

**STUDY OF VITAMIN D LEVELS IN WOMEN WITH ABNORMAL
UTERINE BLEEDING**

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ABSTRACT

Introduction: Abnormal uterine bleeding (AUB) is defined as bleeding from the uterine corpus that is abnormal in duration, volume, frequency and/or regularity. AUB accounts for half of the gynecologic problems among women. The underlying factors that cause AUB and/or AUB itself may have potential for long term health consequences, decrease life quality and day to day activities. **Aim and Objectives:** to measure the serum levels of Vitamin D in patients with abnormal uterine bleeding. **Materials and Methods:** We included the women of reproductive age 18-45 years. Detailed history was taken regarding the symptoms of thyroid disorders, menstrual history, obstetric history, past medical history, family history, personal and social history. General examination was done. Body temperature, pulse rate, blood pressure, respiratory rate was noted. Systemic examination of the cardiovascular system (CVS), central nervous system (CNS), respiratory system and thyroid gland was done. Weight was measured in kilograms and height in meter, BMI was calculated using the formula weight in Kg/Height in metre square. Those who had BMI 18 to 24 were normal, BMI <18 kg/m² were considered as undernourished and BMI >25 kg/m² were considered overweight. Under aseptic precautions 3 mL of random blood sample was drawn and subjected for centrifugation and serum is separated and was used for Vitamin D levels estimation. Vitamin D levels were estimated by chemiluminescence immuno assay. **Results and Discussion:** This cross-sectional observational study was conducted in the Department of Obstetrics and Gynecology at our hospital. A total of 100 women presented to OPD with abnormal uterine bleeding in the age group of 18-45 years were enrolled. They were divided into two groups, Group A Cases: women with AUB and Group B: healthy women. Cases: women with abnormal uterine bleeding and controls: women without AUB. The mean age in cases and controls were 31.64±2.32 and 32.46±1.64 respectively. We assessed BMI for both cases and controls, it is found that 64% had normal BMI and 32% were overweight in cases and in control group 88% had normal BMI and 12% were overweight. Vitamin D levels were measured in both cases and controls, it is found that the mean vitamin D levels in cases and controls were 16.24 ± 3.22 and 30.43 ± 7.89 respectively. It is clearly indicating that cases had decreased vitamin D levels in

comparison with controls. This difference was statistically highly significant. **Conclusion:** In the present study we found decreased levels of vitamin D in women presenting with abnormal uterine bleeding. It is very logical to check for vitamin D levels at the baseline itself when women presents to OPD with abnormal uterine bleeding. This clearly indicates that the therapeutic approach should be directed towards supplementation of Vitamin D in reproductive women with abnormal uterine bleeding.

Key-words: abnormal uterine bleeding, vitamin D and body mass index .

INTRODUCTION:

Abnormal uterine bleeding (AUB) occurs in 30 % women in reproductive age.¹ Etiological factors are divided into structural which includes polyps, adenomyosis, leiomyoma, malignant tumors and endometrial hyperplasia and non-structural which includes coagulopathy, ovulation disorders, endometrial pathology, iatrogenic factors and unclassified causes.² Currently, the course and severity of the pathology is often influenced by external factors, among which a special role is given to stress. There are stress dependent disorders of the menstrual cycle³, which include luteal phase insufficiency⁴, infertility⁵ and menstrual disorders.⁶

In recent years, the attention of scientists has been drawn to the issue of the involvement of vitamin D in the pathogenesis of various diseases. Vitamin D deficiency is regarded as a global problem increasing the risk of many chronic diseases. More recently, the emphasis has shifted to the non-skeletal effects of vitamin D. A growing body of literature suggests that vitamin D plays an important role in the regulation of processes in the ovaries determining female fertility and reproductive capacity. Vitamin D belongs to the steroid hormone family. In recent years, the spectrum of vitamin D-mediated effects has expanded and it is now recognized as a universal signalling molecule, not just a regulator of bone health and calcium homeostasis. The cellular effects of vitamin D are mediated primarily through the related intranuclear vitamin D receptor. Vitamin D receptor enzymes involved in its metabolism are expressed in both central and peripheral reproductive organs (hypothalamic-pituitary system, ovaries, uterus, placenta).⁷⁻

¹¹ All this suggests that vitamin D is involved in the regulation of menstrual function. The data on this matter is ambiguous. The role of vitamin D was mostly studied in relation to dysmenorrhea, polycystic ovary syndrome.^{12,13} There are isolated works on the role of vitamin D in the formation of menstrual dysfunction.¹⁴ However, virtually all these works indicate that

vitamin D deficiency is harmful to reproductive health. Among the hypotheses of menstrual dysfunction with vitamin D deficiency, neurohumoral regulation of the hypothalamic-pituitary-ovarian system is considered the most important due to the fact that vitamin D receptors, in contrast to other vitamins, are located in the nuclei of various tissues and organs.^{15,16}

AIM AND OBJECTIVES: In the present study we measured the levels of vitamin D in women presenting with abnormal uterine bleeding to our OPD.

MATERIALS AND METHODS:

This cross-sectional study was conducted in the Department of Obstetrics and Gynecology, at our tertiary care hospital.

Study design: Hospital based observational study.

Sample size: we included a total 50 women aged 20-50 years presenting with AUB and 50 healthy controls.

Inclusion Criteria: We included women presenting with symptoms of abnormal uterine bleeding and those willing to give consent for the study were included.

Exclusion Criteria: Perimenopausal women with hormone replacement therapy, any other metabolic or chronic disorders, thyroxine therapy, women with leiomyoma and adenomyosis and women on vitamin D supplementation were excluded.

