



VITAMIN D<sub>3</sub> SUPPLEMENTATION AND OSTEOPOROSIS.

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**ABSTRACT**

Vit D is well known to exert multiple functions in bone biology autoimmune diseases, cell growth inflammation or neuromuscular and other immune function .Vit D is at low levels in all the population and it is a global problem. Administration of vit D at 600IU for one week and then twice daily definitely significantly lowered BMD, osteoporosis and osteoporotic fractures. It is of great help to old people above 65 years who are at high risk for osteoporotic and osteoporotic fractures there by lower neuromuscular pain.

**KEYWORDS :**

**INTRODUCTION**

Vitamin D deficiency is a wide spread global problem. A Vit D level below 20ng/ml is considered as deficiency <sup>(1)</sup>.Recent evaluation shows that 25 D3 levels predict hepatic and renal degeneration in these patients.

Between 2001 and 2006 about one third of the US population was clearly affected <sup>(2)</sup>. A German Health Interview and Examination Survey for health care showed that slightly more than 60% of the human population have Vit D level 20ng/ml. Amling and Barvencik reported that in 2012 about 80 % of UK population had vit D below 30 ng/ml <sup>(3,4)</sup> what cannot be neglected is the drug induced vit D deficiency .Symptoms of rickets include swelling in the wrist with a wide spread growth gap , a delayed closure of the craniofacial dysmpothy , neuromuscular pain and further symptoms like cardiac arrest tetany or seizures might be induced by the resultant hypocalcaemia <sup>(5)</sup>. Depending on manifestation rickets can even lead to death.

Osteoporosis, a skeletal disease is characterized by decrease in bone mass and pathological changes of the micro vascular structure. The evaluation of the US National Health and Nutritious Survey by dual obseometry.

In case of osteoporosis the T scan is less than 25.5 this is exactly where having a BMP between 2.5 and less than one and having suffering s from a low levels of fractures.

**MATERIALS**

200 willing subjects were included .It included 100males and 100 females of age above 65years.

**METHODOLOGY**

Vit D and BMI measured in 200 subjects blood collected using disposable syringes .Using silicon coated clot tubes and EDTA tubes. Serum separated by centrifugation at 4000rpm for 10 minute. Serum transferred to vials.

EDTA blood used to measure CBC and Hb. Serum used for measure Vit D. BMA calculated from weight (kg)/height (Meter<sup>2</sup>). Vit D measured using il000SR.

Two hundred subjects were divide into 2 groups of 100 each .Each 100 of then subdivided in two consist 50 each of age above 65years.

**RESULT**

All 100 control subjects had low levels of Vit D. BMA is normal or near normal limits. These subjects had risk for osteoporotic fractures .Among 100 old subjects(50 women and 50 men) having osteoporosis and low bone physiology where given 600 IU of Vit D per day for 1 week and then twice a day weekly .There is significant reduction in BMI and osteoporosis and consequently reduced osteoporotic fractures and neuromuscular pain.

**Table 1**

Group	Mean vitD	Mean BMI
Group I (50 old yrs men)	20 ng/ml	30
Group II (50 old yrs women)	28 ng/ml	32
Group III (vit D supplemented men- 50 old yrs men )	35 ng/ml	28
Group IV (vit D supplemented women- 50 old yrs women )	42 ng/ml	22

200 subjects were divided into two groups of 100 each consist 50 males and 50 females. 50 males and 50 females kept as controls

**DISCUSSION**

Vitamin D is well known to exert multiple bone etiology, autoimmune diseases, cell growth, inflammation or neuromuscular immune functions. Being a fat soluble vitamin present in many foods it is found in fat tissue. It can be endogenously produced by ultraviolet light from sunlight when skin is exposed to sunrays .Vitamin D deficiency is proved to produce rickets and osteomalacia.

Osteoporosis, a skeletal disease is characterised by damage in bone mass and pathological changes of the micro vascular structure due to low 25(OH) vit D leading to an elevated risk of osteoporotic fractures <sup>(6)</sup>. The evaluation of the US National Health and Nutrition Examination survey showed that calcium intake can also affect BMP depending on the 25(OH) D levels.

According to the findings of Shane et al two single nucleotide polymorphism constitutes a genetic predisposition which is associated with low bone mineral density (BMD) and a

resulting increased risk of fractures<sup>[7]</sup>. A women suffered from low energy trauma on a typical osteoporotic fractures site classified as having osteoporosis.

In the present study subjects having high risk BMD and osteoporotic fractures showed reduction in BMI and osteoporotic fractures .The subjects received 600IU of vit D continuously for a week and then twice a week thereby indicating a protective and preventive role of osteoporosis and osteoporotic fractures by administering vit D. Majority of the population being vit D deficiency there is high risk for BMI and osteoporosis. Hence vit D levels should be monitored and supplemented specially for old age people (above 65 years). This is well in agreement with the findings of Fatimah M et.al<sup>[8]</sup>

The telephone health survey by Robert Koch Institute in 2003 revealed that the life time prevalence of osteoporosis in women above 45years is over 14% and even rising with age. Wacker and Holick depict a prevalence of about 30% in women aged between 60 and 70. Per year, there is approximately 9 million osteoporosis induced fractures globally, among which fractures of the hip and forearm are most common<sup>[9,10,11,12]</sup>. The life time prevalence of osteoporotic hip fractures among North American women is about 18% . Bischoff-Ferrari and colleague expect a further increase of 310% by the year 2050. In addition to strong pain osteoporosis involve specific risk including high mortality and morbidity. A pooled analysis the effect of vitamin D supplements on fractures reduction showed there is a significant reduction in hip fracture cases when given higher doses than 792 IU/day<sup>[13]</sup>. This is in agreement with the present study. However there is no significant decrease in hip fracture risk among men and women caused by calcium intake. A meta- analysis of randomised, controlled trails adversely showed a significantly increased hip fracture risk<sup>[14]</sup>.

People above the age of 65 have high risk for osteoporotic fractures. Being old age this can even lead to death. Since vitamin D supplementation reduces the osteoporosis and osteoporosis fracture it will be a boon if vitamin is supplemented to all subjects above 65 years or more. Further it will reduce the financial burden of central and state government who are bound to maintain public health free of cost.

## CONCLUSIONS

Vit D and BMI measured in 200 subjects all subjects had low Vit D .50 subject with high BMI having high risk for osteoporosis where given 600 IU of Vit D for one week and then twice weekly .BMI and osteoporosis where lowered .Vit D definitely alters bone density and bone physiology and should be provided an adequate amount to all subjects specially old subjects –above 65years .This could reduce BMD, BMI and osteoporosis fractures. It will be cost effective and reduce the government expenses towards maintaining public health especially in old people.

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