ORIGINAL RESEARCH PAPER

Biochemistry

STUDY OF VITAMIN D LEVELS IN CHRONIC KIDNEY DISEASE PATIENTS.

KEY WORDS:

Dr. Asiya Amera First year MD Biochemistry postgraduate, Osmania medical college, Hyderabad.

Dr. P. Kiranmai Associate professor, department of biochemistry, Osmania medical college, Hyderabad.

ABSTRACT

Background: Vitamin D is a pre hormone obtained through the diet or via skin synthesis. Renal activated end product is responsible for all the effects of active vitamin D hormone in the body.

- Chronic kidney disease is an emergency public health problem and one of the most powerful predictors of premature cardiovascular diseases.
- Patients with CKD have a high rate of vitamin deficiency that is further exacerbated by the reduced ability to convert 25 (OH) vitamin D into active form 1,25 (OH) vitamin D.
- Because cardiovascular disease is the major cause of death in CKD patients, the potential role of vitamin D repletion, positively regulates RAS angiotensin 2 mediated system which may be quite significant in affecting premature mortality associated with CKD.

Aim: Study of vitamin D levels in chronic kidney disease patients. **Objective of the study:** To evaluate vitamin D levels in chronic kidney disease patients. **Methodology:** Study was conducted in Osmania general hospital. 40 cases of CKD patients formed the study group and 40 normal healthy individuals formed the control group. Their serum vitamin D level were estimated using Chemiluminiscent immunoassay. **Result:** Cases were having suboptimal levels of vitamin d (<30 ng/ml) when compared to controls (>30ng/ml). **Conclusion:** There were decreased levels of vitamin D in chronic kidney disease patients, thus in CKD patient`s supplementation with 25 (OH) vitamin D is recommended at the inception of the disease with the addition of calcitriol replacement beginning in stage 3.

BACKGROUND

Vitamin D is a pre hormone obtained through the diet or via ski synthesis. Renal activated end product is responsible for all the effects of active vitamin D hormone in the body.

Chronic kidney disease is an emergency public health problem and one of the most powerful predictors of premature cardiovascular disease.

Patients with CKD have an high rate of vitamin D deficiency that is further exacerbated by the reduced ability to convert 25 (OH)vitamin D into active form 1,25(OH) vitamin D.

Because cardiovascular disease is the major cause of death in CKD patient`s, the potential role of vitamin D repletion, positively regulates RAS angiotensin 2 mediated system which may be quite significant in affecting premature mortality associated with CKD.

In the past decade, an abundance of evidence has detailed a more expanded array of actions involving numerous regulatory processes of vitamin D in the body **(1,2).** Vitamin D appears to play a more extensive role as a cell differentiating and antiproliferative factor with action in a variety of tissues including the renal, cardiovascular and immune system **(3,4)**.

The implication of these new data will serve to shift the approach to vitamin D replacement in CKD patients into a new era where use of vitamin D is no longer solely for the treatment of secondary hyperparathyroidism **(1,5)**.

Vitamin D deficiency is associated with insulin resistance, ventricular hypertrophy, atherosclerotic disease and vascular calcifications **6,7)**

The objective of our study was to evaluate vitamin D levels in chronic kidney disease patients.

MATERIALS AND METHODS

Sample Size: 40 Cases and 40 controls were taken.

Study Design: It's a case control study.

Inclusion Criteria:

All consented cases who were diagnosed clinically and biochemically as chronic kidney disease, attending nephrology Department of Osmania general hospital in the age group of 40-70 years.

Age matched healthy controls were taken.

Methodology:

3 ml of serum sample was collected in both cases and control`s, and their serum creatinine levels were measured by enzymatic method in Beckmen coulter AU5800.

5 ml of serum sample was collected in both cases and controls and there, Vitamin D levels were measured by siemens chemiluminescence immune assay.

Statistical Analysis:

From our data, the mean, percentage, standard deviation, chi-square test and multiple correlation were done by using SSPS-10.

The P values was used to compare the cases mean values with control mean values and the P values of < 0.05 was considered statistically significant.

RESULTS:

The study included 40 cases and 40 controls.

23 (57%) males and 17 (42%) females in case group and 19 (47%) males and 21 (52%) female in control group.

The mean age of study population (mean ± SD) in cases was 60.69 ± 10.62 and in control was 60.81 ± 9.17 years.

Distribution of Vitamin D in Groups

Vitamin D	Case	Control
Deficiency	15	2
Insufficiency	18	12
Normal	7	26

- Among cases, 15 (38%) patients had vitamin D deficiency, 18 (44%) patients had vitamin D insufficiency, 7 (18%) patients had normal vitamin D levels.
- Among controls, 2 (5%) patients had vitamin D deficiency, 12 (33%) patients had vitamin D insufficiency , 26 (66%) patients had normal vitamin D levels.
- Among cases, mean vitamin D (mean ± SD) of patients was 22.57 ± 9.76.
- Among controls, mean vitamin D (mean ± SD) of patients was 35.24 ± 10.18.

CONCLUSION

Both deficiency and insufficiency were higher in chronic kidney disease patients compare to control and that is statistically significant (p value <0.05).

Thus, in CKD patient`s supplementation with 25 (OH) vitamin D is recommended at the inception of the disease with the addition of calcitriol replacement beginning in stage 3.

REFERENCES

1. Jones G: Expanding role of vitamin D in CKD, Importance of blood 25(OH) vitamin D levels and extra renal 1 α hydroxylase in the classical and nonclassical action of 1 α 25 Di hydroxylase vitamin D3 [2007,20(4: 316-324 [PubMed, Google scholar]
2. Li. YC: Reno protective effect of vitamin D analogs [2009 May 27]. [PubMed, Google scholar]
3. Holick MF: Vitamin D appears to play a more extensive role as a cell differentiation and antiproliferative factor with actions in a variety of tissues including the renal, cardiovascular and immune system. [Vitamin D deficiency 2007: 357: 266-281]. [PubMed, Google scholar]
4. Nagpal S, Na S, Rathnachalam R. [non calcemic action of vitamin D receptors ligands]. [PubMed, Google scholar]
5. Cheng S, Coyne D: The implication of these new data will serve to shift the approach to vitamin D replacement in CKD patients inti a new era where use of vitamin D is no longer solely for the treatment of secondary hyperparathyroidism. [vitamin and outcomes in CKD 2007;16 (2); 77-82]. [PubMed, Google scholar]
6. Lai S, Coppola B, Dimko M, et al 2014: Vitamin D deficiency is associated with insulin resistance, ventricular hypertrophy, atherosclerotic disease. [PubMed, Google scholar]
7. Fusaro M, Gallieni M, Rebora p et al, 2016: Vitamin D deficiency and vascular calcification. [Pub Med, Google scholar]