The incidence of hypothyroidism in a tertiary care hospital

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ABSTRACT

The study included a total of 200 patients, whose blood samples were collected and they were sent for Total Triiodothyronine(T3), Total Thyroxine(T4), Thyroid Stimulating Hormone (TSH). The age of the patients ranged from 9yrs to 68yrs. Out of 200 patients examined for T3, T4 and TSH, 6 patients showed hypothyroidism accounting for 3%. Out of these 6 patients 5 were female and 1 was male.

Keywords: hypothyroidism, T3, T4, TSH

INTRODUCTION

Thyroid gland is the largest endocrine gland. Hypothyroidism can be defined as deficient production of thyroid hormone. Primary hypothyroidism indicates decreased secretion of thyroid hormone by factors affecting in thyroid gland itself. A decrease in serum concentration of thyroid hormone causes an increased secretion of TSH, resulting in elevated serum TSH concentration.

Primary hypothyroidism is one of the commonest endocrine disorders in the clinical practice.

The prevalence of hypothyroidism observed in South India was 3.9% & another 9.4% had subclinical hypothyroidism. The prevalence was higher in women, at 11.4% , in comparison with men, in whom the prevalence was 6.2%.

Hypothyroidism can practically have an affect on all organ systems in human body.

Thyroid hormone deficiency slows metabolism, thus causes a decrease of resting energy expenditure, oxygen consumption, and utilization of substrates[1]. The low basal metabolic rate (BMR) leads to decreased appetite, cold intolerance, and slightly low basal body temperature[1]. Reduced thermogenesis is the key reason behind the cold intolerance characteristic of hypothyroid patients.

Hypothyroidism has got key effects on Protein, Carbohydrate and lipid metabolism.
The face is expressionless when at rest and has been given different names such as ‘cretinoid’, ‘expressionless’, ‘heavy’, ‘apathetic’, ‘mask-like’, ‘vacant’, ‘stolid’, ‘goodtempered’, ‘blunted’ and ‘large featured’. The patient is good tempered but not completely listless. It is rarely as puffy as the classic facies of chronic renal failure.

Thyroid hormone is essential for the development of the CNS[2].

Hypothyroidism has profound effects on Cardio Vascular System, Respiratory System, Musculoskeletal System, GastroIntestinal System, Renal function, water and Electrolytes, Reproductive function, Endocrine system (Pituitary & adreno cortical function,) and Hematopoietic system.

MATERIALS AND METHODS

The study included a total of 200 patients, whose blood samples were collected and they were sent for Total Triiodothyronine(T3), Total Thyroxine(T4), Thyroid Stimulating Hormone (TSH). The tests were done by the following methods-

- T3 – Competitive Chemi Luminescent Immuno Assay
- T4 – Competitive Chemi Luminescent Immuno Assay
- TSH – Ultra Sensitive Sandwich Chemi Luminescent Immuno Assay.

RESULTS

Out of 200 patients examined for T3, T4 and TSH, 6 patients showed hypothyroidism accounting for 3%. Out of these 6 patients 5 were female and 1 was male. The age of the patients ranged from 9yrs to 68yrs.

The normal values for Total Triiodothyronine (T3) is 60-200ng/dl
The normal values for Total Thyroxine(T4) is 4.5-12.0ug/dl
The normal values for Thyroid Stimulating Hormone (TSH) is 0.30-5.5uIU/ml

DISCUSSION

Hypothyroidism was the first endocrine disorder to be treated with replacement of the deficient hormone [3].

Thyroid disorders are amongst the most common endocrine dysfunctions. The total prevalence of these disorders estimated to be 200 million worldwide[4]. Some researchers reported 42 million Indians [5] to be suffering from thyroid disorders. Similarly high frequency of occurrence have been reported in other countries as well [6]. The thyroid gland is the master gland to control the body metabolism, growth, development and maintenance of the internal environment. The gland works under the control of thyroid stimulating hormone (TSH) from pituitary gland which in turn is under the control of thyrotropin hormone (TRH) from hypothalamus. It secretes 93% of thyroxin(T4) and 7% tri-iodothyronin (T3), T3 is almost 10 times more active than T4 and produced mainly by the conversion of T4 in the peripheral tissues. These hormones increase transcription of several genes, known to affect catabolism. Thyroid hormone initiate a chain of molecular events or gene expressions when the active form of the hormone interacts with specific cell receptors and subcellular components of various organs[7].

Hypothyroidism is the most common thyroid disorder and is often overlooked. It is 5-10times more common in females as compared to males [8]. The clinical presentation of hypothyroidism may vary from asymptomatic to, rarely, with multi-systems organ failure leading to myxedema coma[9].

The Thyroid Stimulating Hormone is the single most sensitive test to diagnose thyroid dysfunction. The combination of Total Thyroxine and Thyroid Stimulating Hormone appears to correctly establish both hypothyroidism and its cause in the majority of patients. An elevated TSH in the presence of a low T4 establishes thyroid dysfunction and primary hypothyroidism

CONCLUSION

The diagnosis of hypothyroidism is made specifically by a combination of history, physical examination and laboratory testing. Since the laboratory confirmation of hypothyroidism is straightforward, the critical factor in diagnosis is a high degree of suspicion.
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