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Study of clinical profile of hypothyroidism in a tertiary care hospital, Central India

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***Abstract*---**Background: hypothyroidism is a common disorder in overweight Indian female populations. Comorbidities and complications are more in patients with hypothyroidism compared to other people. Hence early diagnosis and early treatment for hypothyroidism can prevent a lot of complications in patients, especially for subclinical hypothyroidism. Aim and Objective: To study the presentation and clinical profile of hypothyroidism in central Indian population. Material &Methods: this cross sectional study was carried out among 240 clinically diagnosed patients of hypothyroidism in a tertiary care centre, Madhya Pradesh, India. Thorough history and clinical examination was done to ascertain the clinical features. Results: females had a higher (71.7%) incidence of hypothyroidism than male. Most common symptoms are of weakness, weight gain, facial puffiness, irritability, hair loss and menstrual irregularities. On general examination most common findings are weight gain, pallor, dry skin, pedal edema and Goiter. Type 2 diabetes mellitus, dyslipidemia, obesity and hypertension were commonly associated with the hypothyroidism. Conclusions: hypothyroidism most common in older age females. Weight gain, weakness, facial puffiness, pedal edema, falling of hair, pallor and menstrual irregularities was the common clinical presentation of hypothyroidism

***Keywords*---**hypothyroidism, clinical profile, weight gain, thyroid stimulating hormone.

Introduction

The thyroid gland produces two key metabolic hormones viz. thyroxine (T4) and tri-iodothyronine (T3), these hormones regulate metabolic rate, growth and development [1]. Subclinical hypothyroidism (ScHt) 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 [3-4]. The prevalence of hypothyroidism was higher in lower socioeconomic group population [5]. 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 [6]. 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 [7]. Among the Indian population, patients with asthma, obesity, diabetes, dyslipidemia, and hypertension had the higher prevalence of hypothyroidism [8]. 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 [9-10].

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 [11] Early accurate diagnosis and treatment of hypothyroidism is crucial and often challenging in clinical practice because of multiple manifestations; this challenge is even more in Subclinical hypothyroidism The aim of this study was to access the clinical profile of hypothyroidism in central Indian population.

Materials and Methods

A prospective observational study was conducted in the Department of medicine in a tertiary care hospital, Datia, M.P., India. Total of 240 patients who were confirmed case of hypothyroidism were included in the study with age more than 15 years

Inclusion criteria

- 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.

Exclusion criteria

- Patients whose thyroid profile were in the normal limits.
- Patients who were not given consent for the study.
- Age less than 15 years of age
- Pregnant women were excluded

Detailed history, socio-demographic data, history of illness, clinical sign, symptoms and complete clinical examination were done in all the patients. Laboratory test 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, and Chest X-Ray was also advised accordingly. The all data were analysis statistically using SPSS (version 22).

Results

In present study, total 240 patients of hypothyroidism diagnosed according to T3, T4 and TSH level were evaluated for clinical sign and symptoms. Our study involved diagnosed hypothyroidism patients of 16 to 70 years age and both gender. 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.

Table 1: Age and gender wised distribution of hypothyroid patients

S. No.	Age	Male	Female	Total
1	16 – 25	4 (1.7%)	10 (4.2%)	14 (5.9%)
2	26 – 35	14 (5.8%)	36 (15%)	50 (20.8%)
3	36 – 45	21 (8.7%)	54 (22.5%)	75 (31.2%)
4	46 --55	16 (6.6%)	43 (17.9%)	59 (24.5%)
5	>55	13 (5.4%)	29 (12.1%)	42 (17.5%)
Total		68 (28.3%)	172 (71.7%)	240 (100%)

Among socio-economic status majority (47.9%) of the hypothyroid patients belong to middle class family, upper class was 30.4% and lower class was 21.7%. Most of them were residing in urban areas (65.8%), Majority of the hypothyroidism patient was obese (BMI>24.99). 31.2% was suffering for mild obesity, 35.4% were moderate obesity and 14.6% was severe obesity.

Table 2: Socio-demographics and baseline characteristics of hypothyroid patients

Baseline characteristics		Number	Percentage
Socio-economic class	Upper	73	30.4%
	Middle	115	47.9%
	Lower	52	21.7%
	Rural	82	34.1%

Residential area	Urban	158	65.8%
BMI (kg/m2)	Underweight (<18.5)	3	1.25%
	Normal (18.5-24.99)	42	17.5%
	Mild obesity (25.0-29.99)	75	31.2%
	Moderate obesity (30.0-34.99)	85	35.4%
	Severe obesity (>35)	35	14.6%

Sub clinical hypothyroidism was an incidental finding in 18(25%) asymptomatic patients who were being evaluated for general health checkup. Among the symptoms of hypothyroidism weakness was the most common (85.8%) presenting complaint, followed by weight gain (69.2%), irritability (57.9%), facial puffiness (47.1%) and menstrual Irregularity in 45.4% cases.

