Original Research Paper

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Biochemistry

"STUDY OF SERUM VITAMIN D LEVEL IN WOMEN DIAGNOSED WITH CARCINOMA OF BREAST IN SILCHAR MEDICAL COLLEGE AND HOSPITAL"

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ABSTRACT **BACKGROUND:** Vitamin D is a secosteroid hormone which in its active form, 1,25-dihydroxyvitamin D3 (1,25-(OH)2D3), is an important regulator of bone development and metabolism and calcium homeostasis. Although vitamin D deficiency is known mainly for its association with fractures and bone disease,1–7 vitamin D may play role in controlling growth of normal breast cells and may help in prevention of growth of malignant mammary cells.

AIMS AND OBJECTIVES:

1.To assess serum vitamin D level in patients diagnosed with carcinoma of breast.

2.To correlate the values with severity of carcinoma of breast.

MATERIALS AND METHODS: -The study is conducted among the outdoor and indoor patients in Department of Biochemistry, Silchar Medical College over a period of one year from 1st June 2018 to 31st May2019.The study group comprises of 50 diagnosed cases of carcinoma of breast within the age group of 40 to 70 years and 50 healthy subjects within same age group without any co morbid conditions. After taking proper history and clinical examination, cases are included in the study. Serum vitamin D is measured in autoanalyzer using standard method.

RESULTS: Serum vitamin D level was found to be low in breast carcinoma cases compared to healthy controls. **CONCLUSION:** From this study, we can infer that vitamin D may be protective for breast cancer patients. Low vitamin D levels are frequently found in our population. If we can establish an association between them in our population, we will be able to give recommendations to take corrective actions and try to reduce the incidence of breast cancer in our population.

KEYWORDS :

INTRODUCTION

Breast cancer is the most common invasive cancer in females worldwide. It usually presents with a lump in the breast with or without other manifestations. Breast carcinoma is generally diagnosed by physical examination, mammographic findings and biopsy results. Vitamin D may play role in controlling growth of normal breast cells and may help in prevention of growth of malignant mammary cells. Vitamin D and its metabolites reduce the incidence of many types of cancer by inhibiting tumor angiogenesis, stimulating mutual adherence of cells and enhancing intercellular communication through gap junctions, thereby strengthening the inhibition of proliferation that results from tight physical contact with adjacent cells within a tissue (contact inhibition). Ecological studies have associated high levels of sunlight exposure with low breast cancer incidence and mortality rates[1,2]. These observations, together with experimental evidence showing anticarcinogenic properties of vitamin D, have led to the hypothesis that high levels of vitamin D might reduce the risk of breast cancer[3]. Vitamin D exerts its anti-neoplastic activity by various mechanisms. Its active metabolite form 1,25 $(OH)_2$ vitamin D binds with nuclear vitamin D receptor (VDR) and further to specific DNA sequences namely vitamin D response elements and modulates expression of specific genes in tissue-specific manner. They encode for proteins required for regulation of cell proliferation, differentiation, apoptosis and angiogenesis. In deficiency of vitamin D, these activities are hampered and enhance cellular growth, neoangiogenesis and carcinogenesis[4].

AIMS AND OBJECTIVES:

1. To assess the levels of serum vitamin D level in patients diagnosed with carcinoma breast.
2. To correlate the values with severity of carcinoma breast.

MATERIALS AND METHODS:

The study was conducted in Department of Biochemistry, Silchar Medical College over a period of one year from 1st June 2018 to 31st May2019. It was a case control study done on 50 cases and 50 healthy controls. After taking proper history and clinical examination, cases were included in the study. Serum vitamin D is measured by chemiluminescent immunoassay in Vitros 5600 autoanalyzer. Normal range of serum vitamin D taken is 30-100 ng/ml. Vitamin D level of 20-30 ng/ml is taken as insufficient and <20 ng/ml of serum vitamin D is taken to be deficient. All p-values <0.05 considered as statistically significant.

RESULTS AND DISCUSSION:

The present study was carried out in Department of Biochemistry, Silchar Medical College from June 2018 to May2019.

