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To evaluate the which developed first diabetes mellitus or thyroid dysfunction (Thyrobetes) in JNU Hospital, Jaipur

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Abstract

Introduction: Now a days Diabetes Mellitus has highest prevalence rate in India and thyroid disease also increasing due to influence life style changes. Both endocrine diseases and thyroid problem are interlinked and effect each other as glucose high in blood which influence by insulin resistant and increase TSH level in pituitary gland feedback system due to low function of thyroid hormone secretion. When hypothyroidism glucose release from liver and dyslipidemia finally insulin resistant and causes type 2 diabetes and tis influence hypothyroidism. So, need to control both.

Objective of study: To define interrelation of factors responsible for interlink between diabetes and thyroid disease development.

Method and methodology: This study evaluates duration diseases of thyroid and diabetes with basic analysis like glucose, TSH HbA1c, lipid profile etc. and data analyses in excel software done, found diabetic develop first in highest prevalence followed by metabolic changes develops hypothyroidisms, second highest hypothyroidism and vise versa in “thyrobetes”. There were total thyrobetes 10.7% and DM type 2 52%, hypothyroidism 49%. P was significant <0.02.


Conclusion: There should be very necessary to make policies to evaluate Diabetic patients with periodically thyroid function test, and thyroid patient evaluate glucose level vise versa so on time controlled both diseases.

Keywords: Thyrobetes, diabetes, thyroid, hypo and hyper thyroid, glucose, TSH

Introduction

There are many ways in which low thyroid hormone levels can increase the risk of diabetes,” he says. “First of all, thyroid hormones are crucial for our body’s metabolism and energy expenditure. Low thyroid hormone levels are associated with higher Body Mass Index, which in turn is a risk factor for diabetes.” Study finds hypothyroidism tied to type 2 diabetes. Having too little thyroid hormone in the blood—even in the low-normal range—raises the risk of developing type 2 diabetes, especially in people with prediabetes, a new study in nearly 8,500 people finds. Effects of Thyroid Hormones on Glucose Homeostasis. Thyroid hormones affect glucose metabolism via several mechanisms. Hyperthyroidism has long been recognized to promote hyperglycemia.

Objective of the study

On completion of study will be able to find out 

1. To define interrelation of factors responsible for interlink between diabetes and thyroid disease development.
2. To estimate thyroid hormone TSH, free T3, free T4, lipid profile, blood glucose fasting and PP, HbA1c, S. Insulin, ant-TPO antibodies, USG neck for thyroid some patients.
3. To describe each factor correlation between developing diabetes and thyroid diseases.
4. To explain preventive measures to prevent both diseases

Research problem of the study

There are patients increasing of diabetes mellitus, hypothyroidism and other condition of thyroid dysfunction but difficult to say which disease occurs first. Study is going to find out overlapping risk factor between diabetes and thyroid dysfunction

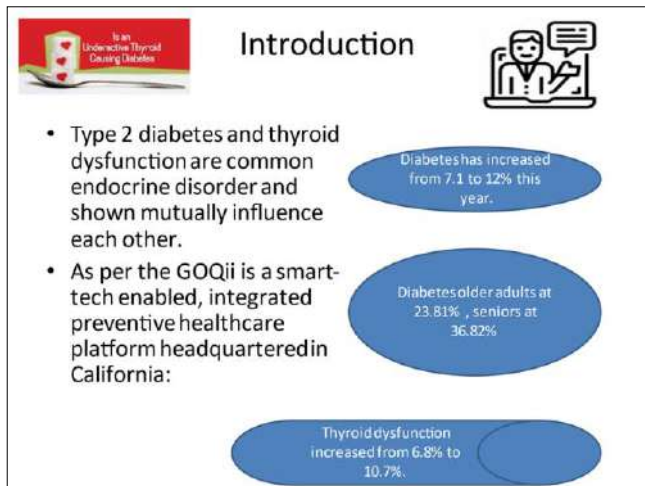


Fig 1: Introduction of study

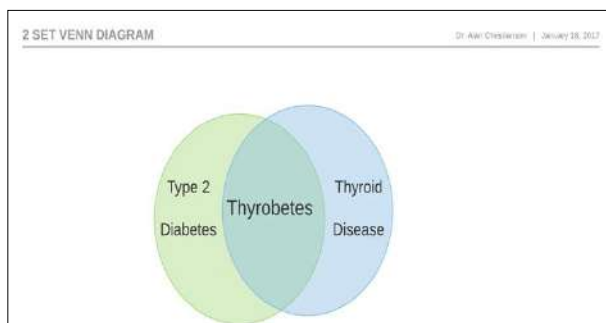


Fig 2: Thyrobetes

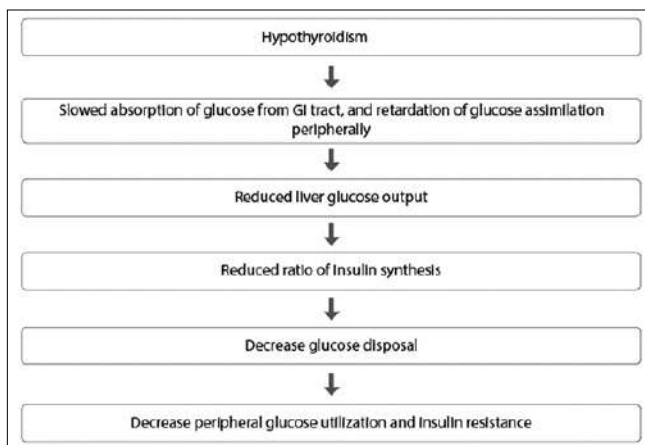


Fig 3: Introduction



Fig 4: Literature review

Literature review

Type 2 diabetes mellitus and thyroid dysfunction (TD) are two major public health endocrine problems in world. The status of iodine and thyroid with diabetic patients less studied. Few studies available which done on this relationship are:

