R, Godbole MM, Mithal A. Vitamin D status and its relationship with bone mineral density in healthy Asian Indians. Osteoporos Int, 2004; 15: 56–61
4. Goswami R, Gupta N, Goswami D et al. Prevalence and significance of low 25-hydroxyvitamin D concentrations in healthy subjects in Delhi. Am J Clin Nutr, 2000; 72: 472–475.
5. Harinarayan CV, Ramalakshmi T, Prasad UV et al. High prevalence of low dietary calcium, high phytate consumption, and vitamin D deficiency in healthy south Indians. Am J Clin Nutr, 2007; 85: 1062–1067
6. Wang TJ, Pencina MJ, Booth SL, et al. Vitamin D deficiency and risk of cardiovascular disease. Circulation, 2008; 117: 503–11.
7. Rosen CJ, Adams JS, Bikle DD, Black DM, Demay MD, Manson JE,Murad M, Kovacs CS. The nonskeletal effects of vitamin D: an Endocrine Society Scientific statement. *Endocr Rev*, 2011; 33: 456–492.
8. Weishaar RE, Simpson RU. Vitamin D3 and cardiovascular function in rats. *J Clin Invest*, 1987; 79: 1706–1712.
9. Scragg R. Seasonality of cardiovascular disease mortality and the possible protective effect of ultra-violet radiation. *Int J Epidemiol*, 1981; 10: 337–341.
10. Motiwala SR, Wang TJ. Vitamin D and cardiovascular risk. *CurrHypertens Rep*, 2012; 14: 209–218.
11. Scragg H, Sowers M, Bell C. Serum 25-hydroxyvitamin D, eth-nicity, and blood pressure in the Third National Health andNutrition Examination Survey. Am J Hypertens, 2007; 20: 713-719.
12. Martins D, Wolf M, Pan D, et al. Prevalence of cardiovascularrisk factors and the serum levels of 25-hydroxyvitamin D inthe United States: data from the Third National Healthand Nutrition Examination Survey. Arch Intern Med, 2007; 167: 1159-1165.
13. Forman JP, Giovannucci E, Holmes MD, etal. Plasma25-hydroxyvitamin D levels and risk of incident hypertension. Hypertension, 2007; 49: 1063-1069.
14. Ryan A. Harris, Jennifer Pedersen-White, De-Huang Guo, Inger S. Stallmann-Jorgensen, Daniel Keeton, Ying Huang, Yashesh Shah, Haidong Zhu, Yanbin Dong.D3 Supplementation for 16 Weeks Improves Flow-Mediated Dilation in Overweight African-American Adults *AMERICAN JOURNAL OF HYPERTENSION*, 2011; 24: 557-562.
15. Fatemeh Ardeshir Larijani1, Seyed Mohammad Kalantar Motamedi1, Abbas Ali Keshtkar1, Patricia Khashayar1, Zahra Koleini1, Fakher Rahim2, and Bagher Larijani1.. *The Relation between Serum Vitamin D Levels and Blood Pressure: A Population-Based StudyActa Medica Iranica*, 2014; 52(4): 290-297.
16. Subodh Kumar Pathak, Pritam Maheshwari, Prahlad Ughareja, Shaurya Shah, Prashanth Raj M and Sandeep Kumar Gour. Is vitamin D deficiency a modern epidemic in tropical countries?. International Journal of Orthopaedics Sciences.

17. Marium Ilahi, Laura AG Armas, and Robert P Heaney, Pharmacokinetics of a single, large dose of cholecalciferol, Am J Clin Nutr, 2008; 87: 688–91.
18. Davide Carrara, Matteo Bernini, Alessandra Bacca, Ilaria Rugani, Emiliano Duranti, Agostino Virdis, et al. Cholecalciferol administration blunts the systemic renin–angiotensin system in essential hypertensives with hypovitaminosis D. *Journal of the Renin-Angiotensin- Aldosterone System*, 2012; 0: 1–6.