ORIGINAL RESEARCH PAPER

Physiology

EARLIEST SYMPTOM & SIGN FOR WHICH HYPOTHYROIDISM IS SUSPECTED

KEY WORDS:

Hypothyroidism, dry skin, cold sensitivity.

Dotton Denis Noronha

Senior resident, Department of Medicine, A.J.Institute of Medical Sciences, Mangalore.

Sneha B Shetty*

Associate-professor, Department of Physiology, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India.
*Corresponding Author

Balachandra A Shetty

Professor, Department of Medicine, A.J.Institute of Medical Sciences .Mangalore.

ABSTRACT

Background: The thyroid hormone maintains the level of metabolism in the tissues that is optimal for their normal function. Traditional symptoms of hypothyroidism have been well known to medical practitioners. Yet hypothyroidism often remains undetected.

Aims And Objectives: To study the first symptom and sign that helps to diagnose hypothyroid state

Materials And Methods: The study design is cross-sectional: all patients, regardless of results of physical examination, underwent the reference standard test (thyroid hormone assays) at the same point of time. All screened patients in the age group of 14 and above are considered for the study

Results: Dry skin and cold sensitive skin were found to be the most common symptom amongst 100 subjects out of which 18% of the population had each of these symptoms being the first symptom that helped in diagnosing hypothyroid state. The most common physical sign out of 100 subjects was found to be delayed relaxation of ankle jerk, out of which 30% of the subjects had their first clinical sign being delayed ankle jerk that helped to diagnose hypothyroid state.

The next more common physical sign out of 100 subjects was found to be bradykinesia/slow movements, out of which 22% of the subjects were diagnosed hypothyroid state considering it being the first sign.

Conclusion: The most common symptom noted in symptom profile of hypothyroidism was dry skin and cold sensitivity, which was seen in 68% respectively, of which 18% of the cases were diagnosed hypothyroidism through these symptom. The most common feature noted in clinical profile of hypothyroidism was delayed relaxation of ankle jerk, which was seen in 92% of which 30% of the cases were diagnosed hypothyroidism through this clinical sign. The traditional symptoms, clinical examination and signs are valuable and more efficacious when deciding which patients to be tested for hypothyroidism

INTRODUCTION

The thyroid hormone maintains the level of metabolism in the tissues that is optimal for their normal function. The principal hormones secreted by the thyroid are thyroxine (T4) and triiodothyronine (T3). The human thyroid secretes about 80µg of T4, 4µg of T3, and 2µg of RT3 per day.1,2

Hypothyroidism can affect all organ systems, and these manifestations are largely independent of the underlying disorder but are a function of the degree of hormone deficiency1.

Hypothyroidism is common, potentially serious, often clinically overlooked, readily diagnosed by laboratory testing, and eminently treatable. Thyroxine replacement therapy is highly effective and safe.

Traditional symptoms of hypothyroidism have been well known to medical practitioners. (3-6) Yet hypothyroidism often remains undetected.(4) The pathophysiologic changes generally require months or years to manifest as clinical signs and symptoms. Furthermore, the onset of hypothyroidism is so insidious that even classic symptomatology may go unnoticed or undiagnosed(7). Although most hypothyroid patients do have some signs & symptoms indicative of disease,(8) it may be difficult to identify a "classic" clinical picture because symptoms may be non specific and thus confused with other health problems.(4,7,9).

The relation between symptoms & physiologic disease is so complex that clinicians turn to biochemical measures of thyroid dysfunction for diagnosis. There is no information available in literature regarding amongst the traditional symptoms and signs which is the first and most common symptom and sign that helps to diagnose hypothyroid state.

Hence the need for this study.

OBJECTIVES OF THE STUDY

1. To study the first symptom that helps to diagnose hypothyroid state
2. To study the first sign that helps to diagnose hypothyroid state

MATERIALS AND METHODS

Source Of Data:

The study design is cross-sectional: all patients, regardless of results of physical examination, underwent the reference standard test (thyroid hormone assays) at the same point of time. All screened patients in the age group of 14 and above are considered for the study.

Method Of Collection Of Data:

Screening of the study population: By asking the following questions [6] to consecutive patients presenting to the outpatient department

1. Do you feel less energetic than you felt a year ago?
2. Do you lack interest in your surroundings?
3. Has the skin of your arms or legs become more dry or rough?
4. Do you think you have put on weight in the last one year?
5. Have you or any of your family or friends noticed that your voice has recently become huskier or weaker?

All the screened patients had their blood drawn for total thyroxine (T4) and thyroid stimulating hormone (TSH) levels on the day of the examination.

The TSH levels were measured by an ultra-sensitive radioimmunoassay. Total T4 levels were measured using a chemiluminescence assay (CLIA).

Patients with Total T4<4.5µg/dl and TSH 2.5-5.5mIU/ml were judged to have hypothyroidism.

SAMPLE AND SAMPLING TECHNIQUE:

Study Type & Design: Two year clinical, prospective and observational study

Set-up: Medical college.

Study Period: July 2013 up to July 2015.

Ethical committee clearance: Obtained

Inclusion Criteria:

1. All patients above 14 years of age.
2. Patients presenting in OPD/ wards of AJIMS, with history & examination findings suggestive of hypothyroidism.
3. Sick euthyroid patients

Exclusion Criteria:

1. All pediatric cases of hypothyroidism (which includes congenital hypothyroidism and neonatal hypothyroidism)
2. Previously diagnosed patients of hypothyroidism, already on treatment
3. Patient information sheet. Informed/written consent were taken in each case.

After obtaining detailed history the patients were interviewed for the presence / absence of traditional hypothyroid symptoms. The complete data was recorded in specially designed case recording form.

