

Hypothyroidism in Tribal Population of Bastar Region of Chhattisgarh, India

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Citation this Article: Dr Jyotindra Kumar Sahu, Dr Amar Singh Thakur, Dr Rajeeb Kalita, “Hypothyroidism in Tribal Population of Bastar Region of Chhattisgarh, India”, IJMSIR- March - 2020, Vol – 5, Issue -2, P. No. 202 – 206.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Hypothyroidism is characterized by a broad clinical spectrum ranging from an overt state of myxedema, end-organ effects and multisystem failure to an asymptomatic or subclinical condition with normal levels of thyroxine and triiodothyronine and mildly elevated levels of serum thyrotropin.

Subject and Method: For this study various camp conducted in Bastar region of chhattisgarh and the subjects between 15years and more than 65years of age with symptoms of hypothyroidism were enrolled for study.

Results: Mean and sd value of T3 in euthyroid subjects were 165.14 ± 20.5 mg/dl mean and sdvalue of T4 was 9.26 ± 2.04 μg/dl and mean and sdvalue of TSH was 2.52 ± 0.42 IU/ml (Table 2). Mean and sd value of T3 was 163.12 ± 20.2 mg/dl, T4 was 8.26 ± 1.9 mg/dl and TSH was 8.78 ± 3.1 μIU/ml in subclinical hypothyroid patients. In hypothyroid patients serum T3 level was

71.8 ± 8.2 mg/dl, serum T4 level was 2.98 ± 0.56 mg/dl and TSH level was 64.29 ± 7.5 μIU/ml.

Conclusion: We have found that subclinical hypothyroidism is more common than hypothyroidism. Author has also found that thyroid disorder was more common in reproductive age group tribal subject in Baster region of Chhattisgarh.

Keywords: T3, T4, TSH & Hypothyroidism.

Introduction

Hypothyroidism is characterized by a broad clinical spectrum ranging from an overt state of myxedema, end-organ effects and multisystem failure to an asymptomatic or subclinical condition with normal levels of thyroxine and triiodothyronine and mildly elevated levels of serum thyrotropin.[1,2] Disorders of thyroid gland are among the most common disorder of endocrine gland next to diabetes mellitus. In India, with a population of 1.21 billion, an estimated 108 million people suffer from endocrine and metabolic disorders. Of these 108 million, 42 million suffer from thyroid

disorders.[3]Hypothyroidism and hyperthyroidism both are common finding, but incidence of hypothyroidism is common than hyperthyroidism that is 2% and 1% respectively.[4] Hypothyroidism can be easily diagnosed and managed but it become potentially fatal in severe cases if untreated. Clinical manifestations of this disorder range from no signs or symptoms to life threatening.[5] Hypothyroidism is usually categorized under iodine deficient disorder. Ever since universal salt iodization programme is adopted in India there is shift in balance from iodine deficiency to sufficiency state. But studies conducted by various authors during post - iodization period indicated that hypothyroidism is still prevalent in India despite of promotion of iodised salt.[6,7] But the studies conducted are limited to certain geographical area and some cities, so it is non-uniform. There are studies in tribal population, but no study is available in this region. So due to lack of information on thyroid status of in Bastar region of Chhattisgarh. This study has been conducted to study prevalence of hypothyroidism in tribal population of Bastar region of chhattisgarh, India.

Material and Method

This is a prospective cross-sectional study conducted in the department of Biochemistry, LATE BRKM Government Medical College, Jagdalpur, Chhattisgarh, India between 15.01.2016 to 30.09.2019. For this study various camp conducted in Bastar region of chhattisgarh and the subjects between 15years and more than 65 years of age with symptoms of hypothyroidism were enrolled for study.

Inclusion criteria

- Subject of age group 15 to 68 years.
- Subject of both male and female sex in the age group
- Subject who are permanent inhabitant of bastar.

- Subject belonging to Mising tribe.

Exclusion criteria

- Pregnancy
- Chronic or acute illness,
- Drug consumption which can interfere with thyroid function

Biochemical Analysis

5 ml of fasting blood was collected and thyroid function test was done by estimation of T3, T4, and TSH levels in serum by using Beckman Coulter Access 2immuno-biochemistryautoanalyzer. Based on result patients were distributed into euthyroid, sub clinical thyroid and Hypothyroid. Patient with normal T3, T4 and TSH was considered euthyroid, Patients with elevated TSH but normal T3 and T4 level was considered sub clinical and patients with decreased T3 and T4 and elevated TSH was considered hypothyroid.[8,9]

Statistical analysis

Data collected and were compiled on Microsoft excels and analysis was done by using proportion and chi square test.

Results and Discussion:

Out of 2500 tribal Subjects of this bastar region 700 patients with the symptom of hypothyroidism were selected from them for hematological evaluation. Out of 2500 subjects 1800(72%) were euthyroid out of that 392 (21.8%) were 15 to 25 years of age, 325 (18.05%) were between 25 to 35 years of age, 416 (23.1%) were between 35 to 45 years of age, 351 (19.5%) were between 45 to 55 years of age, 210 (11.7%) were between 55 to 65 years of age, and 106(5.9%)were more than 65years of age. A total 575 (23.0%) subjects were having subclinical hypothyroidism, among them 76 (13.2%) were 15 to 25 years of age, 128 (22.3%) were between 25 to 35 years of age, 194 (33.7%) were

between 35 to 45 years of age, 86 (15%) were between 45 to 55 years of age, 49 (8.5%) were between 55 to 65 years of age, and 42 (7.3%) were more than 65 years of age. Among 125 patients were suffering from hypothyroidism that is 5.0%, out of that 12 (9.6%) were 15 to 25 years of age, 16 (12.8%) were between 25 to 35 years of age, 38 (30.4%) were between 35 to 45 years of age, 28 (22.4%) were between 45 to 55 years of age, 22 (17.6%) were between 55 to 65 years of age, and 9 (7.2%) were more than 65 years of age.

