



STUDY ON PREVALENCE OF SUBCLINICAL HYPOTHYROIDISM IN MOUNTAINOUS REGION

Dr. Surinder Kumar Garg*

Assistant Professor, Dept. of Surgery, NC Medical College & Hospital, Israna (Dt), Panipat, Haryana. *Corresponding Author

Dr. Ranjan Katyaj

Professor and Head, Dept of Biochemistry, Pt JLN Government Medical College and Hospital, Chamba (HP).

ABSTRACT

Introduction: Subclinical hypothyroidism is also called as mild thyroid failure, is diagnosed when peripheral thyroid hormone levels are within normal reference laboratory range but serum thyroid-stimulating hormone (TSH) levels are mildly elevated. This condition occurs in 3%-8% of the total population, more common in females than males. **Objective of the Study:** The objective of the present study is to determine the prevalence of sub clinical hypothyroidism in mountainous region of Himachal Pradesh. **Materials and Methods:** A retrospective, cross-sectional referral hospital study was conducted. We included 2800 patients who were referred to Clinical Biochemistry laboratory, Pt JLN Government Medical College and Hospital, Chamba (HP). Serum Thyroid Function tests (TSH, T4, T3) were measured in all these patients from November 2019 to October 2020 by Electrochemiluminescence Immuno Assay method. **Results:** We included 2800 patients comprising of 45% males and 55% females in the age group of 18-55 years. Subjects with elevated and normal thyroid stimulating hormone (TSH) levels in the serum were 30 and 70% respectively. About 600 patients (21.42%) had subclinical hypothyroidism which includes both males and females. Prevalence of SCH was more in females (80%) than in males (20%). Most of the patients presenting with SCH were in the age group of 20-50 years.

KEYWORDS : Subclinical hypothyroidism, thyroid stimulating hormone, thyroxine, tri-iodothyronine

INTRODUCTION

Thyroid disorders represent the most common endocrine disorders in India, affecting about 42 million population, the burden is high.¹⁻² The prevalence and pattern of thyroid disorders depends on several factors like sex, age, ethnic and geographical factors and especially on iodine intake.³ Subclinical hypothyroidism is more common disorder than primary hypothyroidism. It is also called as mild thyroid failure, is diagnosed when peripheral thyroid hormone levels i.e. serum thyroxine (T4) and tri-iodothyronine (T3) are within normal reference laboratory range but serum thyroid-stimulating hormone (TSH) levels are mildly elevated (4.5 to 10 mIU/L), having a prevalence of 1.4-7.8% in older populations.⁴⁻⁶

In relation to the prevalence of SCH, the data of the published series ranges considerably between 3.4 and 10.8% of the general population.⁷⁻¹⁰ Iodine is an essential trace element which is required for the synthesis of the thyroid hormones, thyroxine (T4) and tri-iodothyronine (T3), regulates cellular oxidation and hence has effect on calorogenesis, thermoregulation and intermediary metabolism. Daily requirement of iodine is normally met by a well-balanced diet and drinking water except in hilly areas and around the rivers and great lakes where iodine has been leached out of soil so that food grown in soil is iodine deficient, resulting in increased incidence of hypothyroidism in these iodine deficient areas.¹⁰⁻¹³ The food grown in iodine-deficient regions can never provide enough iodine to the population and livestock living there.¹⁴

OBJECTIVE OF THE STUDY:

the objective of the study is to study the prevalence of subclinical hypothyroidism in mountain region.

MATERIALS AND METHODS:

Source of data: A retrospective, cross-sectional referral hospital study was conducted. We included 2800 patients who were referred to Clinical Biochemistry laboratory from OPD and IPD, Pt JLN Government Medical College and Hospital, Chamba (HP) from November 2019 to October 2020.

Exclusion Criteria: Patients with ischemic heart disease, cerebrovascular and neurological diseases, diabetes

mellitus, chronic renal impairment, known psychological illnesses, previous history of thyroid disease or previous thyroxine therapy, asthma and pregnancy were excluded.

Specimen collection and Analysis: About 3-5 ml of venous blood was collected and centrifuged to separate serum from the cells as soon as the clot was formed. Serum aliquots were stored at 4°C to be run in batches. The samples were allowed to thaw prior to assay, mixed thoroughly. Hemolyzed and lipemic samples were rejected. Bi level i.e. high and low control was run with each batch. Thyroid function test (TFT) comprising of T3, T4 and TSH levels was carried out by electrochemiluminescence immunoassay method using a fully automatic analyzer ECLIA 2010(Roche Diagnostic Germany).

Patients with thyroid hormone evaluation picture of elevated serum TSH levels (>4.5 to ≥ 10 mIU/ml) with normal levels of serum thyroxine (T4) and tri-iodothyronine (T3) were categorized as subclinical hypothyroidism (SCH) if similar levels were observed in repeated thyroid profile after a lapse of three months.

RESULTS:

We included 2800 patients comprising of 45% males and 55% females in the age group of 18-55 years. Subjects with elevated and normal thyroid stimulating hormone (TSH) levels in the serum were 30 and 70% respectively. About 600 patients (21.42%) had subclinical hypothyroidism which includes both males and females. Prevalence of SCH was more in females (80%) than in males (20%). Most of the patients presenting with SCH were in the age group of 20-50 years.

DISCUSSION AND CONCLUSION:

A prevalence rate of 21.42% SCH was found among the study group which is quite high as compared to other epidemiological studies in various parts of the world where it ranges from 4 to 8.5%. The highest percentage of SCH was found especially in the female age group 20- 55 years. Considering the potential danger to progression to overt disease state and SCH may itself be associated with serious complications, there needs to be proper guidelines to recommend the screening and treatment of SCH. Studies

have reported psychiatric problems such as panic disorder, anxiety and depression disorders a more common in SCH.

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