

Vitamin D levels and its association with uterine fibroid development

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ABSTRACT

1-Setting: The study was carried on at Kirkuk governorate hospitals, department of gynecology and obs
Background: Uterine fibroid are benign tumors of women uterus, affect female in reproductive age group.

Objective: To detect vitamin D deficient female and frequency of uterine fibroid.

Patients and Methods:

tetrics.

2-Methods: The study conducted on women with uterine fibroid, their age was ranging from 21-50 years. Vitamin D in serum was estimated using fluorescence immunoassay method.

Results:

It was found that vitamin D levels differ significantly between different age groups while there was no significant in relation to parity. Patients with bleeding had lowest vitamin level (11.74 ± 4.92) while asymptomatic patients had highest value of vitamin D (17.16 ± 10.79). Educated women had lower vitamin level than uneducated ones.

Conclusion: Symptomatic patients and educated women had lower Vitamin D level than asymptomatic and uneducated ones

.Keywords: : Uterine fibroid, women, vitamin D, Kirkuk

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1. Introduction

Uterine fibroid is defined as a pseudo capsule of muscle fibers that surround localized proliferation of smooth muscle cells; and its mainstay treatment is surgery. According to recent statistics, this condition is regarded as one of the most common benign tumor affecting female reproductive system, and its effect in addition to economic obstacles can have burden on common health care system (1).

In a study done by Blauer et al., it was confirmed that there was effect of vitamin D3 on the inhibition of human fibroid cell growth and myometrim (2).

The first group who studied the possible association between vitamin D and uterine fibroid was Al-Hendy group who reported an increase susceptibility to fibroid among black and white women in North Africa (3). Recently the relation between vitamin D and calcium demonstrated that the main regulator of calcium homeostasis is vitamin D; and it was concluded that vitamin D3 is a potent anti tumor agent that accelerates the shrinkage of uterine fibroid in vitro, however human trial yet not conducted completely and conclusively (4). Fibroid (leiomyomas) affects more than 25% of females in reproductive age group with a considerable effect on morbidity; the main cause of which is that most fibroids are asymptomatic and found accidentally during routine visits or the female experience bleeding, pressure symptoms or urinary problems (5). It is demonstrated that vitamin D among black female who have lower level of vitamin is a principal risk of developing uterine fibroid; also it was clarified that uterine fibroid has lower level of vitamin D receptor (VDR) comparing with adjacent myomatrical tissue (6). The rationale of our study is to demonstrate that fibroid is a common health problem among reproductive age group female with its significant burden on health, economy and morbidity regarding its unfavorable outcome following hysterectomies in young age group, in addition to the lack of screening of asymptomatic cases by regular official health programs; in relation to Iraqi Health System. The objective of the current study is to detect the deficient female with vitamin D levels and the frequency of uterine fibroid among that group.

2. Patients and Methods

1-Setting: This study was conducted in Kirkuk hospitals, gynecological and obstetric department, on the selected sample for the period from March 2018 to March 2019

2-Sample size: A total of 94 women on reproductive age were enrolled in the study. They were ranging from 21 to 50 years and they were selected by simple random sampling to avoid selection bias. Regarding the questionnaire list which included the following information in regard to study samples {age, parity, clinical symptoms and educational levels}. It was performed by single interviewer to avoid information bias.

3-Methods: All included patients were referred to laboratory examination to test for the level of vitamin D in the serum of patients and an abdominal and pelvic ultrasound was performed to confirm the diagnosis of uterine fibroid.

Estimation of vitamin D in blood serum was carried on according to procedure of ichroma TM, which is a fluorescence immunoassay (FIA) for quantitative determination of total 25(OH)D₂/D₃ level (Boditech Med incorporated , Republic of Korea).

4-Statistical Analysis: Statistical analysis was carried out using statistically available SOFTWARE(SPSS version 18).Comparison between patient and control groups were made using Analysis of Variance (ANOVA) analysis and Duncan test to show significant difference between groups and between each two groups. (4)

3.Results and Calculations

Table 1, shows the serum vitamin D level according to age. The value of vitamin D was highest among 31-35 years followed by 21-25, 46-50 and the lowest value was among 36-40 years. Statistically there was significant difference between age groups (P<0.05).

