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Vitamin D Status and Relation with Thyroid Antibodies in Patients with Autoimmune Thyroid Disease

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Abstract

Background: The most common cause of thyroid dysfunction is autoimmune thyroid disease (AITD), which includes Hashimoto's thyroiditis (HT) and Graves' disease (GD). Vitamin D insufficiency has been linked to autoimmune disorders but the data are inconclusive.

Objective: This study aimed to evaluate vitamin D status and its relation with thyroid autoantibodies (Anti-TPO-Ab, Anti-Tg-Ab, TRAb) in Bangladeshi patients with AITD.

Material and methods: This case-control study was conducted in the department of Endocrinology in BIRDEM General Hospital from March 2022 to February 2024. Eighty newly diagnosed untreated AITD patients (40 HT, 40 GD), aged >18 years were enrolled. Eighty subjects with normal thyroid function were recruited as control. Serum 25(OH)D was checked by CMIA and Anti-TPO-Ab, Anti-Tg-Ab, TRAb were noted. Status of vitamin D was defined on serum 25(OH)D levels: sufficiency if ≥30ng/ml, insufficiency if 21-29ng/ml and deficiency if ≤20 ng/ml.

Results: It was observed that 67.5% of AITD cases (70.0% with HT, 65.0% with GD) had vitamin D deficiency in comparison to the 51.2% controls (p 0.039). The mean 25(OH)D was significantly lower in patients with HT (13.22±8.89 ng/ml) and GD (14.46±9.73 ng/ml) than in controls (19.14±7.59 ng/ml) (p 0.001). Correlation analysis revealed that vitamin D was inversely related to Anti-TPO-Ab (r= -0.501p 0.001 in HT and r-0.431, p 0.006 in GD), Anti-Tg-Ab (r=-0.296, p 0.064 in HT; r=-0.299, p=0.061 in GD) and TR-Ab (r -0.447, p 0.004) indicating that as vitamin D levels decrease, antibody titres tend to increase.

Conclusion: Our findings indicate that patients with AITD have lower vitamin D levels. Since we found an inverse correlation between vitamin D and thyroid antibody levels, we may speculate that vitamin D deficiency can be one of the potential factors in pathogenesis of AITD. *[J Assoc Clin Endocrinol Diabetol Bangladesh, 2025;4(Suppl 1): S44]*

Keywords: AITD, Hashimoto's thyroiditis, Graves' disease, Vitamin D, Antibody

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