



A Study of Thyroid Profile in Type2 Diabetes Mellitus

KEYWORDS

TSH, Thyroid dysfunction, type 2 DM

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ABSTRACT

Diabetic patients have higher prevalence of thyroid disorders compared with the normal population. Prevalence of thyroid dysfunction in type2 diabetes is more common than in general population (14%). Subclinical hypothyroidism is most common of thyroid disorders (10%). Early detection and treatment of subclinical hypothyroidism delays the complications of diabetes.

INTRODUCTION

Diabetic patients have a higher prevalence of thyroid disorders compared with the normal population. A number of reports have indicated a higher than normal prevalence of thyroid disorders in type-2 diabetic patients with hypothyroidism being the most common disorder. The presence of hyperthyroidism is typically associated with worsening glycaemic control and increased insulin requirements and cardiac arrhythmia and worsening pre-existing coronary artery disease and angina.

AIMS AND OBJECTIVES

- To study the prevalence of thyroid disorders in type2 diabetes mellitus patients
- To study the effects of thyroid disease in patients with diabetes mellitus
- To study the lipid profile in diabetic patients with thyroid dysfunction

MATERIALS AND METHODS

50 type2 diabetes (25 males and 25 females) admitted in Medical wards and attended to medical OP were studied randomly.

All proven diabetics (fasting venous glucose>126mg/dl and post prandial venous glucose>200mg/dl) were included in the study irrespective of the reason for admission. All patients with a history of diabetes and those who were on treatment were also eligible for inclusion.

Exclusion criteria:-

1. Patients with renal failure and heart failure
2. Patients with hypoproteinemia
3. Patients with steroid abuse
4. Patients with pregnancy

A detailed history was taken with special reference to duration of

diabetes, type of treatment, symptoms related to diabetes and its complications, symptoms related to hypothyroidism and symptoms related to hyperthyroidism. Height and weight were recorded and body mass index calculated by formula $BMI = \frac{Wt}{ht^2}$ in kg/ht in M^2 . All patients are examined for features of thyroid dysfunction. Investigations done in all patients include hemoglobin, total WBC count, differential count. A fasting blood sugar, post prandial sugar and glycated hemoglobin was done for all diabetics. Thyroid function tests done in all patients include Free T3, Free T4 and TSH.

RESULTS

Table:1 – Age and sex wise distribution

Age group (in years)	Type-2 diabetics	
	Male	Female
40-50	4	2
51-60	9	8
61-70	7	10
71-80	5	5

Mean age of male diabetics was 60 years and of females was 65.56 years. The prevalence of Type-2 diabetes is increasing with age, seen more in the 7th decades.

Table:2

BMI	Diabetics with normal thyroid function	Diabetics with thyroid dysfunction	
		Hypothyroidism	Hyper thyroidism
Under weight <18	-	-	-
Normal 18-25	12	1	1
Over weight 26-30	28	3-	10
Obesity >30	3	2	-

Of the 50 diabetics 14 patients (28%) were found to have ideal weight (BMI 18-25). 31 patients (62%) were overweight (BMI 25-30) and 5 patients (10%) were obese (BMI >30).

Thyroid disorders were detected in 7 of the 50 diabetics (14%) of which 6 patients (12%) were females and 1 patient (2%) were male. Out of 7 patients with thyroid dysfunction 6 patients (85.68%) were hypothyroid and 1 patient (14.32%) hyperthyroid. Of 6 patients with hypothyroidism 5 patients were having subclinical and 1 have clinical hypothyroidism. The 1 patient with hyperthyroidism had clinical disease.

Host factors in thyroid disorders in study group.

Age: The mean age was 66.57 years in patients with thyroid disorders. The mean age of hypothyroid patients was 67.83 and hyperthyroid patients was 59 years. Hypothyroid females had mean age of 67.60 years and euthyroid females had mean age of 61.42 years.

Sex: Of the 7 patients with thyroid dysfunction 6(85.68%) were females and 1 (14.28%) were male, significant association was found between female sex and thyroid dysfunction in diabetics, 20% of females Type-2 diabetics had hypothyroidism and 4% had hyperthyroidism.

