

Thyroid peroxidase Antibody in Type 1 Diabetic Patients

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ABSTRACT

Type 1 Diabetes Mellitus is an autoimmune disease characterized by absolute insulin deficiency resulting destruction of islet beta cells. T1DM is frequently associated with autoimmune thyroid disease.

We have therefore investigated the prevalence of anti-thyroid peroxidase(anti-TPO) & anti-thyroglobulin (anti-Tg) antibodies in type 1 diabetic patients, and screened anti-thyroid antibodies and TSH, T3, & T4 levels, and to study the level of lipid profile in type 1 diabetic patients and its relation to anti-thyroid antibodies(anti-TPO & anti-Tg) .

Ninety subjects with type 1 diabetes mellitus and thirty healthy as controls non-diabetics under the age of thirty years.

Blood samples were taken for investigation of thyroid function test by using Vitek Immune Diagnostic Assay System(VIDAS). Enzyme Linked Immuno Sorbent Assay(ELISA) test to detect anti-thyroid antibodies(TPO & Tg).

Among 90 type 1diabetic patients 20(22.2%) were positive for anti-TPO and 7(7.7%) were positive for anti-Tg. There was a statistically no significant correlation between the levels of (anti-TPO & anti-Tg) and gender in type 1 diabetic patients ($P_{value}>0.820$ and $P_{value}>0.972$), respectively. Also we found another negative ($P_{value}>0.05$) correlation between (anti-TPO & anti-Tg) with age. There was a statistically significant positive correlation between TSH and (anti-TPO & anti-Tg) antibodies levels in type 1 diabetic patients($P_{value}<0.05$) at the same time was negative correlation between (T3& T4) levels and (anti-TPO & anti-Tg) levels, but statistically not significant($P_{value}>0.05$). on the other hand we found statistically significant negative ($P_{value}>0.05$) correlation between (anti-TPO & anti-Tg) levels and lipid profile levels in type 1 diabetic patients. Finally, the present study showed that there was statistically significant correlation between (anti-TPO) antibodies level and (anti-Tg) antibodies level ($P_{value}<0.021$).

Introduction

Diabetes mellitus, often simply referred to as diabetes, is a group of metabolic diseases in which a person has high [blood sugar](#), either because the body does not produce enough [insulin](#), or because the cells do not respond to the insulin that is produced. This high blood sugar produces the classical symptoms of [polyuria](#) (frequent urination), [polydipsia](#) (increased thirst) and [polyphagia](#) (increased hunger)(1).

There are three main types of diabetes:

[Type 1 diabetes](#): results from the body's failure to produce insulin, and presently requires the person to inject insulin. (Also referred to as insulin-dependent diabetes mellitus, IDDM for short, and juvenile diabetes) (2), [type 2 diabetes](#): results from [insulin resistance](#), a condition in which cells fail to use insulin properly, sometimes combined with an absolute insulin deficiency. (Formerly referred to as non-insulin-dependent diabetes mellitus, NIDDM) (2), and [gestational diabetes](#): is when pregnant women, who

have never had diabetes before, have a high blood glucose level during pregnancy. It may precede development of type 2 DM (3,4).

The association of type 1 diabetes mellitus with autoimmune thyroid disease (AITD) has been well documented in many population(5). Autoimmune thyroid disease (AITD) is an organ specific disorder that affects the thyroid gland. The percentage of this disease among the most common human autoimmune diseases, affecting up to 5% of the general population (6). To detect the clinical symptoms of AITD, thyroid volume is usually determined with ultrasonography, and serum concentrations of three hormones [thyroid stimulating hormone (TSH), thyroxine (T4) and triiodothyronine (T3)] and autoantibodies against thyroid peroxidase (TPO) and thyroglobulin (Tg) antibodies are measured. Autoimmunity against the thyroid gland results in two opposite pathogenic paths: hyperthyroidism in Graves' disease and thyroid destruction in Hashimoto thyroiditis. Increased circulating activated T cells and thyroid-specific autoantibodies occur in Graves' disease. Antibodies directed against the TSH receptor stimulate thyroid function and lead to glandular overactivity (6). The aims of the present study is to investigate the prevalence of anti-Thyroid peroxidase (anti-TPO) and anti-Thyroglobulin (anti-Tg) antibodies in type 1 diabetic patients, to compare the effect of age and sex on the thyroid autoimmunity in type 1 diabetic patients, and to study the level of lipid profile in type 1 diabetic patients and its relation to anti-thyroid antibodies (anti-TPO & anti-Tg).