Table 1: Distribution of thyroid disorder among the patient with clinical symptoms

S. N.	Age in Year	Euthyroid Number (%)	Sub clinical Number (%)	Hypothyroid Number (%)
1.	15 - 25	392 (21.8)	76 (13.2)	12 (9.6)
2.	25 - 35	325 (18.05)	128 (22.3)	16 (12.8)
3.	35 - 45	416 (23.1)	194 (33.7)	38 (30.4)
4.	45 - 55	351 (19.5)	86 (15.0)	28 (22.4)
5.	55 - 65	210 (11.7)	49 (8.5)	22 (17.6)
6.	> 65	106(5.9)	42 (7.3)	09 (7.2)
Total=2500		1800(72)	575(23.0)	125(5.0)

Table 2: Comparisons of thyroid hormone levels in different group of subjects

Parameters	Euthyroid (Mean ± Sd)	Sub clinical (Mean ± Sd)	Hypothyroid (Mean ± Sd)
TSH (µIU/ml)	2.52± 0.42	8.78 ± 3.1	64.29 ± 7.5
T3 (ng/dl)	165.14 ± 20.5	163.12 ± 20.2	71.8± 8.2
T4 (µg/dl)	9.26± 2.04	8.26 ± 1.9	2.98± 0.56

Mean and sd value of T3 in euthyroid subjects were 165.14 ± 20.5mg/dl mean and sd value of T4 was 9.26 ± 2.04µg/dl and mean and sd value of TSH was 2.52 ± 0.42 IU/ml (Table 2). Mean and sd value of T3 was 163.12 ± 20.2 mg/dl, T4 was 8.26 ± 1.9mg/dl and TSH was 8.78 ± 3.1µIU/ml in subclinical hypothyroid patients. In hypothyroid patients serum T3 level was 71.8 ± 8.2mg/dl, serum T4 level was 2.98 ± 0.56 mg/dl and TSH level was 64.29 ± 7.5µIU/ml. Total of 2500

tribal subjects of this bastar region, out of that 700 patients were having symptoms of hypothyroidism. Among them, 575 (23.0%) subjects were having subclinical hypothyroidism, among them 76 (13.2%) were 15 to 25 years of age, 128 (22.3%) were between 25 to 35 years of age, 194 (33.7%) were between 35 to 45 years of age, 86 (15%) were between 45 to 55 years of age, 49 (8.5%) were between 55 to 65 years of age, and 42 (7.3%) were more than 65 years of age. Among 125 patients were suffering from hypothyroidism that is 5.0%, out of that 12 (9.6%) were 15 to 25 years of age, 16 (12.8%) were between 25 to 35 years of age, 38 (30.4%) were between 35 to 45 years of age, 28 (22.4%) were between 45 to 55 years of age, 22 (17.6%) were between 55 to 65 years of age, and 9 (7.2%) were more than 65 years of age.

This data is supported by the work of Chakrabarty BK et al.[10] As per his study the common age of the patients 25 to 45 years of age and subclinical hypothyroidism was more common. But as per Bagcchi et al highest prevalence was noted in 45-54 years of age group, which does not support this study, but the presence of hypothyroidism was more in this study than the study of Bagcchi et al.[11] As per the study conducted by Unnikrishnan et al in eight cities of India hypothyroidism prevalence was varied from 7% to 11% and subclinical hypothyroidism prevalence was 7 to 12%, but in our study the prevalence of subclinical hypothyroidism was more.[6] The difference in finding may be due to regional variation and food habit of the people. Mean and sd serum level of TSH was 8.78 ± 3.1µIU/ml in subclinical hypothyroid patients and 64.29 ± 7.5µIU /ml in hypothyroid patient. T3 and T4 level was in normal range but in hypothyroid patient it was less that is 71.8 ± 8.2 ng/dl and 2.98 ± 0.56 µg/dl respectively and this relation was statistically

significant with P value 0.001. So elevated TSH level is common finding in our study of this is supported by the study of Velayutham K et al conducted in South India.[12] In present study we have observed that among hypothyroid patient relation between age and thyroid hormone profile was not significant statistically but TSH level was higher in younger age group than older one. Which is supported by the study of Hoogendoorn et al, but not corroborated by the study of Rebecca et al.[13,14] Same trend of TSH level was found in subclinical hypothyroid patients also but regarding serum T3 level it was high in younger age group but lower in older age group but again this finding was not significant statistically. This finding of decrease in T3 level with age is supported by the study of Then malal et al and Ace Lipson.[15,16]

To summarize the present study is to first providenationwide data on the prevalence of hypothyroidism in the adult population. The study shows a high prevalence of hypothyroidism. This poses a public health concern and an important challenge to the policy makers and health professionals.

Conclusion

These findings suggest that in this post iodization period still hypothyroidism is common. In our study we have found that subclinical hypothyroidism is more common than hypothyroidism. Author has also found that thyroid disorder was more common in reproductive age group tribal subject in Baster region of Chhattisgarh. An extensive study required for further detail evaluation of this problem.

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