INVESTIGATIONS

Complete Blood Count :Hb,TC,DC,ESR,

Random Blood Sugar

Blood Urea, Serum Creatinine

Thyroid Function Test (T3,T4,TSH)

Urine routine-sugar, albumin, microscopy

A standard 12 lead Electrocardiography

2-D Echocardiography

RESULTS

Table 1: Symptom Analysis

	PATIENTS HAVING THESE SYMPTOMS	PERCENTAGE	FIRST SYMPTOMS	PERCENTAGE
Coarse Skin	8	8%	2	2%
Depressed	8	8%	2	2%
Puffy Eyes	16	16%	4	4%
Hoarseness	20	20%	5	5%
Slow Thinking	20	20%	5	5%
Poor Memory	20	20%	5	5%
Irregular/Heavy Menses	20	20%	5	5%
Constipation	28	28%	7	7%
Weight Gain	28	28%	7	7%
Weak/Crampy muscles	40	40%	10	10%
Tired	48	48%	12	12%
Dry Skin	68	68%	18	18%
Cold Sensitive	68	68%	18	18%

Dry skin and cold sensitive skin were found to be the most common symptom amongst 100 subjects out of which 18% of

the population had each of these symptoms being the first symptom that helped in diagnosing hypothyroid state.

Figure 1. Patients Having These Symptoms

Figure 2. Patients First Symptom

Tiredness and weak/ crampy muscles were found to be the next more common symptoms amongst 100 subjects out of which 12% were found to have tiredness being their first symptom and 12% were found to have weak/ crampy muscles being their first symptom that helped in diagnosing hypothyroid state.

Table 2 Physical Sign Analysis

SYSTEMIC EXAMINATION	PATIENTS HAVING THESE SIGNS	PERCENTAGE	PATIENTS WITH FIRST SIGN	PERCENTAGE
Drowsiness/Altered Mental Status	8	8%	8	8.00%
Delayed Ankle Jerk	92	92%	30	30.00%
Bradykinesia/Slow Movement	64	64%	22	22.00%
S3/S4/Raised JVP/Shifted Apex/Systolic Murmur	8	8%	8	8.00%
Muffled Heart Sound	8	8%	8	8.00%
Ascites	8	8%	8	8.00%
Hepatomegaly	8	8%	8	8.00%
Pleural Effusion	8	8%	8	8.00%

Figure 3. Patients With These Signs

Figure 4. Patients With First Sign

The most common physical sign out of 100 subjects was found to be delayed relaxation of ankle jerk, out of which 30% of the subjects had their first clinical sign being delayed ankle jerk that helped to diagnose hypothyroid state.

The next more common physical sign out of 100 subjects was found to be bradycardia/slow movements, out of which 22% of the subjects were diagnosed hypothyroid state considering it being the first sign.

DISCUSSION

The observations made in 100 cases of hypothyroidism in a medical college.

The most common of the traditional symptoms, noted in the study were- Dryness of skin (68%), cold sensitivity (64%), weakness/crampy muscles (52%) and tiredness (52%).

Of the traditional symptoms, 18% of the cases first symptoms were dryness of skin and cold sensitivity.

Notably there were fewer patients who reported neurological /menstrual/mood related symptom

CONCLUSION

The study population consisted of 100 cases of hypothyroid, all of them were primary hypothyroidism, which was consistent with the overall incidence of primary hypothyroidism in the standard textbooks of endocrinology.

The most common symptom noted in symptom profile of hypothyroidism was dry skin and cold sensitivity, which was seen in 68% respectively, of which 18% of the cases were diagnosed hypothyroidism through these symptom.

The most common feature noted in clinical profile of hypothyroidism was delayed relaxation of ankle jerk, which was seen in 92% of which 30% of the cases were diagnosed hypothyroidism through this clinical sign.

The traditional symptoms, clinical examination and signs are valuable and more efficacious when deciding which patients

to be tested for hypothyroidism.

REFERENCES

1. P.ReedLarsen;TerryF.Davies;Larsen:Williams textbook of endocrinology, 10th edition.
2. Vanderpump MPJ, Tunbridge WMG, French JM, et al: The incidence of thyroid disorders in the community: a twenty-year follow-up of the Whickham survey, *ClinEndocrinol (Oxf)* 1998; 43:55-68.
3. Evered DC, Ormston BJ, Smith PA, Bird T. Grades of hypothyroidism. *BMJ*. 1973; 1:657-62. [PubMed]
4. Larsen, PR.; Ingbar, SH. The thyroid gland. In: Wilson JD, Foster DW., editors. *Williams Textbook of Endocrinology*. Philadelphia, Pa: WB Saunders Co; 1992. Pp.357-487. In. eds.
5. Wartofsky, L.; Ingbar, SH. Diseases of the thyroid. In: Wilson JD, Braunwald E, Isselbacher KJ, et al., editors. *Harrison's Principles of Internal Medicine*. 12th ed. New York, NY: McGraw-Hill; 1991. pp. 1692-712. In. eds.
6. Golding DN. Hypothyroidism presenting with musculoskeletal symptoms. *Ann Rheum Dis*. 1970; 29:10-4. [PubMed]
7. Gavin LA. The diagnostic dilemmas of hyperthyroxinemia and hypothyroxinemia. *Adv Intern Med*. 1988; 33:185-204. [PubMed]
8. Tachman ML, Guthrie GP. Hypothyroidism: diversity of presentation. *Endocr Rev*. 1984; 5:456-65. [PubMed]
9. Schectman JM, Kallenberg GA, Shumacher RJ, Hirsch RP. Yield of hypothyroidism in symptomatic primary care patients. *Arch Intern Med*. 1989; 149:861-4. [PubMed]