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An observational study on assessment of thyroid dysfunction and its co-existing conditions in a government area hospital

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Abstract

Introduction:

Healthcare professionals have a great deal of difficulty when thyroid dysfunction coexists with other medical disorders, making diagnosis and treatment more difficult. Thyroid dysfunction is frequently accompanied with conditions such as cardiovascular illnesses, diabetes mellitus, and autoimmune disorders, which can exacerbate patient morbidity and affect treatment results overall. Comprehensive patient management requires an understanding of the relationships between comorbid diseases and thyroid dysfunction. The objective of this study is to improve treatment practices and further our understanding of the intricate interactions between thyroid dysfunction and comorbid illnesses by examining the incidence of thyroid dysfunction in a hospital context. In the end, our research aims to ensure comprehensive and successful treatment options for individuals with thyroid dysfunction, improving their management and care.

Methods and Material:

This was a observational study conducted in a Government area hospital in the duration of 6 months. In this study we collected demographic details, past medical and medication history, current therapy and respective laboratory data i.e., thyroid profile of a patient. The associated co-existing conditions were studied and evaluated using SPSS software

Results:

This study demonstrates that maximum number of patients suffering with thyroid disorders are females. Age group of 31-40 male are more likely suffering from thyroid disorder. Most of the people are suffering from hypothyroidism. People who are using levothyroxine 50 mcg are more when compared with other doses and people using both carbimazole and methimazole are same. People suffering from CVS are more than other co-morbidities.In aspect of both hypothyroidism and hyperthyroidism, females are more prone to CVS compared to males

Conclusion:
The study's combined data demonstrated that, in comparison to hyperthyroidism, more occurrences of hypothyroidism were observed in females than in males. Although the entire sample size indicates that females are more susceptible to thyroid problems, men (38%) and females (27%) of the same age are more impacted by thyroid abnormalities. As per the comorbidities mentioned in our study, CVS accounts for 24%, with DM (12%), CNS (6%), ortho (5%), toxicity (4%) and other comorbidities following closely after. Relevant cardiovascular issues arise from either increased or decreased thyroid hormone activity on certain molecular pathways in the heart and vasculature

Keywords: Thyroid Disorders, Hypothyroid, Hyperthyroid, Comorbidities

Introduction

Thyroid dysfunction, which affects millions of people globally, is a serious public health concern. The thyroid gland, a tiny but essential endocrine structure near the front of the neck, produces the thyroid hormones thyroxine (T4) and triiodothyronine (T3), which are essential for controlling the body's metabolism. Numerous physiological functions, such as heart rate, body temperature, and energy consumption, are influenced by these hormones. A variety of clinical diseases, including hyperthyroidism and hypothyroidism, can result from dysregulation of thyroid hormone production; each has a unique etiology and set of clinical symptoms.[1,2,3]

Insufficient thyroid hormone production causes hypothyroidism, which is characterized by symptoms including sadness, weight gain, lethargy, and cold sensitivity. On the other hand, symptoms of hyperthyroidism, which entails overproduction of hormones, might include palpitations, anxiety, heat sensitivity, and weight loss. Thyroid dysfunction is not universally prevalent, which has significant consequences for people's health and health care systems. Thyroid problems are more common in women than in males, and they can be caused by autoimmune and hormonal reasons.[4,5,6]

The diagnosis, treatment, and prognosis of thyroid dysfunction are typically complicated by the coexistence of other medical diseases. Thyroid abnormalities can worsen morbidity and affect overall patient outcomes when they interact with other comorbid ailments such diabetes mellitus, autoimmune disorders, and cardiovascular diseases. For example, hypertension and hyperlipidemia are frequently linked to hypothyroidism and can raise the risk of cardiovascular events. Likewise, hyperthyroidism can make diseases like osteoporosis and atrial fibrillation worse.[7,8,9]

