

Assess the Prevalence of Thyroid Dysfunction among Patients with Type 2 Diabetes Mellitus: Retrospective Study

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Abstract

Background: Diabetes mellitus and thyroid dysfunction are common endocrine disorders in Indian population and frequently coexist. The prevalence of thyroid dysfunction varies from 10 to 24% among diabetic patients². The objective of this study was to investigate the prevalence of thyroid dysfunction in patients with type 2 diabetes mellitus.**Materials and Methods:** A retrospective study to assess the prevalence of thyroid Dysfunction among Type 2 Diabetic Mellitus Patients.50 type 2 diabetes mellitus who fulfilled the sampling criteria were selected for the study. The biochemical parameters like fasting plasma glucose, total triiodothyronine (T3), total thyroxin (T4) and thyroid stimulating hormone (TSH), Hba1c were collected from patient case file for assessment of prevalence of thyroid dysfunction in records of patients with type 2 diabetes mellitus. **Result:** The data collection tool was validated and reliability was established. The data collection for the study was done and the collected data was tabulated and analyzed. The study result shown that the prevalence of thyroid dysfunction in diabetes mellitus was 35 (70%) of them having Normal Thyroid level, 13 (26%) having hyperthyroidism and 2 (4%) having Hypothyroidism. The researcher felt that by analyzing the blood parameters among type2 diabetes mellitus patients, thyroid dysfunction can be screened out at earlier stages as preventive measures. The prevalence of thyroid dysfunction i.e. .4% of patients had complication such as goitre, aggravating factors may be age (above 60) and history of constantly increased blood glucose level. **Conclusion:** The study finding reveals that only 30% of the people have thyroid dysfunction among type 2 diabetes mellitus. Early screening of thyroid dysfunction may reduce the severity of disease and endocrinal abnormalities in type 2 diabetic patients.

Key Words: Thyroid dysfunction, Triiodothyronine, Thyroxin, thyroid stimulating hormone, Type 2 Diabetes mellitus

Date of Submission: 05-03-2019

Date of acceptance: 22-03-2019

I. INTRODUCTION

Diabetes mellitus (DM), a leading cause of mortality worldwide, is one of the most challenging health issues in the 21st century. It is a group of metabolic diseases characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Pathophysiology of diabetes involves several processes ranging from autoimmune destruction of the β -cells of the pancreas with consequent insulin deficiency to abnormalities that result in resistance to insulin action. The majority of diabetic cases fall into two broad etiopathogenic categories. First type is Type 1 diabetes, the cause of which is an absolute deficiency of insulin secretion. Second and more common form of diabetes mellitus is Type 2 diabetes and usually results from a combination of defects in insulin action and secretion.

Thyroid dysfunction is defined as the altered serum thyroid stimulation hormone (TSH) level with normal or altered thyroid hormones (free triiodothyronine- fT3 and free thyroxine- fT4). Thyroid dysfunction is a common endocrine disorder affecting about 300 million people worldwide and over half are presumed to be unaware of their condition. Thyroid dysfunction is also a major health problem of Nepal with prevalence of nearly 30% of the population affected in eastern region⁶. However, the prevalence and pattern of hypothyroidism depend on ethnic, geographic, and environmental factors including iodine intake status. Hypothyroidism and hyperthyroidism are two widespread thyroid problems, of which hypothyroidism is much more common. These metabolic disorders are more common in women than in men. The prevalence of thyroid

dysfunction, by definition, is the testing of patients in various geographic regions, primary care clinics and in population that have not been screened previously. Thyroid function test is commonly used lab investigation for screening and evaluating thyroid dysfunction. The screening of thyroid dysfunction is strongly recommended in high risk population such as goiter, iodine deficiency disorder, metabolic and autoimmune disorder etc.

