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Hospital based study to evaluate subclinical hypothyroidism in postmenopausal women

Shruthi Kamal V., Rajesh S., Reshma S.*

Department of General Surgery, Saveetha Medical College and Hospital, Thandalam, Chennai, Tamil Nadu, India

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*Correspondence:

Dr. Reshma S..

E-mail: surgeonreshma@gmail.com

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ABSTRACT

Background: Very few studies have assessed prevalence of subclinical hypothyroidism in postmenopausal women. In this study, we aimed to assess the prevalence of subclinical hypothyroidism in postmenopausal women.

Methods: Hospital based cross - sectional study carried out at Saveetha Medical College, Chennai, during the period of August 2016 to October 2016. Seventy-five women in General Surgery ward/OPD were included in the study. Subjects included in the study were postmenopausal age group between 45 to 85 years, provided they fulfilled inclusion and exclusion criteria. History was noted, serum Thyroid function test was done. Results were noted and analyzed.

Results: Out of 75 subjects, 21.3% of postmenopausal women were having subclinical hypothyroidism.

Conclusions: Prevalence of Subclinical hypothyroidism is high among postmenopausal women, which leads to overt hypothyroidism. Therefore, routine screening and treatment of this condition is must among postmenopausal women to prevent complications of subclinical hypothyroidism.

Keywords: Chemiluminescence immunoassay, Postmenopausal women, Subclinical hypothyroidism, TSH

INTRODUCTION

Menopause is a Physiological process characterized by loss of reproductive function, depletion of ovarian follicles, state of estrogen deficiency and appearance of variety of menopausal symptoms. The mean age of menopause is 51 years but can vary from 45-55 years.¹

In rare cases it can occur as early as 30 s or as late as 60s. Typical menopausal symptoms are hot flushes, vaginal dryness, mood swings, depression, dry skin, anxiety, tiredness and insomnia.^{2,3}

Many of these symptoms are similar to symptoms of subclinical hypothyroidism. It has also been observed that menopausal symptoms are more intense in patients with subclinical hypothyroidism.⁴ Subclinical hypothyroidism

is defined as a serum thyroid stimulating hormone (TSH) above the defined upper limit of the reference range, associated with serum free thyroxine (FT4) within the reference range.

Subclinical hypothyroidism was diagnosed when serum TSH was more than 5.5mIu/ml and serum free T3, serum free T4 were normal. Mild thyroid failure is asymptomatic; however, nearly 30% of patients with this condition may have symptoms that are suggestive of thyroid hormone deficiency.⁵

Diminished thyroid function is more common among women with advancing age, particularly in postmenopausal women over the age of 50 years, this decrease could be attributed to an increased sensitivity to physiological negative feedback by thyroxine.^{6,7}

Postmenopausal women are at increased risk of both osteoporosis and cardiovascular disease, and untreated thyroid disease may exacerbate these risks.

Diagnosis of overt hypothyroidism is based on decrease free T4 levels and increased TSH. Subclinical hypothyroidism can progress to overt hypothyroidism, especially if serum TSH concentration is >10mIu/L.8 There is likelihood of symptoms of subclinical hypothyroidism in this group being misinterpreted as menopausal symptoms and remains undetected.

If this condition remains undetected and untreated, it can lead to health hazard like hyperlipidaemia, atherosclerosis and heart disease, these can be prevented by treatment with L-thyroxine therapy. 9,10

That is why timely detection of subclinical hypothyroidism is very important. Presently, there are no clear-cut guidelines about screening menopausal patients for thyroid function. Recent studies suggested that there are millions more suffering from subclinical hypothyroidism still undiagnosed. This study was carried out to detect the prevalence of subclinical hypothyroidism in postmenopausal women.

METHODS

The study was conducted in the Department of General Surgery, Saveetha Medical College, Chennai, during the period of August 2016 to October 2016. 75 females of more than 45 years of age, having attained menopause, selected randomly for this study.

2ml of venous blood was collected from anterior cubital vein after an overnight fast under aseptic conditions from each individual with her consent, duly following the guidelines and norms of the hospital. Serum was analysed via chemiluminescence immunoassay.¹¹

RESULTS

All statistical analysis was performed using statistical package for social science (SPSS, Version 17) for Microsoft windows. The data were not normally distributed and therefore non-parametric tests were performed. Descriptive statistics were presented as numbers and percentages.

The data were expressed as mean and SD. Independent sample test, Mann-Whitney test and chi-square test was used. A two-sided P value <0.05 was considered statistically significant. Out of these 75 subjects, 21.3% of postmenopausal women were having subclinical hypothyroidism. 4% women lying in the age group of 45-55 years and 17.3% women above 56 years of age were having subclinical hypothyroidism with mean serum TSH levels of 3.62±2.89mIu/ml and 6.46±15.19mIu/ml respectively. These observations are tabulated in Table 1.

Table 1: Observed data.

Age group	Percentage of postmenopausal women with subclinical hypothyroidism	Serum TSH levels in mIu/ml (mean±SD)
45-55	4%	3.62±2.89
>56	17.3%	6.46±15.19

DISCUSSION

Oestrogen is believed to cause an increase in thyroxin binding globulin and therefore increase in serum T3 and T4 levels.

In Menopause estrogen levels decrease, thus there is decrease in thyroxin binding globulin and ultimately decrease in serum T3 and T4 levels. ¹² Sex hormone binding concentrations are also decreased in hypothyroidism.

A distinct female preponderance has been demonstrated in past studies of prevalence of hypothyroidism. ¹³⁻¹⁵ Identifying risk factors associated with thyroid dysfunction could alert clinicians to evaluate such factors. Hypothyroidism is common especially in older women. ¹⁶ There is increasing evidence that the subclinical hypothyroidism may have serious consequences in postmenopausal women.

Rotterdam study found that subclinical hypothyroidism is an independent risk factor for atherosclerosis and myocardial infarction in postmenopausal women. The Canadian task force for periodic health examination recommends maintaining a high index of suspicion for nonspecific symptoms consistent with hypothyroidism when examining postmenopausal women. Subclinical hypothyroidism can progress to overt hypothyroidism, especially if serum TSH concentration is >10mIu/L. Progression to overt hypothyroidism has been previously reported to occur in 37.4%, 40.0% and 17.8% of older persons enrolled in a Spanish, and two UK studies respectively. 18-20 In the present study, screening could detect 21% case of subclinical hypothyroidism.

CONCLUSION

Prevalence of subclinical hypothyroidism is high among postmenopausal women which leads to overt hypothyroidism. Thus, it is concluded that women in postmenopausal age group should be aggressively investigated for subclinical hypothyroidism and treatment of this condition is must among postmenopausal women to prevent serious consequences of subclinical hypothyroidism in postmenopausal women.

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Institutional Ethics Committee

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