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A STUDY OF AUTOIMMUNE THYROID DISORDERS IN PATIENTS OF TYPE 2 DIABETES MELLITUS

Medicine

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ABSTRACT

Autoimmunity has been implicated to be the major cause of thyroid-dysfunction associated diabetes mellitus. Thyroid disorders remain the most frequent autoimmune disorders associated with type 1 diabetes mellitus (T1DM) and are known to be highly prevalent in all forms of the diabetes including with type 2 diabetes mellitus (T2DM). The present study is planned to establish the relationship between the Autoimmune Thyroid Disorders and type 2 diabetes mellitus. It was a hospital based cross sectional observational study carried out in Department of Medicine, Silchar Medical College and Hospital, Silchar, Assam. Total 120 patients of type 2 are selected from OPD and IPD in a random fashion. All the patients were evaluated for thyroid dysfunction and autoimmune anti thyroid antibodies. Abnormal thyroid dysfunction was found in a large number of diabetic patients (28.33%). Subclinical hypothyroidism, overt hypothyroidism and primary hyperthyroidism were observed in 16.7%, 8.3% and 3.3% of diabetic patients respectively. A high titer of anti-thyroid antibodys and autoimmune thyroid disorders were also found in many T2DM subjects which were statically significant. The study show an increased prevalence of autoimmune thyroid disorders in patients with type 2 diabetes mellitus.

KEYWORDS

Type 2 diabetes mellitus, thyroid disorders

INTRODUCTION:

Thyroid disorders are also very common in the general population and it is second only to diabetes as the most common condition to affect the endocrine system. Many thyroid abnormalities may co-exist and interact with diabetes mellitus. According to many studies the prevalence of thyroid dysfunctions are more in diabetics than in non diabetics.

Autoimmunity has been implicated to be the major cause of thyroid-dysfunction associated diabetes mellitus. Thyroid disorders remain the most frequent autoimmune disorders associated with type 1 diabetes mellitus (T1DM) and are known to be highly prevalent in all forms of the diabetes including with type 2 diabetes mellitus (T2DM).

Autoimmunity in which circulating antibodies exist to numerous body tissue components destroy such tissues was stated to be the underlying mechanism behind the increase prevalence of thyroid disorders.

Among auto immune disorders, autoimmune thyroid disease (ATD) is the most frequent with DM and prevalence of it that varies depending on the age, sex and ethnic origin of the subjects is considerably higher than the general population and increase with duration of DM [1]. High titer of anti-TPO is highly suggestive of ATD and correlated well with thyroid dysfunction. Patients with circulating antibodies may be euthyroid, hypothyroid or rarely hyperthyroid [2]. The presence of autoimmune thyroid disorder in patients with DM - even in subclinical hypothyroidism - can be associated with an increased risk of hypoglycaemia, reduced linear growth and lower weight, better diabetes control, menstrual regularity and overall well-being [3] Furthermore on extensive search of literature we found only a few studies have been conducted to correlate autoimmune thyroid disorders and type 2 diabetes mellitus. The present study is planned to establish the relationship between the Autoimmune Thyroid Disorders and type 2 diabetes mellitus.

MATERIAL & METHODS:

The study was carried out in Department Of Medicine, Pandit Deendayal Upadhyaya Medical College, Churu, Rajasthan, from 11 Oct. 2017 to 10 Oct. 2018 for a period of one year. It was a hospital based cross sectional observational study. Total 120 patients of type 2 are selected from OPD and IPD in a random fashion. After taking history, detailed physical examination of the patient and bio-chemical parameters including FBS, PPBS, HbA1C, Free T3, Free T4, TSH, Anti-TPO and Anti-TGA Ab were obtained in our hospital. Statistical analysis was performed with IBM SPSS Statistics version 21 Software.