Table 1 Serum vitamin D level in fibroid women according to age group.

Serum Vitamin D (ng/ml)

Age group	Vitamin D Mean value±S.D.
21-25	18±10.95 a
26-30	13.77±6.08 ab
31-35	19.6±12.30 a
36-40	8.42±1.43 b
41-45	13.31±8.43 ab
46-50	17.78±7.33 a

Table 2 shows that the vitamin D level among niliparous and primiparous was lower than multiparous. Statistically there was no significant difference between different parity (P=0.779).

Table 2. Serum vitamin D level in fibroid women according to parity.

Serum Vitamin D (ng/ml)

Parity	Vitamin D Mean value±S.D.
Nulipara	15.25±8.66
Primipara	15.52±9.87
Multipara	17.16±10.79

Table 3, shows serum vitamin level among women without clinical symptoms was highest followed by those with pressure and the lowest was among those with bleeding. Statistically there were significant difference between three groups of women (P<0.02)

Table 3 .Serum vitamin D level in fibroid women according to clinical symptoms.

Serum Vitamin D (ng/ml)

Clinical symptoms	Vitamin D Mean value±S.D.
Asymptomatic	17.16±10.79
Bleeding	11.74±4.92
Pressure symptoms	13.00±4.31

Table 4, shows the vitamin D value among educated women were lower than uneducated ones.

Table 4 .Serum vitamin D level in fibroid women according to educational status.

Serum Vitamin D (ng/ml)

Education	Vitamin D Mean value±S.D.
Educated	11.84±4.754
Uneducated	15.61±9.53

4.Discussion

The level of serum vitamin D varies in different countries; it is different according to sociodemographic, dietary habits of society in addition to anthropometric factors and educational level. In our country no previous studies were carried out especially in Kirkuk governorate, therefore this preliminary study was decided to show the levels of vitamin among studied women with uterine .fibroid

About 25% of myomas are detected and diagnosed among women older than 40 years, that is to say, it is one of the most frequent perimenapausal conditions which alter menopause its occurrence will .(suddenly decline(7,8

In the current study no cases of recurrent myomas were detected, in contrast to a study done by Wise and Langhlin who showed a high frequency of recurrence following myomectomy which may .(indicated the existence of tumor specific chromosomal abnormalities in 40% of tested samples (9 In this study the majority of fibroid women were asymptomatic, followed by pressure and bleeding. Identical to report of Brakta et al. (5) that most of females with uterine leiomyoma are without clinical symptoms. The lowest value of vitamin among women with bleeding is expected as patient with .hemorrhage will loss blood which effect serum vitamin level

It is a well known fact that myomas are more common in nulliparous women, which's cause may be thought to be increased exposure to regular or continuous menstrual cycles without interruption by pregnancy or lactation (10). In this study although vitamin D was low in nulliparous and primiparous than multiparous, but statistically there was no significant difference in vitamin value among women with different parity.

Regarding hypovitaminosis, it is recently postulated to be an important risk factor in the myoma formation; as Baird et al. (11) concluded in his research that women with sufficient Vitamin D had reduced risk of myoma in comparison with women with vitamin D deficient women (1). The level of Vitamin in our studied groups is low, this finding is accordance to study in Turkey (12) who carried on a cross sectional study to show relationship between serum vitamin D levels and of uterine fibroid in premenopausal women, with uterine leiomyoma, they found that vitamin levels were significantly lower than healthy control women and 78% of patients had severe vitamin deficiency (<10 ng/ml).

In a study by Garg et al, (13) detected that 89.92% of women with Vitamin D deficiency were illiterate while 43.92% literate ladies were deficient to Vitamin D. Regarding the employment, 70% of deficient women were housewife in contrast to 40.05% among working women (13). In a study performed in Copenhagen (14) on 700 subjects, 238 had vitamin D insufficiency, 135 had vitamin deficiency of which 13 had severe deficiency (<12.5 nmol/L). They reported that the relative risk was significantly lower for whom studying for a Bachelor degree level had the lowest RR=0.40 compared to master degree for vitamin deficiency and study period. The lower vitamin D level among educated than uneducated women in the present study, is in accordance to other studies. Shinkova et al., (15) found Vitamin D level were higher in the males with elementary and secondary education compared with higher education.

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