Materials and Methods

This comparative study was conducted at the Specialized Center for Endocrinology and Diabetes-Baghdad, during the period from November 2010 to January 2011.

Sera were collected from 90 subjects with type 1 diabetes mellitus, and 30 healthy controls. All the subjects had no history of previous thyroid diseases. Informed consent was obtained from all the subjects. Fasting blood samples were collected by vein puncture technique & for separation of serum, the blood is centrifuged at 3000 rpm for 5 min. The separated serum is used to estimate serum TSH, T3, T4, lipid profile, FBG, and (anti-TPO & anti-Tg) antibodies. Serum TSH, T3, and T4 are estimated by VIDAS method. Estimation of thyroid autoantibodies by using ELISA. Statistical methods: comparison between means was performed by student t-test. Comparison between frequencies was carried out by Chi-Square. Differences were considered significant at ($P_{\text{value}} < 0.05$).

Results and Discussion

Table(1) showed that no statistically significant differences in the distribution of studied groups were according to gender, with prevalence rates (42.2%) for males, and (57.8%) for females in study group, against (36.7%) for males and (63.3%) for females in the control group ($p > 0.05$). Female groups in this study show the highest percentage (57.8%) for patients and (63.3%) for controls. Although there is not statistically significant difference, this result is matched with Faranak Sharifi et al, 2007(5), Hesham El_Hefnawy et.al, 2004 (9), and Erdogan et.al, 2010 who had found no difference in the distribution of studied groups according to gender(10).

Regarding the age groups the same table shows that the majority of patients with T1D is between (10-14) years old with 42(46.7%) for study group against 13(43.3%) for control group. A non significant difference was found between the numbers of patients in the five age groups when we compared them with that of control ($P_{\text{value}} > 0.05$).

Table (1) Demographical picture of studied groups

Variables	Groups	Frequencies and Percents	Sample		C.S. P-value
			Study	Control	
Gender	Male	Frequency	38	11	CC=0.049 P=0.592 NS
		% Groups	42.2%	36.7%	
	Female	Frequency	52	19	
		% Groups	57.8%	63.3%	
Age Groups	5 – 9	Frequency	9	5	CC=0.205 P=0.262 NS
		% Groups	10.0%	16.7%	
	10 - 14	Frequency	42	13	
		% Groups	46.7%	43.3%	
	15 - 19	Frequency	32	7	
		% Groups	35.6%	23.3%	
	20 - 24	Frequency	5	2	
		% Groups	5.60%	6.70%	
	25 - 30	Frequency	2	3	
		% Groups	2.2%	10.0%	

NS: Non – Sig. at $P > 0.05$

Table(2) showed that there was a positive significant different between diabetic patients and control groups according to anti-TPO antibodies ($P_{\text{value}} < 0.005$).

Table (2) Distribution Anti-TPO Abs in the study and control groups

Anti-TPO	Frequencies and Percents	Groups		C.S. P-value
		Study	Control	
Negative	Frequency	70	30	CC=0.250 P=0.005 HS
	% Anti-TPO	77.8%	100.0%	
	% of Total	58.3%	25.0%	
Positive	Frequency	20	0	
	% Anti-TPO	22.2%	0.0%	
	% of Total	16.7%	0.0%	
Total	Frequency	90	30	
	% Anti-TPO	100%	100%	
	% of Total	75%	25%	

Anti-thyropoxidase antibodies (anti-TPO) are considered as anti-thyroid antibodies directed to the thyroid follicular microsomes, i.e., antiperoxidase(11). TPO is a membrane-bound, glycosylated hemoprotein plays a key role in thyroid hormone synthesis by catalyzing

both the iodination of thyroglobulin and the coupling of some of the iodotyrosyl residues to generate the thyroid hormones T3 and T4 (8).

