

Tuberculosis and Vitamin D Deficiency

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ABSTRACT

Aim: To examine serum vitamin D concentration before treatment in patients with active T.B and their family members.

Method: Serum vitamin D concentration was measured before treatment in 50 patients with active T.B and 50 healthy contacts.

Results: There was statistically significant difference in serum vitamin D concentration between patients and their family members. Significantly more patients have severely deficient concentration than their family members. Dietary intake was the same in both patients and family members with similar sunlight exposure as well.

Conclusion: Patients with active TB have lower serum vitamin D concentrations than contacts from similar ethnic and social backgrounds with comparable dietary intake and sun exposure indicating that in TB patients factors other than diet and sun exposure contribute to vitamin D deficiency. Therefore while public health education should stress the need for adequate dietary intake of vitamin D in all vulnerable groups, there is need to explore a potential role for vitamin D supplementation in treatment of Tuberculosis.

Key words: Vit. D deficiency, Tuberculosis,

INTRODUCTION

There is increasing tendency of Vitamin D Deficiency in Pakistan which has a very high incidence of tuberculosis patients. Study was undertaken to examine serum vitamin D concentrations before treatment in patients with active tuberculosis and their family members. Kelech E Nnoaham and Aleen Clark on 13 November 2007 published study in which they evaluated papers published between 1980 and 2006 that examine associations between low serum vitamin D and risk of active tuberculosis. This study was performed to determine whether there is association between active Tb and lower serum vitamin D levels. Many factors can influence serum vitamin D concentration but diet and sunlight exposures are particularly important. In this study we have measured serum vitamin D concentrations at presentation and at three months and six months of treatment. As several factors are known to influence 25 hydroxycholecalciferol. We excluded women over fifty years of age, heavy smokers and patients with concurrent diseases example cancer patients, diabetics and renal diseases.

METHODS

Serum vitamin D was defined as serum levels of 25 Hydroxyvitamin D3 levels. The study population was smear positive pulmonology tuberculosis patients yet to commence treatment. Controls were healthy

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people representative of the population from which cases were drawn. To assess the involvement of diet of 50 patients and 50 of their family contacts completed, well dated, food frequency, questionnaire to establish levels of sun exposure. Reused table of foods naturally containing vitamin D (mainly oily fish, egg yolk and liver). Exposure of the face, arms and legs through the sun for one hour daily during the summer months would be required to obtain sufficient vitamin D to maintain normal concentration throughout the year.

RESULTS

Mean 25 hydroxyvitmain D concentrations were significantly lower in patients with TB than in their healthy contacts and significantly more patients had severely deficient concentrations than controls. It was also noted that patients with lower social economic status had adequate sun exposure but inadequate dietary intake, whereas patients with good social economic background had adequate dietary intake but inadequate sun exposure.

DISCUSSION

The study finds that patients with tuberculosis have on average lower serum levels of vitamin D than healthy controls. Although there is a good evidence to suggest that a fall in serum vitamin D levels compromises cell mediated immunity and leads to the activation of latent tuberculosis, it is also possible

that low serum vitamin D levels results from tuberculosis itself.

Much remains to be known of the relative contribution of sunlight and diet to body vitamin D levels. Study of indigenous Indonesian suggested that in population with good year round sunshine, people could maintain adequate serum levels of vitamin D inspite of poor dietary intake. A similar study in India however found low vitamin D levels in the study population despite adequate sun exposure concluding that diet was the most important factor.

The significance of association between vitamin D deficiency and tuberculosis is 2 fold. First already low vitamin D levels in tuberculous patients may fall further on commencement of treatment. Further drops can be predispose to other vitamin D deficient states.

CONCLUSION

Patients with active TB have lower serum vitamin D concentrations than contacts from similar ethnic and social backgrounds with comparable dietary intake

and sun exposure indicating that in TB patients factors other than diet and sun exposure contribute to vitamin D deficiency. Therefore while public health education should stress the need for adequate dietary intake of vitamin D in all vulnerable groups, there is need to explore a potential role for vitamin D supplementation in treatment of Tuberculosis.

REFERENCES

1. KE Nhogamr 2008. Low serum vitamin D levels and Tuberculosis.
2. LT-MO.. Associaton between Vitamin D insufficiency and tuberculosis. Pham-2010
3. Vitamin D deficiency and tuberculosis by IR REILD-2000
4. Sasidharan PIC, Rajeev. Tuberculosis and vitamin D deficiency. Dept of Medicine, Calicut University
5. Talat N, Perry S, Dawood G Vitamin D deficiency and tuberculosis progression Agha Khan university, Karachi