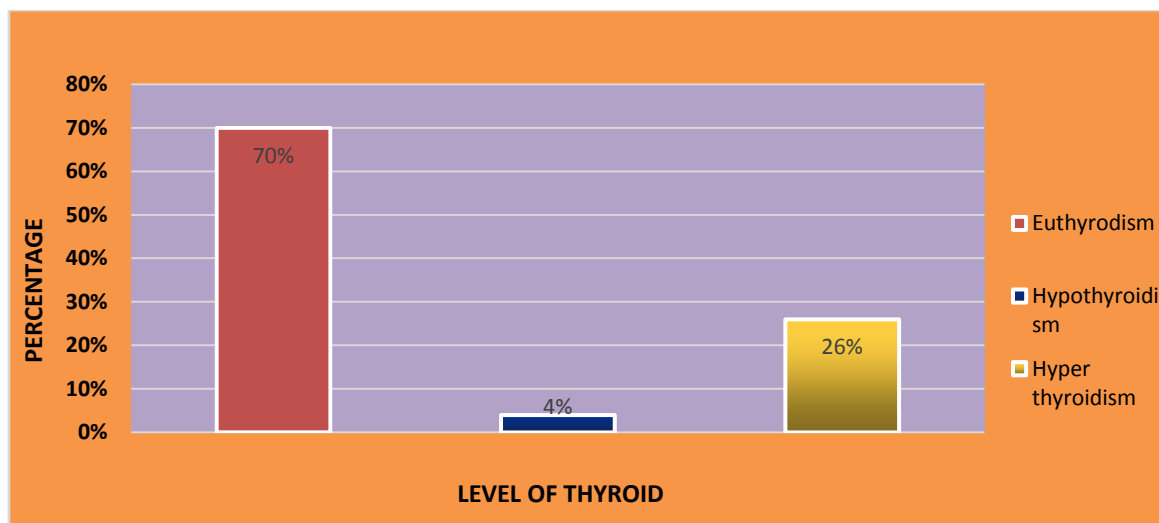
Thyroid hormone and insulin are the antagonists and both are involved in cellular metabolism of carbohydrate, protein, and lipids. Thyroid disease is a pathological state that seriously affects diabetic control and is commonly found in most form of DM which is associated with advanced age in type 2 diabetes and autoimmune disease in type 1 diabetes. Diabetes may influence thyroid function in two sites firstly at the level of hypothalamic control of TSH release and secondly at the conversion of T₃ to T₄ in the peripheral tissue. Marked hyperglycemia causes reversible reduction of the activity and hepatic concentration of T4-5-deiodinase, low serum concentration of T3, elevated levels of reverse T3 and low, normal, or high level of T4 . Because thyroid hormones regulate metabolism and diabetes due to altered metabolism of food content, the metabolism of organisms may be further affected of the combination of thyroid disease and diabetes. The term “Thyroid diabetes” was coined in early literature to depict the influence of thyroid hormone excess in deterioration of glucose control. Glucose intolerance is associated with hyperthyroidism⁴. Hypothyroidism is characterized by insulin resistance¹. In type 2 diabetes patients the presence of highly frequent forms of hyperthyroidism and hypothyroidism should be ruled out since they may be associated with increased risk of developing nephropathy, retinopathy and cardiovascular events.

II. METHODS AND MATERIALS

A Retrospective Study was conducted to assess the prevalence of Thyroid Dysfunction among Patients with Type 2 Diabetic at Selected Hospital, Kancheepuram District, Tamilnadu, India. A descriptive approach was considered appropriate for the study. Research design selected for the present study was non experimental descriptive design. The population of the present study includes the case sheet of type 2 diabetes patients' aged more than 30 years who fulfill Sampling Criteria. The researchers obtained ethical clearance from IHEC and permission from concern authority. The investigator introduced them to HOD of MRD to ascertain their cooperation for the study. Later the investigator collected data from the Records after obtaining permission from medical record department. The 50 case sheets were selected through purposive sample technique as per the sampling criteria. The necessary data's collected from the records. In the present study, Research tool were two sections (A&B) in which Section A includes selected demographic variables and BMI& Section B includes the biochemical markers. Data collection was done, tabulated and analyzed in terms of objective of the study by using descriptive and inferential statistics.