The results above are in agreement with the result made in Egypt in 2004, who had found highly significant difference between both groups(9). This study also agrees with former study conducted by Faranak Sharifiet.al,2007(5). These results were compatible with Aaron Hanukoglu et.al,2003 (12), H.Moayeri et.al,2004 (13), Erdogan et.al,2010,(10), and G.S.R.Kedari,2010, who stated that the significant increase in the value of anti-TPO in type 1 DM when compared to controls(14).

Table (3) showed that there was no significant difference regarding of anti-Tg levels between both groups ($P_{\text{value}} > 0.115$).

Table (3): Distribution of Anti-Tg in the study and control groups

Anti-Tg	Frequencies and Percents	Groups		C.S. P-value
		Study	Control	
Negative	Frequency	83	30	CC=0.142 P=0.115 NS
	% within Anti-Tg	73.5%	26.5%	
	% of Total	69.2%	25.0%	
Positive	Frequency	7	0	(C.I. = 88.5%)
	% within Anti-Tg	100%	0.0%	
	% of Total	5.8%	0.0%	
Total	Frequency	90	30	
	% within Anti-Tg	75%	25%	
	% of Total	75%	25%	

NS: Non – Sig. at $P > 0.05$

Thyroglobulin, the main protein synthesized in the thyroid, serves both in the synthesis and in the storage of thyroid hormones (7,15).

These results agree with Erdogan et.al, 2010, who found no statistical difference between the two groups (10).

Other studies in India in 2010, disagree with the present results that show the anti-Tg antibody has highly significant prevalence of anti-Tg antibody in patients with type 1 diabetes mellitus(14).

Table(4) showed that there was no significant difference between two sexes and anti-thyroid antibodies(anti-TPO & anti-Tg) ($P_{\text{value}} > 0.05$).

Table (4): Distribution of the frequencies of the studied Anti-thyroid Abs in the study group according to gender

Enzymes' types	Gender	Frequencies and Percents	Enzymes' diagnosis		Total	C.S. P-value
			Normal	Abnormal		
Anti-TPO	Male	Frequency	30	8	38	CC=0.024 P=0.820 NS
		% gender	42.9%	40.0%	42.2%	
	Female	Frequency	40	12	52	
		% gender	57.1%	60.0%	57.8%	
	Total	Frequency	70	20	90	
		% gender	100.0%	100.0%	100.0%	
Anti-Tg	Male	Frequency	35	3	38	CC=0.004 P=0.972 NS
		% gender	42.2%	42.9%	42.2%	
	Female	Frequency	48	4	52	
		% gender	57.8%	57.1%	57.8%	
	Total	Frequency	83	7	90	
		% gender	100%	100%	100%	

NS: Non – Sig. at $P > 0.05$

Results of this study, are within the prevalence limits established by other studies. These results are in agreement with the observation of D.Hansen et.al , 2003, who found there was no significant difference between the prevalence of thyroid antibodies in males and females(16).

There is no difference between males and females for distribution of anti-thyroid antibodies in most studies. This result matches with Ana Sofia Zeloya et.al,2010 (17), Faranak Sharifi et .al, 2007, who had stated no significant difference in men and women in the diabetic patients(5).

The present results are nearly compatible with study made M.PRAZNY et.al, 2005, who had found no significant difference in the value of anti-TPO were found between men and women in the diabetic group (18).

Table(5) showed that there was no significant difference ($P_{\text{value}} > 0.05$) between studied groups with anti-thyroid antibodies according to age ranges.