50 breast carcinoma cases were selected for the study. The mean blood level of serum 25(OH) Cholecalciferol level in carcinoma breast cases in this study was found to be [24.20± 9.07] ng/ml and [32.97 ± 6.88] ng/ml in controls. In the Unpaired t test between case and control groups, the two-tailed p-value is <0.01 which is considered significant.

1.SERUM VITAMIN D LEVEL- Mean serum vitamin D level of cases and controls along with SD, SEM and p value given in following tables and figures

Table: Showing Mean Value Of Serum Vitamin D Level In Studied Groups

	Mean	SD	Sem	95% Ci For Mean	P- Value
Cases	24.20	9.07	1.28	21.62, 26.78	<0.01
Controls	32.97	6.88	0.973	31.01, 34.93	

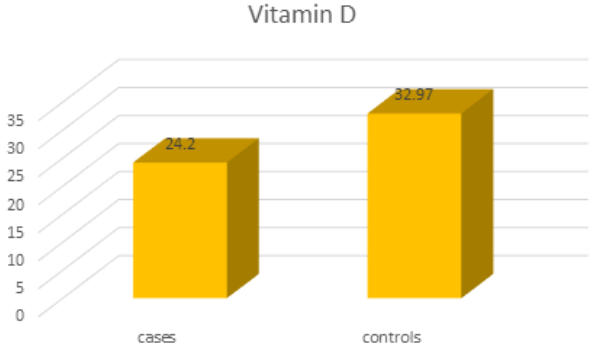

Fig: Showing Mean Value Of Serum Vitamin D Level In Studied Groups

Table: Distribution Of Study Groups Based On Vitamin D Status

Vitamin D Status	Case	Control	Total
DEFICIENCY (<20ng/ml)	17	2	19
	34%	4%	19%
INSUFFICIENCY (20-<30ng/ml)	19	14	33
	39%	28%	33%

SUFFICIENCY (30-100ng/ml)	14	34	48
	28%	68%	48%

The above table shows that 34% of cases were vitamin D deficient (<20ng/ml) whereas in the control group only 4% were found deficient, 39% of cases and 28 % of controls were found to have insufficient vitamin D level (20-<30ng/ml). Minimum sufficiency level (30-100ng/ml) for cases and control groups were found to be 28% and 68% respectively.

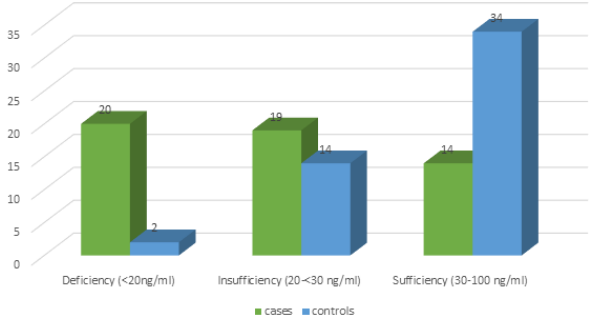

Fig: Distribution Of Study Groups Based On Vitamin D Status

CONCLUSION:

This study was conducted to find out any relationship between low vitamin D and breast cancer risk. In a hospital-based case-control study, an inverse association was observed between $1,25(OH)_2D$ levels measured in whole blood collected at the time of diagnosis and breast cancer risk[5]. Furthermore, a recent case control study observed that women with plasma 25(OH)D concentration <50 nmol/L had >5 times higher risk of breast cancer than those with plasma concentration exceeding 150 nmol/L[6]. Similar inverse association was also reported by Stoll et al[7] in their systematic review of 37 studies. They suggested that elevated serum 25(OH)D through the sun exposure and dietary intake more than 400 IU per day vitamin D supplementation decreased breast cancer risk and recurrence. From this study, we can conclude that vitamin D may be considered as an important factor in development of breast cancer. Therefore, supplementation of vitamin D may be helpful in inhibiting development of carcinoma and disease progression thereby improving the quality of life.

To further confirm the potential protective effects of vitamin D on breast cancer, well-designed cohort studies and clinical trials are warranted.

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