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Monitoring Study on the Incidence of 25-OH Vitamin D Deficiency in Population of Kerbala Province

Zeyad Tareq Habeeb [1], Khawla Ibrahim Ab [2], Maryam Sabah Naser [3], Emad Salaam Abood [4]

[1] *University of Kerbala / College of Education of pure sciences, Karbala, Iraq*
[2] *University of Kerbala / College of Veterinary medicine, Karbala.Iraq*
[3] *Medical Laboratory Techniques department, Hilla University College/ Babylon, Iraq*
[4] *Medical physics department, Hilla university college, Babylon, Iraq*

Abstract

Vitamin D is known as calciferol, and it is one of the four fat soluble vitamins (A , E, K and D) Two hundred and fifty patients were included in this study to diagnose 25-OH Vitamin D deficiency at laboratory of Al-Husaini teaching hospital in Kerbala Province from March to July 2021. 250 patients had been studied according to gender, age, sunlight exposure, take a medication and diseases.
Keywords: 25-OH Vitamin D, Vitamin D deficiency

Introduction

25-OH Vitamin D is known as calciferol, and it is one of the four fat-soluble vitamins (A, E, K and D) that are stored in the body, and it is the only vitamin that the body can manufacture specifically in the skin through exposure to ultraviolet B (UV-B) rays.[1, 2]

Vitamin D is known as the sunshine vitamin; because the body makes it from cholesterol when exposed to sunlight. Vitamin D is usually associated with bone strength; Vitamin D helps the body use calcium from the diet. Vitamin D deficiency is associated with rickets, a disease in which bone tissue is not properly mineralized, leading to osteomalacia and skeletal abnormalities.[3]

A vitamin D test is performed to check the level of vitamin D through it, and to detect abnormal levels. Abnormal vitamin D levels may indicate nutritional problems, bone disorders, organ damage, or other health conditions.[4, 5]

The importance of maintaining the normal level of vitamin D in the body of women and men lies in protecting the body from multiple health problems, as it plays a role in the prevention of a number of different health conditions, including type 1 and type 2 diabetes, high blood pressure, and multiple sclerosis.[6] .

Vitamin D is found in many foods, including some fish, fish liver oils, egg yolks, dairy products, and cereals in one of two forms: Vitamin D-2, Vitamin D-3. When they enter the bloodstream, they are converted to another form of vitamin D called 25-hydroxyvitamin D.[7]

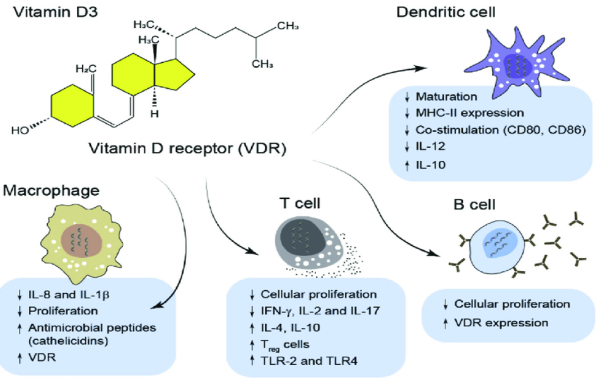

Figure 1. Effects of vitamin D on the immune system[8]

25-OH Vitamin D plays an essential role in numerous disorders like autoimmune and cardiovascular diseases. Moreover, it considers as a nutrient for the bone homeostasis.[9] Deficiency of 25-OH vitamin D is commonly distributed in all ages , in spite it hard to occur in the elderly and younger; not bone disorders only can be related to this vitamin deficiency, but neuro-related diseases such as schizophrenia , cardiovascular and autoimmune diseases.[10] In related to the immune system , it proposed to play an essential and supportive role by

*Corresponding author e-mail: Zeyad.t@uokerbala.edu.iq.(Zeyad T. Habeeb)
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controlling on many diseases, such as neurodegenerative , cancer and related with MS diseases..[11]

The biological importance of vitamin D, is to absorb calcium and phosphorous, maintains the level of calcium and phosphorous in the blood and calcium and phosphorous deposition in the bones.[12-14]

Vitamin D deficiency represents a global public health problem clearly, and differences in levels of this Vitamin D might vary depending upon the season, latitude, sunlight exposure, clothing habits, and differences dietary intake.[16]

According to above survey and in continues of our work, we aimed to monitoring the incidence of the deficiency of 25-OH Vitamin D in Kerbala province in Iraq and introduce this study as a document to government to deal with the incidence of the deficiency of 25-OH Vitamin D in Kerbala.

Material and Methods:

We got a sample of 250 patients that have 25-OH Vitamin D deficiency as indicated by laboratory of Al-Husaini teaching hospital in Kerbala Province at a period from March to July 2021 according to mutal agreement between University of Kerbala and Kerbala Province (see supplementary file).

All patients must not take vitamin D supplement for a month. Blood samples of patients were immediately collected to separate their serum from the patients and stored until examination with their questionnaire.

Results and Discussion

Two hundred and fifty patients were diagnosed that 25-OH Vitamin D deficiency according to their laboratory analysis at Al-Husaini teaching hospital in Kerbala Province at a period from March 2021 to July 2021. The gender of patients was 36 male (14.4%) and 214 females (85.6%).

