Randomized retrospective study showed that B12 vitamin deficiency is associated with autoimmune diseases in Patients with Diabetes Mellitus type 2

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Vitamin B-12 (cobalamin) has the largest and most chemically complex structure of all of the vitamins, is only active substance in the body containing an atom cobalt and is synthesized by anaerobic microorganisms in the gut of animal sources. B-12 vitamin deficiency is associated with a wide range of hematological, neurological, cardiovascular, psychiatric and autoimmune processes.

Epidemiological studies show that 3-8% of people in the world has autoimmune diseases. One of the most prevalent autoimmune disease is autoimmune thyroiditis. There are currently several publications on the use of vitamins for the prevention of autoimmune diseases. As we know Patients with Type 2 Diabetes Mellitus who use Metformin also have Low level of B12 Vitamin.

Results:

A significant negative correlation was observed between B12 vitamin and anti-TPO, deficiency of B12 vitamin causes an increase in anti-TPO. $r = -.225^{**}$, $p < 0.0001$.

B12 shows a reliable positive correlation with With B-12 deficiency - Thyroid autoimmune disease - $r = .786^{**}$, $p = 0.000$; Diffuse goiter - $r = .147^{**}$, $p = 0.009$; Hypothyroidism - $r = .264^{**}$, $p = 0.000$

Methods:

The first time, a retrospective study of 313 patients who had Diabetes Mellitus Type 2, without Metformin Treatment - at the National Institute of Endocrinology in Georgia was retrospectively studied, who first determined the level of vitamin B12 in the blood.

Without B12 vitamin deficiency				With B12 vitamin deficiency				
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	t	p
Anti-TPO(<3.2iu/ml)	178	38.62	163.79	135	254.30	510.19	-4.73	0.0000

Conclusions:

However there is limited data on exact prevalence of low B12 and its correlation with anti-thyroperoxidase antibody (anti-TPO) levels in these patients. Our study demonstrates the presence of low serum B12 levels in AITD. Which pathology first appears? Autoimmune process or vitamin B12 deficiency? From this study, we can recommend that patients with autoimmune disease be diagnosed with B12 levels. It is also noteworthy that patients in the risk group of vitamin B12 deficiency, such as diabetic patients with or without Metformin, should be monitored periodically for markers of autoimmune diseases. These findings need further more research on a larger population using additional markers to investigate into the cause of deficiency, the factors involved, and benefit of B12 supplementation in these patients.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3710642/>
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