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A Study on Prevalence of Subclinical Hypothyroidism in The First Degree Female Relatives of Hypothyroid Patients

KEYWORDS: Subclinical hypothyroidism, TSH, T_3, T_4, Overt hypothyroidism, Euthyroid.

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ABSTRACT *Introduction:Subclinical hypothyroidism is mainly diagnosed by laboratory results as there are no presenting clinical signs and symptoms. There are only a few studies done on prevalence and patterns of age distributions of subclinical hypothyroidism in India.*

Research design & Aim: This hospital based cross sectional study was done to estimate the prevalence and distribution of subclinical hypothyroidism in the first degree female relatives of hypothyroidism patients in a rural setting at PESIMSR, Kuppam ,AP, India. First degree female relatives 45 of hypothyroid patients of 18 years and more were selected and investigated for subclinical hypothyroid by estimating T3, T4 and TSH by Enzyme Linked Immuno Sorbent Assay.

Observations: Subclinical hypothyroidism was diagnosed in 17(37.7%) patients and 2(4.4%) patients were found to be hypothyroid patients.

CONCLUSION: The present study has revealed that the prevalence of subclinical hypothyroidism in the first degree females of hypothyroid patient is 37.7% and overt hypothyroidism was found in 4.4%.

INTRODUCTION

Subclinical hypothyroidism is the condition where there is an elevated Thyroid Stimulating Hormone concentration (TSH) in the presence of normal serum free thyroxine (FT4), triiodothyronine (FT3) concentrations [1]. Subclinical hypothyroidism is an exclusive laboratory diagnosis, where most of the patients are asymptomatic without any typical presenting signs and symptoms. The reference ranges for the parameters are FT3:75-220mg/dl, FT4:411mg/dl and TSH:0.5-5milliunits/l. When TSH levels are more than 5milliunits/l with normal FT3 & FT4 levels, then it is diagnosed as subclinical hypothyroidism. It is evident from previous studies the prevalence of subclinical hypothyroidism is widespread among female populations [2].

There are only few studies available in prevalence and distribution of subclinical hypothyroidism in females in India. At present there are no standard recommended criteria for screening, management and follow up for subclinical hypothyroidism. Community based studies and metaanalysis in the prevalence, distribution and associated co morbidities will aid in framing policies and recommendations regarding effective management and follow up of subclinical hypothyroidism .With this background, the study was undertaken to find the prevalence of subclinical hypothyroidism in rural women who are first degree relatives of hypothyroid patients attending PES institute of medical sciences and research, Kuppam, Andhra Pradesh.

MATERIALS AND METHODS

First degree female relatives of hypothyroid patients attending PESIMSR, kuppam were selected and investigated for subclinical hypothyroidism. The study was performed after getting clearance from the institutional ethics committee from May 1st 2015 to July 30th, 2015. The total number of patients enrolled were 45. About 3 ml of venous blood was collected for estimation of Thyroid function tests, which was done in Clinical Biochemistry Laboratory, by ELISA (Enzyme Linked Immuno Sorbent Assay) method. The reference range for the parameters being T3:0.64-2.15 ng/dl,T4:4.4-11.8 ug/dl and TSH:0.25-5.5milliunits/l. When TSH levels were more than 5.5milliunits/l with normal T3 & T4 levels, it was diagnosed as subclinical hypothyroidism. After Informed consent, patients who were fitting into the inclusion criteria and willing to enroll in our present study were selected. First degree female relatives of hypothyroid patients aged 18 years and more were included in the study. Those having history of recent surgery, pregnant women and malignancy were excluded from the study.

RESULTS AND DISCUSSION

Among the 45 patients enrolled, 17(37.7%) patients were in subclinical hypothyroid state and 2(4.4%) patients were in frank hypothyroid state. This study reveals that the prevalence of subclinical hypothyroidism in the first degree female relatives of hypothyroid patients was 37.7% whereas, overt hypothyroidism was 4.4% (Fig. 1). The mean age group of the study was 40 years. The distribution of number of subclinical hypothyroid cases in different age group distribution was <30 years n=7, 31-40 years n=2, 41-50 years n=5, >50 years n=2.

In about 2-5% of patients having subclinical hypothyroidism, it may progress to overt hypothyroidism. Subclinical hypothyroidism is associated with co- morbidities such as lipid abnormalities, hip fractures, cognitive dysfunctions and pulmonary complications [3-5]. In women subclinical hypothyroidism is associated with Dysfunctional uterine bleeding, increased incidence of preeclampsia and pregnancy outcomes [6, 7].

Subclinical hypothyroidism is a laboratory rather than clinical diagnosis and is associated with illness like dyslipidaemia, vascular, neurological complications. Previous Studies done at coastal Andhra Pradesh, Kashmir valley and Mumbai showed that there is a significant prevalence of subclinical hypothyroidism in females [8-10]. Our result cor-

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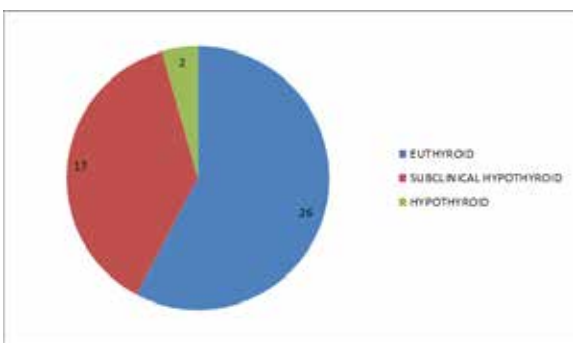
relates well with the previous studies on the prevalence of subclinical hypothyroidism [10].

Our study corroborates well with the previous studies and document that there is prevalence of subclinical hypothyroidism in female first degree relatives of hypothyroid patients. The prevalence of subclinical hypothyroidism is more than overt hypothyroidism in the present study.

The diagnosis of subclinical hypothyroidism is based solely on thyroid function test results, since the patients do not have any signs and symptoms pertaining to subclinical hypothyroidism, It is worthwhile to investigate for subclinical hypothyroidism among first degree female relatives of patients by doing thyroid function tests.

The limitation of the present study is sample size is small and has not estimated the associated illnesses, and no follow up of the patients was done to ascertain conversion to overt hypothyroidism or reversal to euthyroid state. No therapeutic intervention trials with thyroxine supplementation was done in patients with subclinical hypothyroidism. The study provides supportive evidence that subclinical hypothyroidism is prevalent in the first degree female relatives of hypothyroid patients. Currently, there are no standard guidelines for age of screening, follow up, and intervention in subclinical hypothyroidism. Testing large number of samples, longitudinal follow up and metaanalysis studies will enable to frame strategies for screening of subclinical hypothyroidism.

Fig. 1: Distribution of thyroid status among total number of female patient



Ravi Shekhar et al. (Chinakakani, Guntur)	8.29%
Deshmukh, et al. (B.Y.L. Nair Hospital, Mumbai)	11.3%
Senthilkumaran S et al. (Irungalur, Tiruchirappalli, Tamil Nadu, India)	9%
Present study(kuppam,2015)	37.7%

Table 1: Prevalence of subclinical hypothyroidism in different studies

CONCLUSION

The present study has identified that the prevalence of subclinical hypothyroidism in the first degree female relatives of hypothyroid patients is 37.7% & overt hypothyroidism in 4.4%. Further studies and metaanalysis are required to estimate the overall prevalence of subclinical hypothyroidism in our country.

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