

Clinical Profile Of Hypothyroidism In Indian Females: A Cross-Sectional Study

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ABSTRACT:

INTRODUCTION:

AIM: correlation of clinical profile and hypothyroidism in female patients at Nagpur region

MATERIAL: This was a cross-sectional study. 220 females' patients of hypothyroidism attending from Medicine OPD and IPD were selected for the present study during Dec 2019 to Nov 2020. Demographic details of patients were recorded for age. Clinical history of patients was noted in detail and their general examination was conducted.

RESULT: On basis of symptoms as per age group. Weight gain was more prevalent in patients within age group of 26-30 followed by age group of 36-40 and the numbers were less below 20 age group. Dry skin was found more in age group of 26-30 and 55 and above patients, only 3 patients within age group of 30 -40 were found to have constipation. Cold intolerance was seen in patients within age group of 26-30, 31-35 and 46-50. Depression was more common between age group of (31-35) followed by (21-25) & (41-45). Menstrual problem was common between age group of (21-25) followed by (26-30) and few cases were only seen in age group below 20 and age group of (41-45). Dyspnoea was common in age group above 55. Levels of T3 were high between age group of (41-45) followed by age group above 50 and decreased in between age group of (46-50). T4 level was high between age group of (36-40) followed by (26-30) and low between age group of (21-25). TSH level was increased in cases with age group above 50, followed by age group of (31-35) & (21-25) lowered between age group of (46-50). Level of TCH was increased in age group above 50 and lowered between age group of below 20. Triglycerides levels were increased between age group of (41-45) and decreased between age group below 20. HDL levels were found to be decreased with increasing age as it was decreased in age above 50 as compared to age below 20.

CONCLUSION: *Weight gain may directly be associated with hypothyroidism as Thyroid hormone regulates metabolism in both animals and humans. Present findings reveal old age is more affected. Any patient presenting with weight gain, dry skin, dyspnoea, constipation, cold intolerance, depression, menstrual abnormalities should be suspected of hypothyroidism.*

KEYWORDS: *Hypothyroidism, TG, TC, HDL, T3, T4, TSH*

INTRODUCTION:

Hypothyroidism is a clinical condition that arises from a deficiency in the target tissues of thyroid hormones, resulting in a widespread slowing down of all metabolic processes. Particularly in iodine-deficient areas such as India, primary hypothyroidism is common worldwide¹. Hypothyroidism is a clinical condition that arises from a deficiency in the target tissues of thyroid hormones, resulting in a widespread slowing down of all metabolic processes^{i, ii}. The most common condition resulting from thyroid hormone deficiency is Primary Hypothyroidism. In India, the prevalence of hypothyroidism is about 5-6%, particularly in iodine-deficient areas such as India, hypothyroidism is prevalent worldwide². It is divided into congenital and acquired, according to the time of onset, as per the extent of primary and secondary or central endocrine dysfunction and according to the degree of severe, moderate, or subclinical hypothyroidism³.

Primary hypothyroidism, especially in iodine deficient areas such as India, is more prevalent worldwide. Autoimmunity is the most common cause. It typically results from Hashimoto's thyroiditis and is often associated with a strong goitre or with a shrunken fibrotic thyroid with little or no activity later in the disease phase. The second most common cause of post-therapeutic treatment is Hypothyroidism, especially after therapy with radioactive iodine Hyperthyroidism or goitre, or surgery⁴⁻⁶. Proteins are the clinical symptoms of hypothyroidism, encompassing nearly all body systems. Diagnosis with a healthy clinical history and meticulous evaluation with hypothyroidism anchors, accompanied by thyroid function examinations. Although symptom scoring scales have been identified with considerable predictive ability, they remain too insensitive and non-specific for a conclusive diagnosis^{1,7}.