Table (5): Distribution of the frequencies of the studied Anti-thyroid antibodies in the study group and Age Groups

Age Groups		Frequencies and Percents	Antibodies		Total	C.S. P-value
			Normal	Abnormal		
Anti-TPO	< 10 yrs.	Frequency	9	0	9	CC=0.177 P=0.232 NS C.I.=76.8%
		% Anti-TPO	12.9%	0.0%	10%	
	10 - 19 yrs.	Frequency	56	18	74	
		% Anti-TPO	80.0%	90.0%	82.2%	
	20 > yrs.	Frequency	5	2	7	
		% Anti-TPO	7.1%	10.0%	7.8%	
	Total	Frequency	70	20	90	
		% Anti-TPO	100%	100%	100%	
Anti-Tg	< 10 yrs.	Frequency	9	0	9	CC=0.231 P=0.079 NS C.I.=92.1%
		% of Total	10.8%	0.0%	10.0%	
	10 - 19 yrs.	Frequency	69	5	74	
		% of Total	83.1%	71.4%	82.2%	
	20 > yrs.	Frequency	5	2	7	
		% of Total	6.0%	28.6%	7.8%	
	Total	Frequency	83	7	90	
		% of Total	92.2%	100%	100%	

The present results are nearly compatible with study made in Tehran in 2007, which found a positive correlation between age and serum anti-TPO, but not for anti-Tg concentrations in the diabetic patients(5).

In this study the highest positive anti-TPO antibody titer (90.0%) is at age from (10-19) years although there is no statistically significant difference, this result is in constant with H.Moayeri et.al, 2004, who stated that the frequency of anti-TPO antibodies was higher in older patients between (10-20) years(13).

Table (6) showed that there was no significant correlation ($P_{\text{value}} > 0.05$) between FBG and anti-thyroid antibodies in patients with type 1 diabetes mellitus.

Table (6): Distribution of FBG concentration in the study group and Anti-thyroid antibodies(anti-TPO & anti-Tg)

FBG	Frequencies and Percents	Anti-TPO		Total	C.S. P-value
		Normal	Abnormal		
(\geq 7.2 mmol/L)	Frequency	6	1	7	CC=0.055 P=0.599 NS
	% TPO	8.6%	5.0%	7.8%	
(< 7.2 mmol/L)	Frequency	64	19	83	
	% TPO	91.4%	95.0%	92.2%	
Total	Frequency	70	20	90	
	% TPO	100%	100%	100%	

FBG	Frequencies and Percents	Anti-Tg		Total	C.S. P-value
		Normal	Abnormal		
(\geq 7.2 mmol/L)	Frequency	77	6	83	CC=0.070 P=0.503 NS
	% FBG	92.8%	7.2%	100%	
(< 7.2 mmol/L)	Frequency	6	1	7	
	% FBG	85.7%	14.3%	100%	
Total	Frequency	83	7	90	
	% FBG	92.2%	7.8%	100%	

Table (7) showed that there was no significant correlation between anti-TPO antibodies and lipid profile in patients with type 1 diabetes mellitus.

Table (7): Distribution of the Frequencies of the studied Anti-TPO(IgG) Abs in the study group and Lipid Profile

Lipid Profiles	Diagnosis	Frequencies and Percents	Anti-TPO		Total	C.S. P-value
			Normal	Abnormal (Pos.)		
cholesterol	Normal	Frequency	56	17	73	CC=0.053 P=0.614 NS
		% Anti-TPO	80.0%	85.0%	81.1%	
	Abnormal	Frequency	14	3	17	
		% Anti-TPO	20%	15%	18.9%	
Triglyceride	Normal	Frequency	64	19	83	CC=0.055 P=0.599 NS
		% Anti-TPO	91.4%	95.0%	92.2%	
	Abnormal	Frequency	6	1	7	
		% Anti-TPO	8.6%	5%	7.8%	
HDL	Normal	Frequency	23	7	30	CC=0.019 P=0.858 NS
		% Anti-TPO	32.9%	35.0%	33.3%	
	Abnormal	Frequency	47	13	60	
		% Anti-TPO	67.1%	65.0%	66.7%	
LDL	Normal	Frequency	5	0	5	CC=0.129 P=0.219 NS
		% Anti-TPO	7.1%	0.0%	5.6%	
	Abnormal	Frequency	65	20	85	
		% Anti-TPO	92.9%	100.0%	94.4%	
VLDL	Normal	Frequency	43	15	58	CC=0.117 P=0.263 NS
		% Anti-TPO	61.4%	75.0%	64.4%	
	Abnormal	Frequency	27	5	32	
		% Anti-TPO	38.6%	25.0%	35.6%	

NS: Non – Sig. at P> 0.05

Table (8) showed that there was no significant correlation between anti-Tg antibodies and lipid profile in patients with type 1 diabetes mellitus.

