



STUDY OF CLINICAL PROFILE OF HYPOTHYROIDISM IN A TERTIARY CARE HOSPITAL

General Medicine

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ABSTRACT

Introduction: Thyroxine (T4) and triiodothyronine (T3), two important metabolic hormones produced by the thyroid gland, control growth, development, and metabolic rate. High blood S.TSH concentrations along with normal levels of free thyroid hormone (FT4) and free triiodothyronine (FT3), together with little or no hypothyroidism symptoms, are referred to as subclinical hypothyroidism. **Methods:** A prospective observational study was carried out in the hospital's medical department at Dr. RPGMC in Tanda, Himachal Pradesh, India. The study comprised 100 participants older than 15 years who had a verified diagnosis of hypothyroidism. Every patient who had symptoms and signs suggestive of hypothyroidism, as well as those whose thyroid profiles suggested hypothyroidism and who were over 15 years old, were enrolled in the study with their informed consent. **Results:** The most prevalent presenting complaint (81%) was weakness related to hypothyroidism, which was followed by weight gain (65%), irregular menstruation (49%), irritability (51%), and facial puffiness (44%). The most prevalent comorbidity was vitamin D deficiency (37%) which was followed by vitamin B12 (6%), diabetes (25%), hypertension (21%), and anemia (31%). The most prevalent condition was pedal edema, which was followed by thyroid swelling (12%), bradycardia (17%), dry skin (33%), depression (29%), and pallor (35%). **Conclusion:** Evaluating patients on a frequent basis for signs and symptoms of anorexia, weight gain, constipation, irregular menstruation, dry skin, weakness, and cold intolerance voice loss, hair falling out, puffiness on the face, swollen thyroid.

KEYWORDS

Thyroid, TSH, Thyroxine (T4), Triiodothyronine

INTRODUCTION

The thyroid gland produces two key metabolic hormones viz. thyroxine (T4) and triiodothyronine (T3), these hormones regulate metabolic rate, growth and development.¹ Subclinical hypothyroidism is defined as high S.TSH concentration with normal serum Free Thyroxine (FT4) and Free Triiodothyronine (FT3) concentrations, associated with few or no signs and symptoms of hypothyroidism.² Hypothyroidism is the most prevalent thyroid disorder affecting 3–15% of the adult Indian population. Its incidence increases with advanced age, more common in female gender.³

The prevalence of hypothyroidism was higher in lower socioeconomic group population.⁴ The common symptoms and signs reported in hypothyroidism are fatigue, lethargy, constipation, weight gain, cold intolerance, loss of libido, dry skin, anemia, bradycardia and delayed ankle reflex, hypothyroidism in young women is linked to menstrual irregularities, polycystic ovaries and infertility. Many of these are non-specific and might have little diagnostic value clinically.⁵ The possible adverse consequences of hypothyroidism such as the possibility of cardiac dysfunction or adverse cardiac end point (including atherosclerotic disease and cardiovascular mortality), elevation of total and low density lipoprotein cholesterol, systemic or neuropsychiatric symptoms.⁶

Among the Indian population, patients with asthma, obesity, diabetes, dyslipidemia, and hypertension had the higher prevalence of hypothyroidism.⁷ In pregnant women, untreated overt hypothyroidism is associated with gestational hypertension, abruptio placenta, anemia, gestational diabetes, and postpartum hemorrhage.

In overt hypothyroidism, there is also an increased risk of adverse birth outcomes. Frequently associated birth outcomes are spontaneous miscarriage, low birth weight, premature birth, fetal distress, perinatal death, and stillbirth.⁸ Screening of general population for subclinical hypothyroidism and treatment of asymptomatic subclinical hypothyroidism may relieve clinical symptoms, improve lipid profiles and lower the risk of atherosclerosis. But the adequacy of the evidence is debated, and case finding is suggested to be better than screening.⁹ The present study was aimed to evaluate the clinical profile of hypothyroidism in a tertiary care hospital in North India.

METHODS

A prospective observational study was conducted in the Department of medicine in a Dr. RPGMC and hospital, Tanda, H.P., India. A total of 100 patients who were confirmed case of hypothyroidism were

included in the study with age more than 15 years. All the patients presented with signs and symptoms suggestive of hypothyroidism, patients with thyroid profile suggestive of hypothyroidism, age more than 15 years of age, patients who given the consent for the study were included.

All the cases in this study were examined according to a clinical plan and investigated as per need. Laboratory tests which included FT4, FT3, TSH, complete blood count, renal function test, liver function test, lipid profile, blood and sugar were done. Specific investigation like ECG, Echocardiography, Chest X-Ray was also advised accordingly.

Data collected in department of general medicine in dr RPGMCH tanda and IGMC shimla.

Statistical Analysis

The data were recorded using a Microsoft® Excel worksheet (version 2019) and subjected to statistical analysis using SPSS (SPSS 21.0, IBM, Armonk, NY, USA). Categorical data were expressed as frequency, and percentages.

RESULTS

Baseline Characteristics

In the present study, a total of 100 patients of hypothyroidism diagnosed according to T3, T4 and TSH level were evaluated for clinical sign and symptoms. The most common age group was >50 years (34%) followed by ≤20 years (8%), 21-30 years (14%), 31-40 years (21%) and 41-50 years (23%). 67% of patients were male and 33% of patients were female. The most common BMI group was obesity (47%) followed by underweight (5%) and overweight (30) while 18% of patients were normal (Table 1).