TSH rise responsible for development of diabetic neuropathy and diabetic nephropathy and one of four people of diabetes are suffering with thyroid diseases [1]. Routine biochemical screening of geriatric patients done, in which increased prevalence of subclinical hypothyroidism [2]. Prevalence of hypothyroidism was found high in type 2 DM patients above 45 years and more so if their BMI is over 25. [3] %. Another study done showed female suffered more thyroid dysfunction compare to man, fasting glucose and lipid profile deranged, TSH significantly high among diabetic patients [4]. Type 2 diabetes found subclinical hypothyroidism and risk of neuropathy and cardiac events as thyroid hormone control insulin secretion: hypothyroidism decrease insulin secretion by glucose level and hyperthyroidism causes insulin resistance [5]. Female found central obesity, DM nephropathy, above normal HbA1c, and duration of DM were risk factors of thyroid dysfunction in type 2 DM patients in this study [6].

Identification of research gap

There is very no study to evaluated factors those interlink, overlap and interdependent, initiation for development diabetes and thyroid dysfunction.

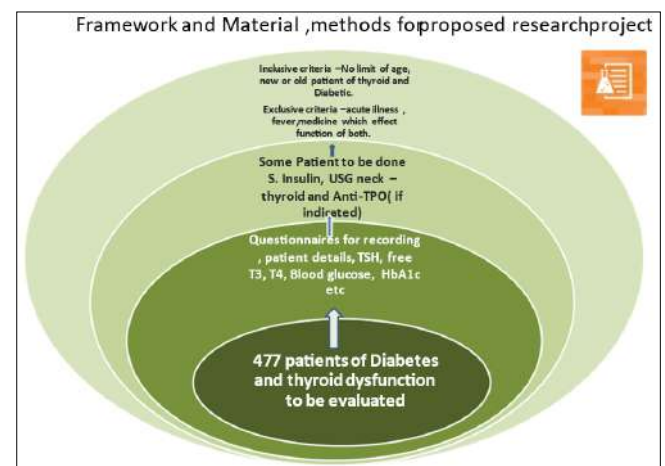


Fig 5: Method and methodology

Data collection and tool for statistical analysis



Fig 6: Data analysis

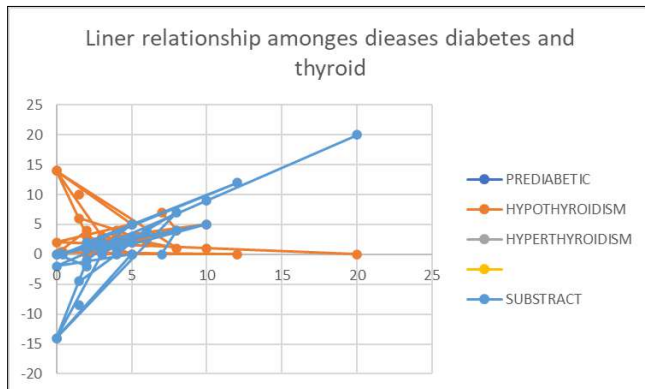
Instruments used for analyzing the Samples taken at JNU hospital

Statistical Analysis

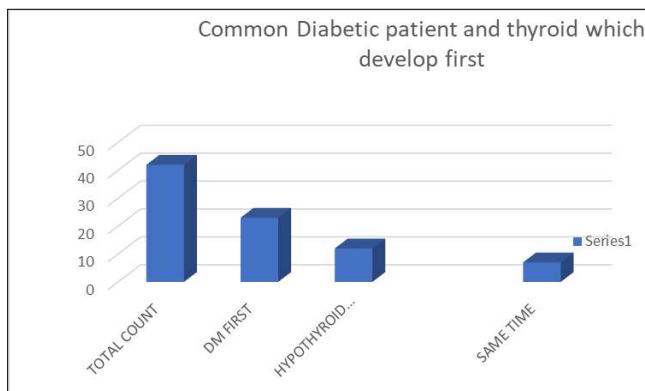
- Statistical analysis was performed by using excel software, correlation was used and if the P* value is < 0.005 then it is considered to be statistically significant. Data organized in excel and make descriptive analysis of date as well as graphs, finding as follows:

Table 1: Prevalence of diseases among study population

DM Type 2	249
Hypothyroidism	234
Hyperthyroidism	26
Dyslipidemia	109
Pre Diabetic	11



Graph 1: Graph show liner relationship Diabetes and thyroid problem



Graph 2: show DM type 2 occurred first most of patient followed by hypothyroidism and vise versa

Percentage: DM type2- 52%, Pre Diabetic- 2.9%, Hypothyroidism 49%, Hyperthyroidism 5.4%, Those both hypothyroidism/hyper with DM type 2- 10.71%

In which common Diabetic and thyroid “Thyrobetes” both were about 10.71%

Discussion of Result

There is found that amongst study population predominant DM type 2 then hypothyroidism and those overlapping thyroid and diabetes “Thyrobetes” was 10.71%. There were significant correlation $P < 0.01$. Diabetic patient was highest and diabetic itself influence to develop thyroid diseases in patient. As we know those has hypothyroidism insulin resistant and slow development diabetes if nit controlled well. Also, if diabetic uncontrolled high TSH can developed due to lipid deranged, low production of Free T3.

Innovativeness in the proposed research project

There will be evaluated factors those interlink, overlap and interdependent, initiation for development diabetes and then thyroid dysfunction.



Fig 7: Innovative approach

Relevance of the proposed research project

Health policy to those Diabetic should regularly evaluate for thyroid function and those thyroid diseases evaluate for diabetic investigation regularly.

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