ORIGINAL ARTICLE

Vitamin D deficiency in Pakistani Population

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ABSTRACT

Objective: To see the serum vitamin D levels in general population in the province of Punjab.
Study design: Observational study.
Place and Duration of Study: Multi centre study conducted at Shaik Zayed Hospital/College, Rahim Yar Khan, Postgraduate Medical Institute Lahore. Private Hospitals of Lahore and Karachi, Dow Medical University Karachi and Lahore General Hospital, Lahore, from June 2010 to December 2012..
Methodology: Patients and their attendants visiting different hospitals both private and public sector were included, their serum vitamin D was noted. Serum vitamin D was for further categorized as.
Deficiency 0-10, insufficiency 10-30, sufficiency 30-100 and Toxicity > 150. The measurements are in Nanogram.
Results: Out of 579 samples taken from patients, attendants and relatives of patients, 1 (0.1727%) had hyper vitaminosim D, 3 (0.518%) had normal vitamin D, 384 (66.32%) had mild deficiency, 161 (22.62%) had moderate deficiency, 123 (3.97%) had severe deficiency.
Conclusion: Our population in general has deficiency of vitamin D. As a public awareness vitamin D must be given to all Pakistanis of all ages but not without laboratory tests.

Key Words: Vitamin D.

INTRODUCTION

Vitamin D is a hormone. It is also called a steroid hormone and is synthesized in skin from sunlight. Skin has 7 dehydro cholesterol, when it is exposed to sunlight it is transformed into chole calciferol (vitamin $D_{3)}$ by ultraviolet B rays, Vitamin D deficiency is prevalent all over the world[1]. Though our country gets lot of sunlight but vitamin D deficiency is endemic in our country[2]. A study showed that 45 % of infants and 55 % of females are deficient in vitamin D in Karachi[3]. Another study showed that 90% of our population is deficient in vitamin D. Our body has vitamin D Receptors in all tissues thus it is an essential hormone for our body[5]. Pakistan is one of the developing countries where rickets and osteomalcia is highly prevalent. Both of these are as a result of vitamin D deficiency. Vitamin D analysis has been used clinically to diagnose. Vitamin D deficiency (Hypovitaminosis D) for the last two decades. Keeping in mind the role of vitamin D in bone metabolism, rickets and osteomalasia, this study was carried out to know the deficiency of this hormone in our population[4].

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Methodology

It was an observational multicenter study carried out at Shaik Zayed Hospital/College, Rahim Yar Khan, Postgraduate Medical Institute Lahore. Private Hospitals of Lahore and Karachi, Dow medical university Karachi and Lahore General Hospital, Lahore, from June 2010 to December 2012. There was no age limit and every body who opted for, was asked to give written consent. The final year students of medical colleges were assigned to collect the samples and get the tests from hospital/ college labs and to fill the forms. Thus it was purposive convenient sampling. Blood samples collected in sterilized syringe were allowed to clot and then centrifugation was done to separate the serum. Vitamin D_3 was analyzed by EL ISA.

Vitamin D_3 levels 30ng/ml was taken as cut off value and any body having value less than 30 ng/ml was considered suffering from Hypo vitaminosis.

RESULTS

We included five hundred and seventy nine people in the study in a period of two and half years. The age ranged from 16 to 83 years and their mean age/ was, 49.5 years. The highest no of people, 384 who had mild deficiency were seen in 40-63 years of age. Group comparison of different age groups in mild, moderate and severe vitamin D

deficient group was not significant (P= 0.51). As it was a purposive convenient sampling so no cause was determined for vitamin D deficiency and the people/ patients with history of chronic diseases were not excluded from the study. One patient who had higher levels of vitamin D up to 140ng/ml was given 8 injections of vitamin D by a consultant without laboratory tests. Out of five hundred and seventy nine patients only 3 (0.518%) had normal vitamin D. All three were females. The difference between male and female level was not calculated but (73%), 423 were female and 156 (27%) ware male. We did not calculate the age related deficiency.

DISCUSSION

Vitamin D is not only responsible for rickets and osteomatacia but has a preventive role in heart diseases, Hypertension, auto immune diseases and type I diabetes[6]. Vitamin D is also responsible for cholesterol regulation in people with vitamin D deficiency, the triglyceride level is higher and HDL. Cholesterol is lower in contrast to those who have normal levels of vitamin D[7]. vitamin D also has role in inflammation and aging. Vitamin D plays role in preventing different cancers by inhibiting cell cycle progression[10,11]. Vitamin D also modulates the action of antigen presenting cell in addition to T cells. Vitamin D has been regarded as essential hormone for mental health, depression, schizophrenia, Alzheimer's disease and anxiety[8,9]. As vitamin D plays a vital role for the regulation of normal body functions, it is mandatory to find out its deficiency in people. So for we are using western reference values for diagnosis of vitamin D deficiency. Clinically the patient presents with body pains, aches, fatigue, depression, irritability, tiredness, muscle weakness and imbalance[12]. Vitamin D is being prescribed general physicians and consultants without laboratory tests and without ruling out other causes of body pains and depression. In this situation there is a need to estimate the cut of value of vitamin D in our population to make correct diagnosis and to avoid intoxication. Thus we will be able to treat vitamin D deficient people.

The study had limitation that age related deficiency and patients with chronic diseases like renal failure were not excluded, but medical students involved that majority of the individuals were healthy.

CONCLUSION

As a global problem vitamin D should be administered after laboratory tests. A large sample size may help in finding cut off value for our country to diagnose and treat vitamin D_3 deficient people.

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