III. RESULT

The study result shown that the majority of 35 (70%) of them having Normal Thyroid level, 13 (26%) having hyperthyroidism and 2 (4%) having Hypothyroidism.



IV. DISCUSSION

The study findings obtained by the nurse researcher shows that majority of them were having blood pressure normal 26 (52%), prehypertension 23(46%) and hypertension grade II 2(4%). only 50% of patients were done HbA1c. The HbA1c above 7, 13 (26%) diabetes and 2(4%) of them had below 7. The patients were categorized based on blood glucose 80-130 was 23 (46%) and 27 (54%) of them above 130. The patients had total cholesterol are as follows: desirable 22(44%), borderline 25 (50%) high 3(6%). The patients had HDL were as follows: low 25 (50%) ,normal 2 (4%) and high 23 (46%) . The LDL level as follows: optimal 14 (28%) ,near optimal 27(54%) ,borderline 9(18%) .Based on FT3, FT4 and TSH level that 30% of samples had thyroid dysfunction. In diabetes mellitus 70 % (n=35) of them having Normal Thyroid level, 26% (n=13) having hyperthyroidism and 4% (n=2) having Hypothyroidism. So, the results shown that 30% of them having thyroid dysfunction among 50 type 2 diabetes mellitus patients. There was a significant association between duration of diabetes mellitus, family history of thyroid disease and diabetes with prevalence of thyroid disease. "r" value was used to identify the correlation between demographic variable and laboratory values. The study finding reveals that there was negative correlation between thyroid dysfunction and type 2 diabetes mellitus. The correlation between fasting blood glucose and thyroid cases value is -0.891 at <0.05.

V. CONCLUSION

The study results shown that the majority of type 2 diabetes mellitus i.e 70% (n=35) of them having euthyroidism, 26% (n=13) of them having hyperthyroidism and 4% (n=2) having hypothyroidism. The prevalence of thyroid dysfunction such as goitre may be due to aging (above 60) and consistent increase in blood glucose level .The study finding reveals that 30% of the people have thyroid dysfunction either in the form of hypo or hyperthyroidism among type 2 diabetes mellitus. Therefore, early screening of thyroid dysfunction may reduce the severity of disease and endocrinal abnormalities in type 2 diabetic patients.

BIBLIOGRAPHY

- [1]. Alok Mawar et al. Study of thyroid dysfunction in type 2 diabetes mellitus patients of Agra city. *International Journal of Biomedical Research* 2016; 7(01): 026-029.
- [2]. Hussain KSH .Thyroid dysfunction in patients with diabetes mellitus at Puducherry, India: a retrospective study. *Int J Adv Med.* 2018;5(4):822-824
- [3]. Palma CC, Pavesi M, Nogueira VG, Clemente EL, Pereira MD, Pereira LC, et al. Prevalence of thyroid dysfunction in patients with diabetes mellitus. *Diabetol Metab Syndr.* 2013;5(1):58.
- [4]. Sahu, S., Dutta, S., Kuiri, S., Nandi, M., Kabiraj, P., & De, U. (2015). Prevalence of thyroid dysfunction in patients with Type 2 diabetes mellitus and its correlation with insulin resistance and serum markers for autoimmune thyroiditis. *Asian Journal of Medical Sciences*, 6(6), 33-38.
- [5]. R.Kadiyala, R. Peter, and O. E. Okosieme, "Thyroid dysfunction in patients with diabetes: clinical implications and screening strategies," *International Journal of Clinical Practice*. 2010. 64(8).1130–1139.
- [6]. Yadav RK, Magar NT, Poudel B, Yadav NK, Yadav B. A prevalence of thyroid disorder in Western part of Nepal. *J Clin Diagn Res.* 2013;7(2):193-6.

Ms. Kowsalya.C. " Assess the Prevalence of Thyroid Dysfunction among Patients with Type 2 Diabetes Mellitus: Retrospective Study." *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*. vol. 24 no. 03, 2019, pp. 07-09.