In the presence of normal circulatory thyroid hormone concentrations, the earliest type of hypothyroidism referred to as subclinical hypothyroidism or mild thyroid failure is characterised by increased serum thyroid stimulating hormone (TSH) levels. It occurs in 10-15% of the general population, is more prevalent in women, and rises with age. Western studies have shown a prevalence of 4.3% to 8.5%⁸⁻¹¹. Indian regional and hospital-based studies have shown a prevalence ranging from 9% to 26%. In lower socio-economic classes, the incidence is greater¹². Hypothyroidism patients have a morbid life, and the quality of life is low. Understanding the clinical profile of these cases may help a physician to improve their quality of life. The creation of the intense TSH assay opened the window to discover the subclinical clinical state of hypothyroidism. Therefore, the present study was undertaken with an objective to study the features of primary hypothyroidism in females.

MATERIAL & METHODS:

The present study was conducted at in the Dept. Of Biochemistry in collaboration with Dept. of Medicine and Central Clinical Lab at a Datta Meghe Medical College, Shalinitai Meghe Hospital and Research Centre, Nagpur and Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe) Wardha, Maharashtra. This was a cross-sectional study. 220 females' cases of hypothyroidism attending from Medicine OPD and IPD were selected for the present study during Dec 2019 to Nov 2020. Demographic details of patients were recorded for age. Clinical history of patients was noted in detail and their general examination was conducted. Sahil's method was used for estimation of haemoglobin. Using fluorescent microparticle enhanced immunoassay for the estimation of serum T3, T4, TSH was done whereas oxidase peroxidase method was used for estimation of serum cholesterol¹³ triglycerides was estimated using method described by McGowan MW,¹⁴ and HDL was estimated as method described by Warnick GR, Clin Chem.¹⁵ The data was entered in Microsoft Excel 2013 and analyzed using SPSS version 23.0.

Inclusion criteria:

All cases with symptom of hypothyroidism, increased TSH with decreased T3 and T4 levels. Asymptomatic cases detected on basis of biochemical parameters.

Exclusion criteria:

Cases of secondary hypothyroidism, pregnant women, and cases of chronic renal failure.

RESULTS AND DISCUSSION

The results of study were classified on the basis of age group, total 220 different age group female patients were included.

Table no 1. Age wise distribution of patients

Sr. No	Age group	No of patients %
1	Below 20	17 (7.72%)
2	21-25	38 (17.27%)
3	26-30	43(19.54%)
4	31-35	36(16.36%)
5	36-40	32(14.54%)
6	41-45	29(13.18%)
7	46-50	16(7.27%)
8	Above 55	09(4.09%)
	Total	220 (100%)

Most of the patients were from age group 21-25 (17.27%),26-30(19.54%) and 31-35 (16.36%) suffering from hypothyroidism.

Table no 2 Shows Distribution of patients on the basis of symptoms as per age group

Symptoms	Weight gain	Dry Skin	Constipation	Cold intolerance	Depression	Menstrual problems	dyspnoea
Age group (Below 20)							
No of patients	05	02	00	01	02	09	02
Age group (21-25)							
No of patients	27	04	01	03	05	31	03
Age group (26-30)							
No of patients	37	05	00	06	04	29	00
Age group (31-35)							
No of patients	29	03	01	05	07	18	00
Age group (36-40)							
No of patients	30	02	03	01	04	14	01
Age group (41-45)							
No of patients	24	03	02	03	05	09	00

ts							
Age group (46-50)							
No of patients	11	02	00	05	02	00	02
Age group (Above 55)							
No of patients	07	05	00	04	01	00	04

Table 2 depicts distribution of patients on basis of symptoms as per age group. Weight gain was more prevalent in patients within age group of 26-30 followed by age group of 36-40 and the numbers were less below 20 age group. Dry skin was found more in age group of 26-30 and 55 and above patients, only 3 patients within age group of 30 -40 were found to have constipation. Cold intolerance was seen in patients within age group of 26-30, 31-35 and 46-50. Depression was more common between age group of (31-35) followed by (21-25) & (41-45). Menstrual problem was common between age group of (21-25) followed by (26-30) and few cases was only seen in age group below 20 and age group of (41-45). Dyspnoea was common in age group above 55.