Table:3 – Age and sex distribution in patients with thyroid dysfunction

Age (in years)	Hypothyroidism		Hyper Thyroidism	
	Male	Female	Male	Female
40-50	-	-	-	-
51-60	-	-	-	1
61-70	1	4	-	-
71-80	-	1	-	-

Table:4 – Type and number of patients with thyroid disorders in study group

	Sub Clinical		Clinical	
	Male	Female	Male	Female
Hypothyroidism	1	5	1	1
Hyper thyroidism	-	-	-	1

Symptoms of thyroid dysfunction:- 5(71.40%) out of 7 patients with thyroid dysfunction presented subclinically i.e., with minimal or no symptoms, 2(28.56%) patients presented with clinical symptoms 6(85.68%). 6 out of 7 patients with thyroid dysfunction are hypothyroid and 1(14.28%) had hyper thyroidism. 5(83.33%) out of 6 patients with hypothyroidism are sub clinical, 1 (16.66%) patient had clinical hypothyroidism. 1 patient with hyperthyroidism had clinical disease.

Fasting lipid profile:

Of the 43 diabetics with normal thyroid function 11(25.52%) had elevated total cholesterol levels, 25 (81.20%) had elevated Triglycerides, 19(44.08%) had elevated LDL levels and 20(46.40%) had low HDL levels.

Table:5

	Diabetics with normal thyroid function	
	Male	Female
Total cholesterol >250 mg/dl	7	4
Triglycerides >160 mg/dl	17	18
LDL>130 mg/dl	6	13
HDL <40mg/dl	11	9

Of the 6 patients with hypothyroidism, 5(83.30%) had el-

evated total cholesterol levels, 6(100%) had elevated tri-glyceride levels, 5(83.30%) had elevated LDL levels and 4(66.64%) had low HDL levels. The distribution of lipid abnormalities in diabetics with hypothyroidism is given in chart below.

Table: 6

	Diabetics with Hypothyroidism	
	Male	Female
Total cholesterol >250 mg/dl	7	4
Triglycerides >160 mg/dl	17	18
LDL>130 mg/dl	6	13
HDL <40mg/dl	11	9

DISCUSSION

In our study we have studied 50 type2 diabetic patients out of which 25 are males, 25 are females, who attended to medical OPD and medical wards at Govt. General Hospital, Kurnool.

The prevalence of thyroid dysfunction in Type2 diabetics was found to 14% which is comparable to Demitrost L, Ranabir S.et al¹ (2012), D.H.Akbar et al ² (2005) and A.R.Radaideh ³et al study (2004). The prevalence of hypothyroidism in the study group is 12% out of which 83.33% (10% of study group) had subclinical hypothyroidism and 16.66% had clinical hypothyroidism which is comparable to Chubb et al Fremantle diabetic study (2005) where the prevalence of subclinical hypothyroidism in type2 diabetics was 8.6%.

The prevalence of hyperthyroidism was 2% in the study group i.e. 14.28% of thyroid disorders in type2 diabetes which is comparable with Patricia WU et al study (2000). 85.72% of type2 diabetics in the study group are not aware of thyroid dysfunction while 14.28% have known disease. There was significant correlation between age and hypothyroidism in this study. The mean age of tpe2 diabetics with thyroid disorders was 66.57 years. The mean age of hypothyroid patient was 67.83 years and hyperthyroid patients was 67.60% years. The mean age of type2 diabetics with normal thyroid function was 60.41 years. This relation is comparable with the EL Norbe et al ⁴ study.

CONCLUSION

1. Prevalence of thyroid dysfunction in type2 diabetes is more common than in general population i.e., 14%
2. Subclinical hypothyroidism is most common of thyroid disorders (10%) in type2 diabetes
3. Thyroid disorders are most common in female and older diabetic patients.
4. Hypothyroidism in type2 diabetes is associated with significant lipid profile abnormalities
5. Early detection and treatment or subclinical hypothyroidism delays the complications of diabetes.
6. Early treatment of hyperthyroidism improves the glyce-mic control and decreased the insulin requirements in diabetes
7. Early institution of lipid lowering therapy in diabetes improves the prognosis
8. Thyroid function tests are advised to every type2 diabetic at the time of diagnosis and then repeated at least every 5 years.

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