RESULTS AND OBSERVATIONS:

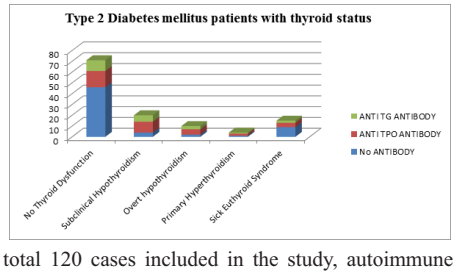
In this study, 120 cases of type 2 diabetics were screened for thyroid disorders. Abnormal thyroid dysfunction was found in a large number of diabetic patients (28.33%). Subclinical hypothyroidism, overt hypothyroidism and primary hyperthyroidism were observed in 16.7%, 8.3% and 3.3% of diabetic patients respectively. Low T3 syndrome (SES) was also seen diabetic patients (12.5%). (Table-1)

Table 1 - Showing Prevalence Of Autoimmune Thyroid Disorders (Total Number Of Cases : 120)

Type	Number	Percentage
Autoimmune Thyroiditis and Subclinical hypothyroidism	10	8.3%
Autoimmune Thyroiditis and Overt Hypothyroidism	5	4.1%
Autoimmune Thyroiditis and Primary Hyperthyroidism	3	2.5%
Autoimmune Thyroiditis and Sick Euthyroid syndrome	4	3.3%

Anti TPO anti body was found positive in 15 (21.1%) euthyroid diabetic cases, 10 (50%) subclinical hypothyroid patients, 5 (50%) overt hypothyroid patients, 2 (50%) primary hyperthyroid patients, 4 (26.6) low T3 syndrome patients . Anti-TG antibody was found positive in 10 (14%) euthyroid diabetic cases, 6 (30%) subclinical hypothyroid patients, 3 (30%) overt hypothyroid patients , 1 (25%) primary hyperthyroid patients and 2 (13.3%) sick euthyroid syndrome. Positivity of autoimmune anti-thyroid antibodies was statistically significant (P value <0.005). (Figure-1)

Figure 1- Thyroid Function In The T2DM Cases And Prevalence Of Autoimmune Antibodies



Out of total 120 cases included in the study, autoimmune thyroid disorders were found in 22 (18.33%) cases. Prevalence of autoimmune thyroiditis and subclinical hypothyroidism is 10 (8.3%), of autoimmune thyroiditis and overt hypothyroidism is 5 (4.1%), of

autoimmune thyroiditis and primary hyperthyroidism is 3 (2.5%), of autoimmune thyroiditis and sick euthyroid syndrome 4 (3.3%). Anti-TPO Ab and Anti-TG Ab also found positive in euthyroid diabetic patients 15(21.1%) and 10(14%) respectively. (Table-2)

Table 2 - Thyroid Function In The T2DM Cases And Prevalence Of Autoimmune Antibodies

Thyroid Dysfunction	Cases (120)		Anti Tpo Antibody		Anti Tg Antibody	
	NO.	%	NO.	%	NO.	%
Normal	71	59.1	15	21.1	10	14
Subclinical Hypothyroidism	20	16. 7	10	50	6	30
Overt hypothyroidism	10	8. 3	5	50	3	30
Primary Hyperthyroidism	4	3. 3	2	50	1	25
Sick Euthyroid Syndrome	15	12. 5	4	26.6	2	13.3

DISCUSSION:

Diabetes mellitus is the one of the most common serious metabolic disorder of human being. India is the diabetes capital of the world with the disease estimated to affect 6.5 to 19.5% of the adult Indians [4] . The relation between diabetes and thyroid dysfunction has been studied by various researchers and the prevalence of hypothyroidism among patients with diabetes is reported from 4.8 to 31.4% [5]. Autoimmunity has been implicated to be the major cause of thyroid-dysfunction associated diabetes mellitus. Autoimmunity in which circulating antibodies exist to numerous body tissue components destroy such tissues was stated to be the underlying mechanism behind the increase prevalence of thyroid disorders in type 1 diabetes mellitus, despite the fact autoimmune thyroid diseases are known to be highly prevalent in all forms of the diabetes; no specific reason has been adduced for an increased prevalence of thyroid disorders in type 2 diabetes mellitus.