Table no 3 Shows age-wise thyroid profile and lipid profile in patients

26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	Above 50	p - value
18.23 ± 2.12	17.32 ± 3.21	18.6 ± 2.3	19.8 ± 3.36	16.91 ± 3.38	18.7 ± 3.22	0.041
1.9 ± 1.8	1.84 ± 0.11	2.12 ± 1.8	1.89 ± 1.9	1.3 ± 0.9	1.1 ± 1.8	0.028
142.5 ± 35.55	152.9 ± 40.31	142.1 ± 43.56	150.5 ± 42.42	133.6 ± 50.58	158.9 ± 44.61	0.0001
339.4 ± 62.1	342.4 ± 53.8	354.1 ± 68.3	370.5 ± 65.6	368.9 ± 64.4	373.2 ± 57.8	0.0001
270.5 ± 60.3	295.2 ± 68.4	310.3 ± 67.4	322.7 ± 63.8	320.5 ± 59.9	310.6 ± 55.3	0.0001
26.6 ± 0.96	24.2 ± 0.74	22.5 ± 0.81	21.8 ± 0.64	20.7 ± 0.65	20.8 ± 0.69	0.0001

Table 3 depicts Levels of T3 were high between age group of (41-45) followed by age group above 50 and decreased in between age group of (46-50). T4 level was high between age group of (36-40) followed by (26-30) and low between age group of (21-25). TSH level was increased in cases with age group above 50, followed by age group of (31-35) & (21-25) lowered between age group of (46-50). Level of TCH was increased in age group above 50 and lowered between age group of below 20. Triglycerides levels was increased between age group of (41-45) and decreased between age group below 20. HDL levels were found to be decreased with increasing age as it was decreased in age above 50 as compared to age below 20.

The study conducted was cross-sectional hospital based study carried out among 220 females, between age group 18 -60 years of age, clinically diagnosed and confirmed after biochemical tests. Present study comprises female participants as the various studies conducted states females are more prone to hypothyroidism as compared to males.^{16,17} Among all the symptoms with which the patients presented, the most common symptom was weight gain and dyspnoea was seen in few cases. Weight gain was more prevalent in patients within age group of 26-30 followed by age group of 36-40 and the numbers were less below 20 age group. While, dyspnoea was common in age group above 55. Similar findings were seen in study conducted by Kumar R et al and Rabeya R et al. Majority of hypothyroid patients was seen between age group of 26- 50 this finding co-inside with study conducted by Unnikrishnan AG et al, where he carried out a large study on 5376 adults. Their study also observed that majority of the patients with hypothyroidism belonged to the age group of 31-50 years of age. This was quite similar to present findings.

The finding of an elevated TSH and low FT4 or FTI indicates primary hypothyroidism due to disease in the thyroid gland. T3 level was high in between age group of 30-50. Levels of T3 were high between age group of (41-45) followed by age group above 50 and decreased in between age group of (46-50). T4 level was high between age group of (36-40) followed by (26-30) and low between age group of (21-25). TSH level was increased in cases with age group above 50, followed by age group of (31-35) & (21-25) lowered between age group of (46-52). Level of TCH was increased in age group above 50 and lowered between age group of below 20. Triglycerides levels was increased between age group of (41-45) and decreased between age group below 20. HDL levels were found to be decreased with increasing age as it was decreased in age above 50 as compared to age below 20. Decreased thyroid function is accompanied by reduced activity of HMG-CoA reductase, TC and LDL-C levels are increased in patients with overt hypothyroidism This is due to the decreased LDL-receptors' activity, resulting in decreased catabolism of LDL and IDL.¹⁹

CONCLUSION

Present study was focused to assess hypothyroid females. Weight gain may directly be associated with hypothyroidism as Thyroid hormone regulates metabolism in both animals and humans. Present findings reveal old age is more affected. Any patient presenting with weight gain, dry skin, dyspnoea, constipation, cold intolerance, depression, menstrual abnormalities should be suspected of hypothyroidism. Not only this, author recommend that all people should routinely screen themselves for thyroid profile right from childhood. If normal, every three years the screening should be performed. Early detection of hypothyroidism is key to healthy life. Interventions are needed to timely detect these cases and to treat them adequately to prevent them from converting into frank hypothyroidism and other complications related with severity.

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