Table (8): Distribution of the frequencies of the studied Anti-Tg (IgG) Abs in the study group and Lipid Profile

Lipid Profiles	Diagnosis	Frequencies and Percents	Anti-Tg		Total	C.S. P-value
			Normal	Abnormal		
Cholesterol	Normal	Frequency	67	6	73	CC=0.034 P=0.746 NS
		% cholesterol	91.8%	8.2%	100%	
		% of Total	74.4%	6.7%	81.1%	
	Abnormal	Frequency	16	1	17	
		% cholesterol	94.1%	5.9%	100%	
		% of Total	17.8%	1.1%	18.9%	
Triglyceride	Normal	Frequency	76	7	83	CC=0.084 P=0.424 NS
		% triglyceride	91.6%	8.4%	100%	
		% of Total	84.4%	7.8%	92.2%	
	Abnormal	Frequency	7	0	7	C.I. = 57.6%
		% triglyceride	100.0%	0.0%	100%	
		% of Total	7.8%	0.0%	7.8%	
HDL	Normal	Frequency	54	6	60	CC=0.117 P=0.266 NS
		% HDL	90.0%	10.0%	100%	
		% of Total	60.0%	6.7%	66.7%	
	Abnormal	Frequency	29	1	30	C.I. = 73.4%
		% HDL	96.7%	3.3%	100%	
		% of Total	32.2%	1.1%	33.3%	
LDL	Normal	Frequency	4	1	5	CC=0.110 P=0.294 NS
		% LDL	80.0%	20.0%	100%	
		% of Total	4.4%	1.1%	5.6%	
	Abnormal	Frequency	79	6	85	C.I. = 70.6%
		% LDL	92.9%	7.1%	100%	
		% of Total	87.8%	6.7%	94.4%	
VLDL	Normal	Frequency	52	6	58	CC=0.128 P=0.221 NS
		% VLDL	89.7%	10.3%	100%	
		% of Total	57.8%	6.7%	64.4%	
	Abnormal	Frequency	31	1	32	C.I. = 77.2%
		% VLDL	96.9%	3.1%	100%	
		% of Total	34.4%	1.1%	35.6%	
Total		Frequency	83	7	90	-
		% VLDL	92.2%	7.8%	100%	
		% of Total	92.2%	7.8%	100%	

NS: Non – Sig. at P> 0.05

Table (9) showed that there was significant correlation ($P_{\text{value}} < 0.05$) between TSH and anti-TPO antibodies in patients with type 1 diabetes mellitus.

Table (9): Distribution of the frequencies of the studied Anti-TPO in the study group and TSH levels

Variables	Groups	Frequencies and Percents	Anti-TPO		Total	C.S. P-value
			Negative	Positive		
TSH	Normal	Frequency	66	16	82	CC=0.204 P=0.048 S C.I.=95.2%
		% TSH	94.3%	80.0%	91.1%	
	Abnormal (Pos.)	Frequency	4	4	8	
		% TSH	5.7%	20.0%	8.9%	
Total		Frequency	70	20	90	C.I.=95.2%
		% TSH	100%	100%	100%	

The results above are in agreement with the result made in Egypt in 2004, which found significant difference between distribution of normal and abnormal TSH concentration according to frequency normal and abnormal of anti-TPO (IgG) antibodies(9). This study also agrees with former study conducted by Faranak Sharifi *et.al*,2007(5).

Table (10) showed that there was no significant correlation between anti-TPO antibodies and (T3 & T4) levels ($P_{\text{value}} > 0.05$) in patients with type 1 diabetes mellitus.