In addition to identifying and analyzing the underlying medical problems that usually accompany thyroid disorders, the goal of this study is to thoroughly evaluate the prevalence and range of thyroid dysfunction in patients. Recognizing the co-occurrence of thyroid dysfunction with other medical disorders can enhance diagnostic accuracy and enable prompt action, but it is crucial to understand the link between thyroid dysfunction and its coexisting illnesses. Understanding the frequency and types of coexisting illnesses can help in the creation of more customized and successful treatment programs, which may enhance patient outcomes. Determining the prevalence of concurrent illnesses in thyroid dysfunction patients can help shape healthcare policy and resource distribution, improving the quality of care for those who are impacted.[10,11,12]

It is anticipated that the study will offer a thorough summary of the range of concomitant illnesses and the prevalence of thyroid dysfunction. It will draw attention to the substantial health burden that these coexisting illnesses impose and emphasize the necessity of multidisciplinary and integrated patient treatment strategies. The goal of the study is to clarify these links in order to improve patient care for patients with thyroid dysfunction as well as clinical practices and treatment techniques.[13,14,15]

Aim

To study the thyroid dysfunction and its co-existing conditions in Government Area Hospital, Narasaraopet

Objectives:

1. To assess the demographics and clinical variables in patients thyroid patients.
2. To classify the thyroid patients according to their age and gender
3. To identify the patients according to the type of disorder
4. To assess the co-existing conditions in thyroid patients.
5. To Analyse the patient medication data

Methodology:

Ethical Approval: The study was initiated after the clearance of institutional ethics committee

Study Site: This research was carried out at Government Area hospital, Narasaraopet, AP. This study was conducted in outpatients.

Study Duration: The study was conducted for 6 months.

Study Design: This is an observational study

Sample Size: 49 Patients were enrolled into this study

Study method: **A** case report form was used to collect the study specific details. The study was conducted in a Government area hospital in the duration of 6 months. In this study we collected demographic details, past medical and medication history, current therapy and respective laboratory data i.e., thyroid profile of a patient. The associated co-existingconditions were studied and evaluated using SPSS software.

Study Criteria

Inclusion criteria:

- Patients of both the gender.
- Patients between ages of 10-70 were considered.
- Patients with or without concurrent illness

Exclusion criteria:

- Paediatric patient and pregnant women were excluded

Data Collection

A review of medical records, patient interviews, and laboratory testing will all be used to gather data. Software for statistical analysis will be used to examine the gathered data. We have analyze the data using both inferential and descriptive statistics.

Statistical Analysis

After entering the data into a Microsoft Excel spreadsheet, basic statistical procedures were used to do statistical analysis and provide frequencies and percentages.

Results

1. Gender distribution

Gender	No. of patients	Percentage
MALE	14	29%
FEMALE	35	71%

Table 1 demonstrates that maximum number of patients suffering with thyroid disorders are females.

2. Age and Gender distribution

Age	Male	Percentage	Female	Percentage
10-20	1	2.04	3	6.12
21-30	2	4.08	2	4.08
31-40	5	10.20	15	30.61
41-50	3	6.12	8	16.32
51-60	2	4.08	4	8.16
61-70	1	2.04	3	6.12

Table 2 demonstrates that age group of 31-40 male are more likely suffering from thyroid disorder.

3. Type Of Thyroid Disorder

Types	No of patients	Percentage
Hypothyroidism	41	84%
Hyperthyroidism	8	16%

Table 3 demonstrates that most of the people are suffering from hypothyroidism

4. Based On Medications

Medication	Dose	No.of patients	Percentage
Levothyroxine(MCG)	12.5	1	2.04
	25	10	20.40
	50	23	46.93
	75	5	10.20
	88	4	8.16
	100	3	6.12
	112	1	2.04
	125	2	4.08
Carbemazole & Methimazole(MG)	10mg	5	10.20
	20mg	6	12.24

Table 4 demonstrates that people who are using levothyroxine 50 mcg are more when compared with other doses and people using both carbimazole and methimazole are same

5. Co-morbidities

Co-morbidities	No. of patients	Percentage
CNS	5	10.20
CVS	21	42.85
DM	8	16.32
CKD	3	6.12
ORTHO	4	8.16
GYNIC	2	4.08
OTHERS	6	12.24

Table 5 demonstrates shows that people suffering from CVS are more than other co-morbidities

6. Based on CVS co-morbidity

Hyperthyroidism		Hypothyroidism	
Male	Female	Male	Female
1	3	7	10

When it comes to both hypothyroidism and hyperthyroidism, women are more likely than men to experience CVS.