Distribution of symptoms

The symptoms of hypothyroidism weakness were the most common (81%) presenting complaint followed by weight gain (65%), menstrual irregularity (49%), irritability (51%), facial puffiness (44%) (Table 2).

Prevalence of comorbidities

In our study, vitamin D deficiency (37%) was the most common comorbidities followed by hypertension (21%), diabetes (25%), anemia (31%), and vitamin B12 (6%) (Table 3).

Presenting signs

In our study, pedal edema was the most common sign followed by pallor (35%), bradycardia (17%), dry skin (33%), depression (29%),

and thyroid swelling (12%) (Table 4).

DISCUSSION

In our study, a total of 100 patients of hypothyroidism diagnosed according to T3, T4 and TSH level were evaluated for clinical sign and symptoms. The most common age group was >50 years (34%) followed by ≤20 years (8%), 21-30 years (14%), 31-40 years (21%) and 41-50 years (23%). 67% of patients were male and 33% of patients were female. The most common BMI group was obesity (47%) followed by underweight (5%) and overweight (30) while 18% of patients were normal. In study by **Jain et al** hypothyroidism patients of 16 to 70 years age and both genders. Female were predominantly higher (71.7%) than male (28.3%). The maximum number of patients was between 36 to 45 years (31.2%) followed by (24.5%) 46 to 55 years age group hypothyroid patients.¹⁰ in a study by **Choudhary et al** total 100 patient of hypothyroidism were evaluated out of these 68 (68%) were female and 32 (32%) were male (Table - 1). Male to female ratio in this study was 2:1. The maximum number of patients was in the age group of 31 to 40 years. 3 (3%) cases were above the age of 71 years.¹¹

The symptoms of hypothyroidism weakness were the most common (81%) presenting complaint followed by weight gain (65%), menstrual irregularity (49%), irritability (51%), facial puffiness (44%). In a study by **Choudhary et al** the most common symptoms were weakness 92 (92%), Dryness of skin 76(76%), weight gain 64(64%), Facial puffiness 54(54%), constipation 48(48%), Menstrual irregularities 44(44%), Hoarseness of voice (36%), Chest Pain (32%), Anorexia (32%), Cold Intolerance (26%), Thyroid Swelling (23%), Falling of hair (18%).¹¹

In our study, vitamin D deficiency (37%) was the most common comorbidities followed by hypertension (21%), diabetes (25%), anemia (31%), and vitamin B12 (6%). Pedal edema was the most common sign followed by pallor (35%), bradycardia (17%), dry skin (33%), depression (29%), and thyroid swelling (12%). In a study by **MG and Joshi** females with age group of 18-28 commonly has Dry skin, Hypokinesia, Hair loss, constipation whereas males with age group of 18-28 commonly has Constipation, Hair loss, lethargy and Dry skin. Females with age groups of 29-39 commonly has Menstrual problems, Hair loss, Hypokinesia and weight gain whereas males with age of 29-39 commonly has Hair loss, Dry skin, Hypokinesia, lethargy and constipation. Females with age groups of 40-50 commonly has Hair loss, Menstrual problems, Hypokinesia, and Constipation whereas males with age of 40-50 commonly has Constipation, Hair loss, Weight gain and Hypokinesia.¹² In a study by **Singh et al** there was only 1 patient having secondary hypothyroidism (1.6%) and rest were primary hypothyroidism (98.4%). The most common clinical presentation in patients with hypothyroidism was short stature followed by lethargy.¹³

CONCLUSION

Routine screening of patients with signs and symptoms of weakness, Anorexia, Weight gain, Cold Intolerance, Constipation, Menstrual irregularity, Dryness of skin, Hoarseness of voice, Falling of hair, facial puffiness, Thyroid swelling, Menstrual irregularities, Chest pain, Pedal oedema, Bradycardia, Hypertension. Dyspnoea, and Pallor should be carried out so that hypothyroidism can be diagnosed and managed earlier.

Table 1: Baseline Characteristics

Baseline Characteristics	Frequency (n=100)	Percentage (%)
Age group (Years)		
≤20	8	8%
21-30	14	14%
31-40	21	21%
41-50	23	23%
>50	34	34%
Gender		
Male	67	67%
Female	33	33%
BMI (Kg/m2)		
Underweight	5	5%
Normal	18	18%
Overweight	30	30%
Obesity	47	47%

Table 2: Distribution of symptoms

Distribution of symptoms	Frequency (n=100)	Percentage (%)
Weakness	81	81%
Anorexia	36	36%
Weight gain	65	65%
Cold intolerance	18	18%
Constipation	34	34%
Menstrual irregularity	49	49%
Irritability	51	51%
Hoarseness	16	16%
Hair fall	22	22%
Facial puffiness	44	44%
Chest pain	13	13%
Dyspnea	28	28%
Asymptomatic	25	25%

Table 3: Prevalence of comorbidities

Prevalence of comorbidities	Frequency (n=100)	Percentage (%)
Type 2 diabetes mellitus	25	25%
Hypertension	21	21%
Vitamin D deficiency	37	37%
Anemia	31	31%
Vitamin B12 deficiency	6	6%

Table 4: Presenting signs

Presenting signs	Frequency (n=100)	Percentage (%)
Pallor	35	35%
Pedal edema	50	50%
Bradycardia	17	17%
Dry skin	33	33%
Depression	29	29%
Thyroid swelling	12	12%

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