



ROLE OF VITAMIN D AND RISK OF PROSTATE CANCER

Biochemistry

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ABSTRACT

Background: Vitamin D is a secosteroid hormone and well-known for its classical actions in the maintenance of calcium uptake and bone metabolism. Recently, numerous in vitro experiments demonstrated that 1,25-(OH)₂D₃, the active form of vitamin D, inhibited the growth and differentiation of human prostate cancer cells.

Aim: To estimate vitamin D level in prostate cancer patients along with increasing risk.

Material & Methods : 100 samples along with control were analysed by cobas e-411 for Vitamin D and PSA.

Results: we have found Higher risk of prostate cancer who having low vitamin D.

Conclusion: it's time to aware people for supplementation of Vitamin D, so we can prevent for the same.

KEYWORDS

Vitamin D, Prostate cancer, PSA, hypovitaminosis

INTRODUCTION:

Deficiency of vitamin D or hypovitaminosis D is widespread irrespective of age, gender, race and geography and has emerged as an important area of research. Vitamin D deficiency is prevalent worldwide. This deficiency has many consequences which are still being explored, apart from the well-known skeletal complications. With the consequences of Vitamin D deficiency, namely, autoimmune diseases, cardiovascular diseases, cancer, and tuberculosis being explored. [1]. Vitamin D₃ deficiency continues to be an unrecognized epidemic in many populations around the world. Vitamin D is important for the absorption of calcium, and bone formation and maintenance [2]. The incidence of prostate cancer differs between countries due to coverage of prostate-specific antigen (PSA) screening [3]. Patients with advanced-stage or metastatic cancer will ultimately progress to castration-resistant prostate cancer [4]. The mechanisms by which prostate cancer progresses to castration-resistant prostate cancer have been studied extensively [5]. Increasing evidence demonstrates that inflammation plays important roles in the pathogenesis of progression to castration-resistant prostate cancer [6]. A double-blinded clinical study found that vitamin D supplementation reduced prostate specific antigen (PSA) level and enhanced survival rate in patients with prostate cancer [7].

On the other hand, vitamin D receptor (VDR) polymorphisms were associated with the incidence of prostate cancer [7, 8]. Several epidemiological reports showed that men with vitamin D deficiency had a higher risk of prostate cancer compared to men with vitamin D sufficiency [9,10]. Nevertheless, the mechanisms through which vitamin D deficiency elevates the risk of prostate cancer remain unclear. The present study aimed to investigate whether there was an association among prostate cancer, vitamin D status in a hospital-based case-control study.

MATERIALS AND METHODS

A case control study done in Ananta institute of medical sciences and research centre, Rajsamand. During June 2016- November 2016. In the present study, total 50 newly diagnosed patients with prostate cancer were recruited as cases. Prostate cancer was confirmed by histopathology. 50 Controls were recruited from men undergoing physical examination. Vitamin D and PSA done by chemiluminescence immunoassay methodology. method on Cobas e-411 and chemistry (CRP), FBG, creatinine, uric acid, T.G., Total Cholesterol by Cobas Intigra 400. Serum samples of all cases and controls were collected at same season and stored at -20°C.

RESULTS

Biochemical characteristics were analyzed as shown in Table 1, no significant difference in Cr, UA, TG, TCH, fasting blood glucose was observed between cases and controls. As expected, serum T-PSA was significantly increased in patients with prostate cancer as compared

with control subjects (Table 2).

Serum 25(OH)D concentration was analyzed in all subjects. As shown in Figure 1A, serum 25(OH)D in patients with prostate cancer was significantly lower than in controls.

Table 1

Parameters	Case(50)	Control (n=50)	P- value
FBG	70±1.2	69.12±.32	0.81 NS
Creatinine	0.87 ±.2	0.96±.31	0.734 NS
Uric acid	3.30±1.1	3.5±1.28	0.086 NS
Triglyceride	125.25±.25	128.35±3.25	0.45 NS
Total cholesterol	155.23±2.3	152.52±2.35	0.93 NS

No significant change

Table-2

Parameters	case(n=50)	Control(n=50)	P- value
CRP	65.01±2.41	3.01±0.24	<0.0001*
Vitamin D	1.08±.56	8.10±2.16	<0.0001*
PSA	3.70±2.36	15.12±1.25	<0.001*

*Significant change

DISCUSSION

The present study analyzed the association among prostate cancer, vitamin D status. Our results showed that serum 25-(OH) D was reduced in patients with prostate cancer. By contrast, serum CRP, a marker of systemic inflammation, was elevated in patients with prostate cancer. These results provide evidence for the first time that low vitamin D status is associated with inflammation in patients with prostate cancer.

Chronic inflammation promotes metastases and progression to castration-resistant prostate cancer [11, 12]. CRP could predict tumor aggressiveness and potential treatment efficacy in patients with prostate cancer [13]. According to an early report, CRP is an independent prognostic factor for overall survival of patients with castration-resistant prostate cancer treated with docetaxel [14]. A recent study showed that elevated CRP level was associated with poor prognosis in prostate cancer patients treated with radiotherapy [15]. Our results showed that serum 25-(OH)D level was lower in patients with severe prostate cancer than in patients with mild and moderate prostate cancer. By contrast, serum CRP was higher in patients with prostate . These results suggest that low vitamin D status is associated with inflammation and the progression of prostate cancer.

Increasing evidence indicates that vitamin D has an anti-inflammatory activity [16]. These results suggest that inflammation may be a key mediator for prostate cancer progression in patients with low vitamin D status.

The present study has several limitations. First, the present study did not observe whether vitamin D deficiency and inflammation promotes metastasis and progression of prostate cancer. Thus, additional study is required to investigate whether prostatic inflammation promotes prostate cancer in patients with low vitamin D status.

In summary, the present study investigated the association among prostate cancer, vitamin D status and inflammation. Our results showed that serum 25-(OH) D was decreased in patients with prostate cancer. By contrast, serum CRP was increased in patients with prostate cancer.

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