Also, according to their age, the 15-24 years old were 43 patient (17.2%), 25-34 years old were 57 patient (22.8%), 35-44 years old were 55 patient (22%), 45-54 years old were 42 patient (16.8%),55-64 years old were 33 patient (13.2%), and above 65 years old were 19 patient (7.6%).

The patient's questionnaire revealed that the higher group, that has Vitamin D deficiency, was above 65 years old then 25-34 years old group and the least one was 15-24 years old. Vitamin D deficiency is cleared at group above 65 years old due to a loss of bone density that can contribute to their osteoporosis and fractures (broken bones) in this group.[17]

According to sunlight exposure from patients and have a medication in the last 6 months, 28 males were exposed to sunlight from 36 male patients and 16 males of them had a medication to treat Vitamin D deficiency, while 54 females were exposed to sunlight from 214 female patients and 134 females of them had a medication to treat Vitamin D deficiency. Their questionnaire revealed that patients, which had a medication and exposed regularly to sunlight, were healthy kept by protecting them against Heart disease and high blood pressure, Diabetes and Infections and immune system disorders.[18, 19]

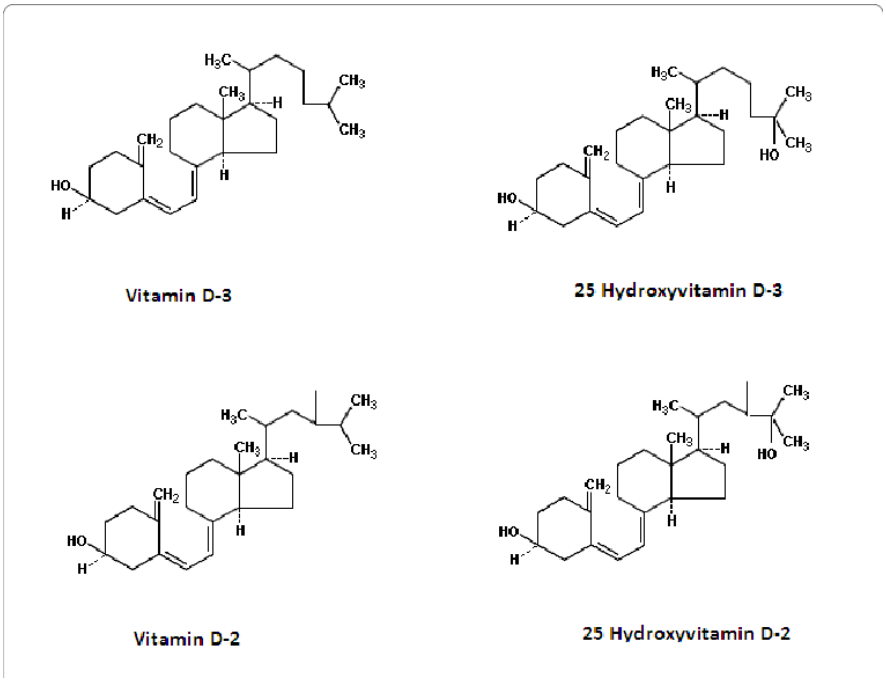

Figure 2. Chemical structures of vitamin D-2, vitamin D-3, 25-hydroxyvitamin D-2, and 25-hydroxyvitamin D-3.[15]

Table 1. The Number and Percentage of Diseases and disorders patient's suffering from

Group (n=250)	Diseases and disorders patient's suffering
Heart disorders	8 (3%)
Kidney disorders	5 (2%)
Hypertension	44 (18%)
Diabetic	23 (9%)
Cartilage and bone illness	67 (27%)
Hair loose	83 (33%)
Stress	93 (37%)
Obesity	167 (67%)
Hair loss	170 (68%)
others	7 (3)

Also, food intake with Vitamin D enriched food was taken as an important factor in patient's questionnaire, 190 patients (76%) have a milk and its derivatives in their food while 155 patients (62%) have fish in their food. This higher percentage of patients that have food intake with Vitamin D enriched food related to treatment of Vitamin D deficiency via food.[20, 21]

Tsur and his colleagues, [22] reported a linkage between vitamin D deficiency and development of diabetes Miletus. Besides vitamin D status related with a better glucose homeostasis modulation, because of a regulation the secretion of insulin and phosphorylation of tyrosine of the receptor of insulin.[23] Many studies based on animal model and other studies suggested that, there is a closely correlation of the 25-OH vitamin D deficiency and cardiovascular disease, particularly hypertension, [24] chronic kidney disorder,[25] phosphorus and homeostasis of calcium,[26-27] and increasing the mortality.[28] So, The questionnaire patients that suffer from heart disorder, blood pressure, kidney disorder, diabetes, cartilage and boon illness, hair loose (Table 1).

Conclusion

As mentioned previously, the amount of vitamin D you need per day to maintain a normal level of 25-hydroxyvitamin D (25[OH]D) depends upon your skin color, sun exposure, diet, and underlying medical conditions. In general, adults are advised to take a supplement containing 800 international units (20 micrograms) of vitamin D per day to maintain a normal vitamin D level. Older people who are confined indoors may have vitamin D deficiency even at this intake level. Exposure to the sun or tanning beds is not recommended as a source of vitamin D. This can lead to skin damage and increase in the risk of skin cancer.

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