Table (10): Distribution of Normal and Abnormal T3 & T4 in the study group and Anti-TPO Enzyme

Parameters	Responding	Frequencies and Percents	Anti-TPO		Total	C.S. P-value
			Negative	Positive		
T3	Normal	Frequency	62	20	82	CC=0.165 P=0.113 NS (C.I.=88.7%)
		% anti-TPO	88.6%	100.0%	91.1%	
	Abnormal	Frequency	8	0	8	
		% anti-TPO	11.4%	0.0%	8.9%	
	Total	Frequency	70	20	90	
		% anti-TPO	100%	100%	100%	
T4	Normal	Frequency	69	18	87	CC=0.185 P=0.060 NS (C.I.=94%)
		% anti-TPO	98.6%	90%	96.7%	
	Abnormal	Frequency	1	2	3	
		% anti-TPO	1.4%	10%	3.3%	
	Total	Frequency	70	20	90	
		% anti-TPO	100%	100%	100%	

Table (11) showed that there was a positive significant difference ($P_{\text{value}} < 0.003$) between anti-Tg antibodies and TSH levels in patients with type 1 diabetes mellitus.

Table (11): Distribution of the frequencies of the studied Anti-Tg in the study group and TSH levels

Variables	Groups	Frequencies and Percents	TSH		Total	C.S. P-value
			Normal	Abnormal		
Anti-Tg	Negative	Frequency	78	5	83	CC=0.303 P=0.003 HS C.I.=99.7%
		% TSH	95.1%	62.5%	92.2%	
	Positive	Frequency	4	3	7	
		% TSH	4.9%	37.5%	7.8%	
Total		Frequency	82	8	90	C.I.=99.7%
		% TSH	100%	100%	100%	

NS: Non – Sig. at $P > 0.05$; S: Sig. at $P < 0.05$; HS: Highly Sig. at $P < 0.01$

The results above are in agreement with the result made in Egypt in 2004, which found significant difference between distribution of normal and abnormal TSH concentration according to frequency of normal and abnormal anti-Tg (IgG) antibodies(9). This study also agrees with former study conducted by Faranak Sharifiet.al,2007(5). **Table (12)** showed that there was no significant correlation ($P_{\text{value}} > 0.05$) between anti-Tg antibodies and (T3 & T4) levels in patients with type 1 diabetes mellitus.

Table (12): Distribution of Normal and Abnormal T3 & T4 in the study group and Anti-Tg Abs

Parameters	Responding	Frequencies and Percents	Anti-Tg		Total	C.S. P-value
			Negative	Positive		
T4	Normal	Frequency	80	7	87	CC=0.152 P=0.091 NS (C.I.=90.9%)
		% T4	92.0%	8.0%	100.0%	
	Abnormal	Frequency	3	0	3	
		% T4	100%	0.0%	100%	
	Total	Frequency	83	7	90	
		% T4	92.2%	7.8%	100%	
T3	Normal	Frequency	76	6	82	CC=0.055 P=0.601 NS
		% T3	91.9%	90.0%	100%	
	Abnormal	Frequency	7	1	8	
		% T3	8.1%	10.0%	100%	
	Total	Frequency	83	7	90	
		% T3	92.2%	7.8%	100%	

NS: Non – Sig. at $P > 0.05$

Table (13) showed that there was significant difference ($P_{\text{value}} < 0.021$) between anti-TPO and anti-Tg antibodies in patients with type 1 diabetes mellitus.

Table (12): Distribution of Anti-Tg and Anti-TPO in the study group

Parameters	Respond	Frequencies and Percents	Anti- Tg		Total	C.S. P-value
			Negative	Positive		
Anti-TPO Pos.	Negative	Frequency	67	3	70	CC=0.237 P=0.021 S (C.I.=95.9%)
		% Anti-TG	80.7%	42.9%	77.8%	
		% of Total	74.4%	3.3%	77.8%	
	Positive	Frequency	16	4	20	
		% Anti-TG	19.3%	57.1%	22.2%	
		% of Total	17.8%	4.4%	22.2%	
Total		Frequency	83	7	90	
		% Anti-TG	100%	100%	100%	
		% of Total	92.2%	7.8%	100%	

