



A CASE OF HYPOVITAMINOSIS D ASSOCIATED WITH GRAVES' DISEASE

General Medicine

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ABSTRACT

In today's world Vitamin D deficiency is very common and according to recent studies Vitamin D deficiency is found to be associated with various autoimmune disorders along with autoimmune thyroid disorder such as Hashimoto thyroiditis & Grave's disease^{1,2,3}. We report a case of young female with hypovitaminosis D, who presented with complaints of palpitation, shortness of breath and carpopedal spasm, which was diagnosed to be associated with Graves' disease. We hereby report this case to create an awareness in physicians to evaluate & consider the possibility of thyroid disorder in patients with Vitamin D deficiency.

KEYWORDS

Hypovitaminosis D, Graves' disease, hyperthyroidism, autoimmune thyroid disease.

INTRODUCTION

Vitamin D is a steroid molecule which is mainly produced in Skin, which regulates the gene expression¹. Vitamin D plays a vital role in Bone metabolism and homeostasis of phosphorus & calcium. Studies have revealed that Vitamin D is linked with various non skeletal functions like cancers, autoimmune disorders, infections, metabolic syndromes and cardio vascular diseases^{4,5,6}. Deficiency of Vitamin D is also found to be associated with autoimmune thyroid diseases such as Hashimoto's thyroiditis & Grave's disease^{1,2,3}. This report is based on a case presented in our hospital which showed the association of vitamin D deficiency and Grave's Disease. We report a case of young female with hypovitaminosis D, who presented with complaints of palpitation, shortness of breath and carpopedal spasm, which was diagnosed to be associated with Graves' disease, and want to create awareness about such vitamin D deficiency associated autoimmune disorder.

CASE STUDY

22 years old female with no previous co-morbidity, came with complaints of shortness of breath since one week associated with palpitations. There was no history of fever, cough, expectoration or chest pain. She also complained of clenching of teeth and stiffness in bilateral wrist joint. She also had a history of weight loss approximately 2 Kgs over a month without any loss of appetite.

On initial investigations her calcium level was low (6.5 mg/dL) with low Vitamin D level (6.47 ng/mL). Magnesium and Albumin level were within normal limits. Her thyroid function test showed free T₃ (3.17 pg/dL), free T₄ level was raised (23.5 ng/dL) and TSH was suppressed (0.008 µIU/mL). Anti-thyroid peroxidase antibody (anti-TPO antibody) and anti-thyroglobulin antibody (anti-TG antibody) both were raised (734 µ/mL and 454.4 µ/mL respectively).

A diagnosis of hypovitaminosis D with hyperthyroidism was made. Technetium Perchnetate Thyroid Scan (99 mTc) was done which revealed overall increased technetium thyroid uptake with normal thyroid gland morphology, suggestive of hyperthyroidism. Patient was started on Methimazole (20mg once daily) along with Calcium and Vitamin D supplementations. The clinical condition improved and patient was discharged in stable condition.

DISCUSSION

Vitamin D deficiency is very common worldwide with over 1 billion people affected by its deficiency⁷. Vitamin D is a pro-hormone, involved in variety of functions in addition to bone metabolism⁸. Above case shows association of vitamin D deficiency and autoimmune thyroid disease (Grave's Disease). Based on other studies vitamin D is also found to be associated with some other autoimmune diseases like Systemic Lupus Erythematosus (SLE), Rheumatoid

Arthritis (RA) Inflammatory Bowel Syndrome (IBD), Type 1 Diabetes Mellitus (T₁DM), Multiple Sclerosis and Hashimoto Thyroiditis^{9,10}. The mechanism involved hereby is, Vitamin D and Thyroid Hormone both bind to similar steroid hormone receptors. Vitamin D binds to Vitamin D receptor (VDR) and activate VDR responsive genes. Polymorphism of VDR genes is found to be associated with autoimmune thyroid disease¹. Our case emphasizes the requirement to evaluate autoimmune thyroid disease in vitamin D deficiency based on symptoms of the patients.

CONCLUSION

Vitamin D deficiency is found to be associated with various autoimmune disorders along with autoimmune thyroid disorder such as Hashimoto thyroiditis & Grave's disease. So the physicians should evaluated for thyroid disease in every patient with severe hypovitaminosis D.

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