Discussion

Our research leads us to the conclusion that CVS issues are more common than other co-morbidities. A survey of the literature reveals confirmation that the prevalence of several co-morbidities linked to hypothyroid individuals is higher than that of the general population.

The data from this study confirms and is consistent with other data and studies conducted at these hospitals, demonstrating that thyroid abnormalities are directly linked to a wide range of ailments, including diabetes, chronic kidney disease (CKD), CNS issues, and coronary artery diseases.

This study had two main goals: first, it sought to determine the co-morbidities and past medical history of the patients. Specifically, it sought to determine whether the patients' past medical history contributed to the development of the disease or if the disease had caused the development of any other diseases or co-morbidities. The results showed that the majority of the patients had a history of various diseases, and nearly all of them had some degree of co-morbidity that had been brought on by hypothyroidism. It was also clear from our investigation that 76% of the participants had hypothyroidism.

All of the research, both Indian and foreign, makes it clear that hypothyroidism coexists with several other conditions that require attention. Additionally, this study reveals that levothyroxine is used in conjunction with several other drug types, with CVS medicines being the most often recommended pharmaceuticals. Since there are no medical records to support the allegation, the data might not be as useful. Similar to accidental discoveries, there are unintentional diagnoses of the primary illness when laboratory tests are ordered to identify other conditions, treat the underlying cause, and identify the type of hypothyroidism. In this study, numerous co-diagnosed conditions were found in addition to hypothyroidism; the relationship between these conditions was only discovered when multiple hypothyroidism diagnoses were made, not before or after.

Thyroid problems frequently go undiagnosed in the elderly, especially when they coexist with other illnesses. Thyroid problems in the elderly might present with a variety of deceptive clinical characteristics. In some people, the only symptoms that manifest are fatigue, dry skin, constipation, cold intolerance, memory loss/confusion, or cardiovascular complications like heart failure that are related to aging or comorbidities. This study investigates thyroid hormones and comorbidity in elderly people who live independently.

In our study, the age distribution of thyroid diseases shows that a greater proportion of patients, both male and female, are between the ages of 31 and 40. It was also established that, in comparison to other age groups, older adults had a higher risk of thyroid diseases.

Based on the gathered cases, it was found that a greater proportion of individuals suffered from cardiovascular diseases, including hypertension,

angina, arrhythmias, and variations in heart rate. Subsequently, there were additional comorbidities such co-morbidities and CNS-related issues like melancholy and hemiplegia, as well as gastrointestinal issues like gastritis and burning feeling.

Conclusion

The study's combined data demonstrated that, in comparison to hyperthyroidism, more occurrences of hypothyroidism were observed in females than in males. Although the entire sample size indicates that females are more susceptible to thyroid problems, men (38%) and females (27%) of the same age are more impacted by thyroid abnormalities. As per the comorbidities mentioned in our study, CVS accounts for 24%, with DM (12%), CNS (6%), ortho (5%), toxicity (4%) and other comorbidities following closely after. Relevant cardiovascular issues arise from either increased or decreased thyroid hormone activity on certain molecular pathways in the heart and vasculature.

A hyperactive dynamic cardiovascular condition (high cardiac output with low systemic vasculature resistance) is brought on by hyperthyroidism. The heart exhibits opposing alterations in hypothyroidism. Our study's small sample size prevented it from being representative of the entire population. Given that thyroid hormones are essential for several bodily functions, including growth, development, and metabolism. Thyroid hormone can change blood sugar levels due to its metabolism-interfering effects, which raises the risk of diabetes and makes blood sugar management more difficult. Patients with hypothyroidism have joint discomfort as a result of increased joint pressure brought on by their increased bodyweight.

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