S: Sig. at $P < 0.05$

Conclusions

1. The frequency of anti-thyroid antibodies (Anti-TPO & Anti-Tg) are not significant according to gender and age groups.
2. There is not significant correlation between anti-thyroid antibodies (Anti-TPO & Anti-Tg) and FBG in type 1 diabetic patients.
3. There is not significant correlation between anti-thyroid antibodies (Anti-TPO & Anti-Tg) and lipid profile in type 1 diabetic patients.
4. There is significant correlation between TSH levels and anti-thyroid antibodies (Anti-TPO & Anti-Tg) antibodies.
5. There are no association between T3 and T4 with anti-thyroid antibodies (Anti-TPO & Anti-Tg)
6. There is significant difference between anti-Tg and anti-TPO
7. The frequency of anti-TPO antibodies was more prevalent than those of anti-Tg antibodies.

Recommendations

- 1- To conduct a large cohort study recruiting a larger number of autoimmune thyroid disease cases to validate the results of the current study.
- 2- It is recommended to do estimation of thyroid antibodies (Tg-Abs & TPO -Abs) periodically for every type 1 diabetic patients.
- 3- Patients with positive thyroid antibodies should be monitored for TSH elevation at yearly intervals.
- 4- It is recommended to have regular examination of thyroid antibodies and thyroid function tests in all patients with type 1 and type 2 diabetes mellitus.

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الخلاصة

مرض السكري النوع الأول ذاتية المناعة يتميز بنقص الأنسولين المطلق نتيجة تحطم خلايا جزيرة بيتا وثبت أن مرض السكري النوع الأول قد يكون مرتبطاً مع مرض الغدة الدرقية ذاتية المناعة. شملت الدراسة 90 مريضاً بالسكري من نوع الأول و30 شخصاً صحيحاً (سليماً) وكان أعمارهم تحت ثلاثين سنة. في هذه الدراسة، تحريماً عن انتشار مستضدات (anti-Tg, anti-TPO) في مرضى السكري من النوع الأول والكشف عن مستضدات للغدة الدرقية [TPO, Tg] ومستوى T4, T3, TSH, والكشف عن مستوى الدهون في مرضى السكري من نوع الأول وعلاقتها بالمستضدات الغدة الدرقية (anti-Tg & anti-TPO) أخذنا عينات الدم للكشف عن مستويات هرمونات الغدة الدرقية وهرمون الـ [TSH] باستخدام تقنيته الفايديس [VIDAS]. تقنية الأمتزاز المناعي المرتبط بالأنزيم (ELISA) استعملت للتحري عن وجود الأجسام المضادة نوع [G] ضد مستضدات الغدة الدرقية [TPO, Tg]. أظهرت النتائج أن من بين تسعين مريض كانت 20 (22.2%) مريض كانت لهم نتائج ايجابية لمستضد الـ (TPO) و7 (7.7%) مريض كانت لهم نتائج ايجابية لمستضد الـ (Tg). أيضاً بينت الدراسة أن العلاقة الإحصائية كانت غير هامة بين مستويات مستضدات الغدة الدرقية (TPO و Tg) والجنس في مرضى السكري من نوع الأول ($P_{value} > 0.820$) و ($P_{value} > 0.972$) على التوالي. ارتباطات سلبية أخرى بين مستويات (anti-TPO و anti-Tg) والعمر لكن من ناحية الإحصائية كانت غير مهمة ($P_{value} > 0.05$). أثبتت النتائج بأن هنالك علاقة ايجابية وذات أهمية إحصائية بين مستوى الـ [TSH] ومستويات كل من (anti-TPO & anti-Tg) ($P_{value} < 0.05$) في نفس الوقت لاحظنا ارتباط سلبى بين مستوى الـ [T3 & T4] والـ [anti-Tg & anti-TPO] ولكن هذه العلاقة إحصائية لم تكن هامة ($P_{value} > 0.05$). كذلك أثبتت النتائج وجود ارتباط سلبى ($P_{value} > 0.05$) بين مستويات (anti-TPO & anti-Tg) ومستويات الدهون في مجموعة مرضى. وأخيراً أظهرت الدراسة بأن هنالك علاقة ايجابية وذات أهمية إحصائية بين مستوى (anti-Tg) ومستوى الـ (anti-TPO) ($P_{value} < 0.021$).