

VITAMIN D LEVEL AMONG SAMPLE OF BASRA PEOPLE

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ABSTRACT

Vitamin D is a group of fat soluble seco-sterols which is found naturally only in a few foods, such as fish, mushrooms, liver oils, fatty fish, egg yolks, and liver. Vitamin D is photosynthesized in the skin of vertebrates by the action of solar ultraviolet (UV) B radiation on 7-dehydrocholesterol. There are many forms of vitamin D, among all vitamin D forms there are two forms with physiological activity vitamin D₂ (ergocalciferol); Plant sterol and vitamin D₃ (cholecalciferol); Animal sterol. The aim of the study is to evaluate the serum level of Vitamin D in a sample of people in Basra province south of Iraq. A prospective analysis of data done at AL-Sadr Teaching Hospital in Basrah over a period of one month. Total of 252 patient involved in the study, there were 204 females (81%) and 48 males (19%). The Mean age was (34.5), range (1-75), there were 35 patients below age of 20 years, 122 in the group between 20-40 years and 95 in the group of above 40 years. The majority of patients have inadequate values either deficient 35% (below 12ng/mL) or insufficient 48% (12-.30ng/mL). This is more prominent in females than in males. Only 17% of patients have normal serum level of vitamin D. Vitamin D deficiency or inadequacy is found to be prevalent among this sample of Basrah people and may reflect the state of vitamin D among Basra population.

KEYWORDS: Calciferol, Cholecalciferol, Vitamin D Deficiency, Vitamin D Level

Article History

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INTRODUCTION

Vitamin D (calciferol) includes a group of fat soluble steroid compounds, the main two physiological types are D₂ (ergocalciferol) and D₃ (cholecalciferol). More than 90% of vitamin D in the body are produced in the skin when it absorbs the UV radiation, D₃ is photosynthesized from 7-dehydrocholesterol while D₂ from ergosterol. Then vitamin D is hydroxylated in the liver to 25-hydroxyvitamin D [25(OH) D] and passed to the kidney where it is further hydroxylated to 1,25-dihydroxyvitamin D [1,25(OH)₂D] which is thought to be the form in charge for major effects associated to vitamin D (Bikle, 2015; Khazaei *et al.*, 2017). The conversion of vitamin D in the kidney is tightly regulated by parathyroid hormone (PTH). This Vitamin has long been known for its role in regulating body levels of calcium and phosphorus, and in mineralization of bone and thus maintains healthy bone and skeleton structure (4-6). The deficiency of Vitamin D may be due to low dietary intake, inadequate exposure to sunlight, vitamin D malabsorption, liver or kidney disorders. Other risk factors including having dark skin color, winter, living in a location with high geographical latitude, using sunscreens, exposure to air pollution, clouds or fog. It may also cause bony and skeletal disorders like rickets in children and osteomalacia in adults (7-8). Measurement of vitamin D level in the blood is by determining the level of [25(OH) D] by different laboratory methods, leading to large variations in the results among different methods and also among laboratories using the same

method. Particularly, Vitamin D deficiency is defined as serum level below 12ng/mL(30nmol/L) in adults while adequate level is between 20-32ng/mL (50-80nmol/L),however no evidence describes adverse effects with levels as high as 56ng/mL(140nmol/L) (12).

PATIENTS AND METHODS

A prospective analysis of data done at Assadr Teaching Hospital in Basrah over a period of one month. The study includes determining the serum level of vitamin D by electrochemiluminescence (ECL) among patients with diseases not related to vitamin D thus excluding patient with diabetes, malignancy, chronic renal or liver disease or those taking vitamin D supplements. The age, gender and the serum level were recorded. Analysis done in respect to age groups and gender.

RESULTS AND DISCUSSION

Total of 252 patient involved in the study, there were 204 females (81%) and 48 males (19%). The Mean age was (34.5), range (1-75), there were 35 patients below age of 20years,122 in the group between 20-40 years and 95 in the group of above 40 years. Table 1 shows age and gender characteristics.

Regarding the serum level of vitamin D, the majority of patients have inadequate values either deficient 35% (below 12ng/mL) or insufficient 48% (12-.30ng/mL). This is more prominent in females than in males. Only 17% of patients have normal serum level of vitamin D. More details are shown in Table 2.

The distribution of deficiency in vitamin D among different age groups shown in Table 3, the deficiency affects all age groups in the same manner.

Table 1: Age and Sex Patient's Characteristics

Parameter	Male (%)	Female (%)	Total (%)
Below 20 years	11 (23)	24 (12)	35 (14)
20-40 years	20 (42)	102 (50)	122 (48)
40+ years	17 (35)	78 (38)	95 (38)
	48	204	252

Table 2: Serum Vitamin D Level (ng/mL) According to Gender

Gender	Malen=48	Femalen=204	Total n=252
Serum Level D (ng/mL)			
Below 12	8 (17%)	91 (45%)	99 (39%)
12-30	29 (60%)	91 (45%)	120 (48%)
30+	11 (23%)	22 (10%)	33 (13%)

Table 3: Serum Vitamin D Level (ng/mL) According to Age Groups

Age Group	Age Below 20 Years n=35	Age 20-40 Years n=122	Age above 40 Years n=95	Total n=252
Serum Level Vitamin D				
Below 12	13 (37%)	51 (42%)	35 (37%)	99 (39%)
12-30	15 (43%)	59 (48%)	46 (48%)	120 (48%)
30+	7 (20%)	12 (10%)	14 (15%)	33 (13%)

Some studies pointed that 50% of population worldwide have vitamin D deficiency and this is mainly attributed to decreased exposure to sunlight (13-15), in our study this percent is higher than this probably due to small size sample and may reflect quality of selected patient which might provide some bias. Our results may indicate the adverse effects of change in life style in our community especially house design toward closed environment that decreases the opportunity for

sunlight exposure together with quality of dresses that cover most of body parts. Regarding vitamin D deficiency in relation to age and sex variable, our study is consistent with other studies and the problem affects the population worldwide and in both gender and any age group (16).

CONCLUSIONS

Vitamin D deficiency or inadequacy is found to be prevalent among this sample of Basrah people and may reflect the state of vitamin D among Basrah population. The above conclusion might be the result of change in life style of population that lead to decrease exposure to sun light like clothes, house designs, decreased out door times.

RECOMMENDATION

Large scale studies and/ or screening programs are required to determine the exact extent of vitamin D status among Basrah and national population. Also, facilities for vitamin D measurements among primary and secondary school students. Moreover, we recommended a health education regarding the problem of vitamin D deficiency and disorders related to it. Encourages health care providers to include measurement of vitamin D level as a routine test and provide supplements with accessible prices.

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