Table 3: Distribution of hypothyroid cases as per presenting signs Symptoms

Symptoms	Number	Percentage
Weakness	206	85.8%
Anorexia	80	33.3%
Weight gain	166	69.2%
Cold Intolerance	39	16.2%
Constipation	75	31.2%
Menstrual Irregularity	109	45.4%
Irritability	139	57.9%
Hoarseness of voice	30	12.5%
Falling Of hair	44	18.3%
Facial Puffiness	113	47.1%
Chest Pain	20	8.3%
Dyspnoea	51	21.2%
Asymptomatic	48	20%

On general examination most common findings are weight gain (81.3%), pedal edema (47.1%), dry skin (28.3%), depression (27.5%), pallor (23.7%), bradycardia (20.4%), hypertension (15.8%) and thyroid swelling was found in 13.3% of patients.

Table 4: Distribution of hypothyroid cases as per presenting signs

Symptoms	Number	Percentage
Pallor	57	23.7%
Pedal edema	113	47.1%
Bradycardia	49	20.4%
Dry, coarse skin	68	28.3%
Delayed ankle reflexes	34	14.2%
Hypertension	38	15.8%
Depression	66	27.5%
Thyroid swelling (Goiter)	32	13.3%
Infertility	35	14.6%

The most commonly reported comorbidities were obesity (65%), anemia (23.7%), dyslipidemia (22.5%), type 2 diabetes mellitus (18.7%), hypertension (15.8%), neuralgia (15.4%) and Vitamin D deficiency (13.7%) associated with the hypothyroidism patients.

Table 5: Prevalence of comorbidities associated with hypothyroidism patient

Symptoms	Number (240)	Percentage
Type 2 diabetes mellitus	45	18.7%
Hypertension	38	15.8%
Dyslipidemia	54	22.5%
Vitamin D deficiency	33	13.7%
Anemia	57	23.7%
Obesity	156	65%
Hypocalcemia	20	8.3%
Hypovitaminosis	16	6.7%
Neuralgia	37	15.4%
Vitamin B12 deficiency	13	5.4%

Discussion

In our study, we found that the most common age group for hypothyroidism is 36 – 45 (31.2%), which was comparable with the other study like Dangol RK et al [12] and Agrawal A et al [13], in contrast to that, Bhatia P et al [14],found 18-20 years age group was common in hypothyroidism. Present study observed majority (71.7%) of the hypothyroidism patients was female, Our result was similar to all other surveys done in different parts of the country as well as outside the country: Yadav RK et al [15], Adhikari BR et al [16], Deshmukh, et al [17] and Bhimte B, et al [18].

Most of the (65%) hypothyroid patients were belonged to obese category (BMI>25) found in the current study, most of them were moderate obesity (35.4%), our finding was concordance with the Yadav V et al [19] In our study maximum number of patients (78.1%) was belonged to upper-middle socio-economic status and most of them (65.8%) residing in urban areas, constant finding were reported by Sethi, et al [20] and Krishna JG et al [21]. Present study analysed clinical profile of all hypothyroidism patients, we have found that the most common presenting symptoms were weakness (85.8%), weight gain (69.2%), Facial irritability (57.9%), facial puffiness (47.1%) and menstrual Irregularity (45.4%), similar finding also observed by Manoj k Choudhary et al [22], *and* Shetty et al [23]

On clinical examination commonly observed sign are weight gain (81.3%), pedal edema (47.1%), dry skin (28.3%), depression (27.5%), pallor (23.7%), and bradycardia (20.4%), accordance to other studies like: Dixit R et al [24] and Ravindra Kumar, et al [25], whereas Kumar et al [26] reported edema, dry skin and tachycardia was the predominant sign found in hypothyroidism patients. Present study found cold intolerance was reported in 16.2% cases, accordance with the Babu MG et al [27], .reported 16.6% cold intolerance in their study

Infertility cases was found in 14.6% of hypothyroidism patient in the present study, concordance to the Fauzia Imtiaz et al [28], so all hypothyroid patients always worked up for infertility. In our current study the common comorbidities associated with the hypothyroidism were, obesity (65%), anemia (23.7%), dyslipidemia (22.5%), and Type 2 diabetes mellitus (18.7%). Diabetes was associated with the hypothyroidism in 18.7% cases in our study, similar to the Shakya SN et al [29], reported 20% association of diabetes mellitus with the hypothyroid. This study has helped delineate the constellation of various clinical presentations, thyroid hormonal profile, diagnostic workups, comorbidities, and management practices being followed in the routine clinical practice.

Conclusion

We have concluded that, Hypothyroidism is a commonly prevailing disorder in Indian female population. Common age group involvement was 36-50 years of age. Most common Presentation and clinical profile of hypothyroidism were weakness, weight gain, facial puffiness, pedal edema, anemia, menstrual irregularity, Dryness of skin, falling of hair and Bradycardia. Obesity, dyslipidemia hypertension and type 2 diabetes mellitus was commonly associated with the hypothyroidism. Early diagnosis and management of hypothyroidism may reduce the morbidity and mortality.

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