SUMMARY AND COUNCLUSION

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Type 1 diabetes mellitus is an autoimmune disease. It can be associated with other autoimmune endocrine disorders as well as autoimmune impairment of non-endocrine tissue. The associated autoimmune disease may influence the control of diabetes by impairing function of the respective organ.

Autoimmune thyroid disease (AITD) is the most frequent autoimmune disease associated with type 1 diabetes mellitus. The screening and diagnosis of AITD are based on the assessment of autoantibodies to thyroid peroxidase (anti-TPO) and thyroglobulin (anti-Tg). The prevalence of these autoantibodies is dependent on gender, age of patient, and age at the onset of diabetes. It also varies in different geographic regions. The assessment of thyroid stimulating hormone (TSH) allows the evaluation of the thyroid function. Dyslipidemia and arrhythmia are the main features frequently accompanying impaired thyroid gland function. Moreover, hyperthyroidism can worsen metabolic control of diabetes and increase its lability often with a need for increased insulin dosage, and hypothyroidism can lead to increased frequency of hypoglycemia in diabetic patients. However, it is known that type 2 diabetes is not an autoimmune disease.

The aim of this work is to study the prevalence of thyroid disorders in diabetic patients , the effect of glycemic state on thyroid functions and the link between types of diabetes and types of thyroid disorder.

CRITERIA OF PATIENTS SELECTION

The present study was conducted on 100 diabetic patients and 20 healthy control subjects.

They were subdivided into 3 groups:

Group I: Included 50 patients suffering from type 1 DM.

Group II: Included 50 patients suffering from type 2 DM.

Group III: Included 20 healthy control subjects.

There is no any excultion criteria:

All cases were subjected to the following:

1. Thorough history taking with emphasis on age of onset of diabetes mellitus, duration of illness, treatment used, and history of any previous thyroid disease, thyroid surgery or drugs known to affect thyroid function.
2. Full clinical examination with particular stress on anthropometric measures (weight and BMI), the presence of clinical autoimmune stigmata and, thyroid examination.
3. Laboratory Investigations including fasting plasma glucose, 2hours postprandial plasma glucose, glycated haemoglobin (HbA1c).
4. Thyroid function tests which include FT3, FT4and TSH.
5. Ultrasound-guided fine-needle aspiration cytology to confirm or exclude presence of thyroid pathology.

The results were statistically analyzed and we found the following results:

1. Type 1 diabetic patients were significantly younger than type 2 diabetic patients with a mean age of onset lower in type 1 DM than that of type 2 DM ($p<0.001$).
2. There was a statistically significant difference between the two types of diabetic patients where the body mass index (BM1) was significantly

higher in type 2 diabetic patients compared with type 1 diabetic patients ($P< 0.001$).

5. There was no statistically significant difference between type 1 and 2 diabetic patients as regards the mean HgA1C level. However, the mean HbA1C level was significantly higher in diabetic patients than control subjects ($P<0.001$).
6. The mean FT_3 level was significantly lower in diabetic patients than control subjects ($P<0.001$). Furthermore, our results noticed that the group of patients with poor diabetic control had significantly lower levels of FT_3 than the group of patients with satisfactory control of diabetes in both.type 1 and type 2 diabetic patients.
8. There was no statistical difference between FT_4 levels in the diabetic groups in comparison to the control group.
9. The mean TSH is significantly higher in diabetic patients as compared to control subjects ($P<0.001$). Furthermore, the mean TSH is significantly higher in type 1 diabetic patients as compared to type 2 diabetic patients. Subclinical hypothyroidism (elevated TSH and normal FT_4) was newly diagnosed in 5/50 patients with type 1 diabetes, 4/50 patients with type 2 diabetes.

10. In type 1 diabetic patients , 2 cases show low FT3 and FT4 level with high TSH level (**clinical hypothyroidism**) . 2 cases show high level of FT3 and FT4 with low TSH (**clinical hyperthyroidism**). 6 cases show high TSH level without abnormality of FT3 or FT4 level **(subclinical hypothyroidism**). 3 cases show low TSH level without abnormality of FT3 or FT4 level **(subclinical hyperthyroidism**). 2 cases show low FT3 level with normal FT4&TSH level (**euthyroid sick syndrome**),

In type 2 diabetic patients , 2 cases show_elevated TSH level without abnormality of FT3 or FT4 level **(subclinical hypothyroidism).** 4 cases

show low FT3 level with normal FT4 & TSH level (**euthyroid sick syndrome**) .

From the results of the present study, one can conclude the following:

1. There is a high prevalence of autoimmune thyroid disorders in type I diabetic patients.
2. Development of hypothyroidism, even subclinical, affects the glycemic control of diabetes with high frequency of symptomatic hypoglycemia. Again, it can enhance the development of macroangiopathic complications by causing secondary hypercholesterolemia.
3. Development of hyperthyroidism can worsen the metabolic control of diabetes and increase its lability often with a need for increased insulin dosage. Again, it can enhance the development of osteoprosis and arrhythmias.
4. Thyroid ultrasound imaging and FNAB are alternative approaches to confirm the diagnosis of autoimmune thyroid disorders.
5. There is inverse relationship between HbA1C and FT_3 level in diabetic patients indicating that the presence of "low T3 syndrome" is an index for poor diabetic control. As a result, assessment of thyroid function in diabetic patients, as in other conditions of chronic illness, should be done by the measurement of serum concentrations of FT_4 and TSH and not by FT3.