Data collection: Detailed history was taken regarding the symptoms of thyroid disorders, menstrual history, obstetric history, past medical history, family history, personal and social history. General examination was done. Body temperature, pulse rate, blood pressure, respiratory rate was noted. Systemic examination of the cardiovascular system (CVS), central nervous system (CNS), respiratory system and thyroid gland was done. Weight was measured in kilograms and height in meter, BMI was calculated using the formula weight in Kg/Height in metre square. Those who had BMI 18 to 24 were normal, BMI <18 kg/m² were considered as undernourished and BMI >25 kg/m² were considered overweight.

Blood Sample Collection and Biochemical Investigations: Under aseptic precautions 3 mL of random blood sample was drawn and subjected for centrifugation and serum is separated

and was used for Vitamin D levels estimation. Vitamin D levels were estimated by chemiluminescence immuno assay.

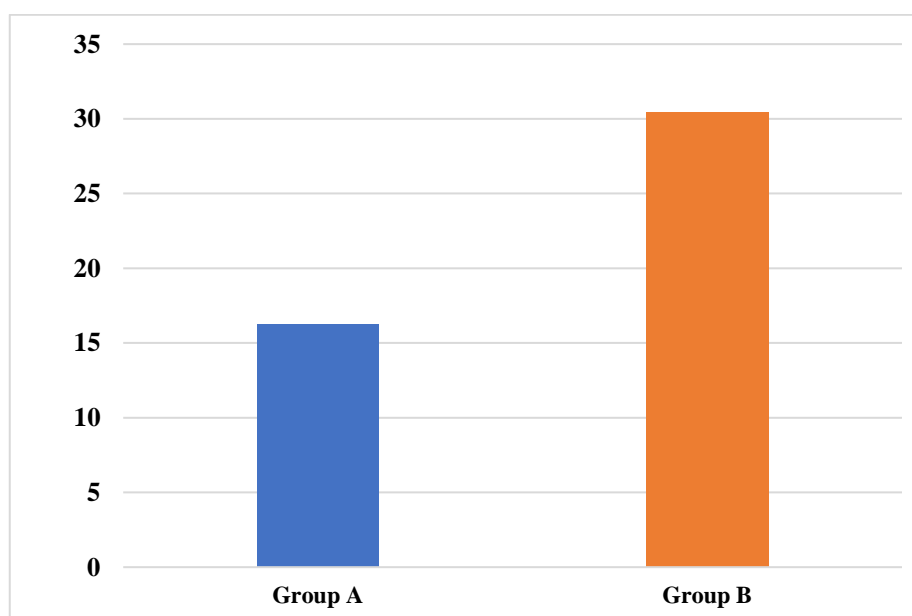
RESULTS: This cross-sectional observational study was conducted in the Department of Obstetrics and Gynecology at our hospital. A total of 100 eligible women in the group 18-45 years years were enrolled. They were divided into two groups, Group A Cases: women with AUB and Group B: healthy women.

TABLES AND FIGURES

Table 1: Shows the comparison of vitamin D levels between cases and controls

Parameters	Group A	Group B
Age	31.64±2.32	32.46±1.64
BMI		
Normal	32 (64%)	44 (88%)
Overweight	18 (32%)	6 (12%)
Vitamin D		
<20 ng/mL	39 (78%)	22 (44%)
>20 ng/mL	11 (22%)	28 (56%)
Mean ± SD	16.24 ± 3.22	30.43 ± 7.89

Bar diagram 1: Shows the comparison of Vitamin D in (ng/mL) levels in cases and controls



DISCUSSION: We enrolled a total of 100 women aged 18-45 years in our study, we divided them into Group A and Group B, Group A included the cases and Group B, healthy controls. Cases: those suffering from abnormal uterine bleeding and controls: those not having AUB. The mean age in cases and controls were 31.64 ± 2.32 and 32.46 ± 1.64 respectively. We assessed BMI for both cases and controls, it is found that 64% had normal BMI and 32% were overweight in cases and in control group 88% had normal BMI and 12% were overweight. Vitamin D levels were measured in both cases and controls, it is found that the mean vitamin D levels in cases and controls were 16.24 ± 3.22 and 30.43 ± 7.89 respectively. It is clearly indicating that cases had decreased vitamin D levels in comparison with controls. This difference was statistically highly significant.

Vitamin D deficiency is a major public health concern worldwide. Generally, vitamin D deficiency results from low vitamin D consumption in the diet and low sun exposure, the inability to absorb intestinal vitamin D, the lack of biological vitamin D activation in the kidneys, the liver, or both. Several consequences are associated with vitamin D deficiency including infections, autoimmune diseases, cardiovascular diseases, different types of diabetes, neurocognitive or psychiatric diseases, cancer, or adverse pregnancy outcomes. Additionally, recent meta-analyses showed that low serum vitamin D level increased the risk of all-cause mortality, while vitamin D supplementation might reduce the risk of death in oncological patients. Vitamin D is involved in the mechanisms of gonadotropin stimulation, affects the activity of sex hormones through the promoters of receptors located both in the hypothalamic-pituitary region and on the periphery in the ovaries.^{17,18} This is evidenced by factor loads, which are analogues of correlation coefficients and show the degree of interrelation of variables in distinguished factors. The debut of the abnormal uterine bleeding during puberty occurs against the background of disorders of both the hormonal component and changes in the content of vitamin D. Further study of the problem of the inclusion of vitamin D in the formation of menstrual disorders, namely abnormal uterine bleeding can help develop new strategies for the prevention and treatment of this serious disease during puberty.

CONCLUSION: In the present study we found that abnormal uterine bleeding in women is accompanied by decreasing of vitamin D in blood serum. This clearly indicates that the therapeutic approach should be directed towards supplementation of Vitamin D in with abnormal uterine bleeding.

We declare no financial support (self-funding) and nil conflict of interest.

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