In over study thyroid dysfunction was found in 28.33% cases, of which 16.7% of cases were having subclinical hypothyroidism, 8.3% of case were having overt hypothyroidism and 3.3% of cases were having primary hyperthyroidism. In control group, 9.16% had thyroid dysfunction of which 6.7% were having subclinical hypothyroidism, 1.7% was having overt hypothyroidism and 0.8% was having primary hyperthyroidism. The difference of values in the both groups were statistically significant (P value <0.05) in subclinical hypothyroidism and overt hypothyroidism. But it is not statistically significant in primary hyperthyroidism group because of small sample size in our study and lower prevalence of hyperthyroidism. It was observed from our study that hypothyroidism was more common than hyperthyroidism in T2DM.

Kiran Babu *et al* reported 28% of thyroid dysfunction in T2DM case with 13.2% having hypothyroidism, 8.8% having hyperthyroidism and low T3 syndrome in 5.8%.[6]

Celani M F *et al* reported 31.4% thyroid dysfunction in T2DM cases. Out of these, Subclinical hypothyroidism was most common (48. 3%), followed by subclinical hyperthyroidism (24. 2%) and by definite hypothyroidism (23. 1%). Definite hyperthyroidism was found in 4 patients (4.4%). [7]

In our study we found that out of 120 cases prevalence of autoimmune thyroid disorders are 22 (18.33%). Prevalence of Autoimmune Thyroiditis and Subclinical hypothyroidism is 10 (8.3%). Prevalence of Autoimmune Thyroiditis and Overt Hypothyroidism is 5 (4.1%). Prevalance of Autoimmune Thyroiditis and Primary Hyperthyroidism is 3 (2.5%). Prevalence of Autoimmune Thyroiditis and Sick Euthyroid syndrome is 4 (3.3%).

In our study out of 120 cases of DM Type 2 cases 15 (21.1%) and 10 (14%) Anti TPO Ab and Anti TG Ab were positive respectively in those thyroid function was absolutely normal. So in these patients regular follow is necessary for thyroid dysfunction.

Hajieh S et al also found High levels of Anti-Tpo Ab and Anti-TG Ab in 33.9% and 32.7% of cases respectively.[8]

CONCLUSION:

The study show an increased prevalence of autoimmune thyroid dysorder in patients with types 2 diabetes mellitus resulting in recommendation of careful follow-up of all diabetic patients for presence of thyroid autoimmunity.

Conflict of interest: There is no interest of conflict between authors.

REFERENCES:

1. Gonzalez GC, Capel I, Rodriguez-Espinosa J, Mauricio D, de Leiva A, Perez A. Thyroid autoimmunity at onset of type 1 diabetes as a predictor of thyroid dysfunction. Diabetes Care. 2007; 30 (6):1611–2.
2. Kordonouri O, Klinghammer A, Lang EB, Gruters-Kieslich A, Grabert M, Holl RW. Thyroid autoimmunity in children and adolescents with type 1 diabetes: a multicenter survey. Diabetes Care. 2002; 25 (8):1346–50.
3. Silverstein J, Klingensmith G, Copeland K, Plotnick L, Kaufman F, Laffel L, et al. Care of children and adolescents with type 1 diabetes: a statement of the American Diabetes Association. Diabetes Care. 2005; 28 (1):186–212.
4. N. Tandon and N. Raizada, "The burden of diabetes in India [internet], 1105045828 rev. no. 8," https://doi.org/10.14496/dia.1105045828.8, 2014.
5. C. Wang, "The relationship between type 2 diabetes mellitus and related thyroid diseases," Journal of Diabetes Research, vol. 2013, Article ID 390534, 9 pages, 2013. View at Publisher • View at Google Scholar.
6. KiranBabu, AtulKakar, S P Byotra. Prevalence of thyroid disorder in type II diabetes mellitus patients. J AssocPhysInd, 2001; 49: 43.
7. Celani MF1, Bonati ME, Stucci N. Prevalence of abnormal thyrotropin concentrations measured by a sensitive assay in patients with type 2 diabetes mellitus. Diabetes Res. 1994;27(1):15-25.
8. Hajieh S, Behbahani M, Mohtashami AZ. Prevalence of thyroid dysfunction and thyroid auto antibodies in type 2 diabetic patients. Pak J Med Sci 2011;27(5):1169-1172.