A study on thyroid dysfunction in postmenopausal women

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Abstract

Women who have gone through menopause are more likely to develop hypothyroidism, which can either be a subclinical or overt condition. Autoimmunity, the development of which is common with advancing age and can include autoimmune thyroid disease, is one of the primary reasons. This not only raises the risk of cardiovascular disease due to dyslipidemia, but it also raises the risk of ischemic heart disease and stroke. The American Association of Clinical Endocrinologists (AACE) reports that millions of women who have menopausal-like symptoms that have not been resolved may actually be suffering from a kind of thyroid disease that has not been properly recognised. Despite the fact that menopause is commonly associated with symptoms such as weariness, sadness, mood swings, and sleep difficulties, menopause does not cause these symptoms. There is also a possibility that these symptoms point to hypothyroidism. It was discovered that one in every seventy-one women over the age of sixty-five had obvious signs of thyroid malfunction. These ladies had a prevalence of 2% for obvious hypothyroidism, which was shown to be the case. Screening can detect the presence of thyroid dysfunction in postmenopausal women efficiently, and it is suggested that these women get screened because they spend one third of their lives after menopause.

Keywords: Postmenopausal, hypothyroidism, atherosclerosis, coronary heart disease

Introduction

Thyroid diseases are prevalent among the general population, with females being more likely to be affected [1]. Thyroid dysfunction can manifest as either an elevated (Hypothyroidism) or decreased (Hyperthyroidism/Thyrotoxicosis) function, and it can either be asymptomatic or overt [2]. Hypothyroidism is a common illness that affects the thyroid, and it is more prevalent in elderly women. Subclinical hypothyroidism (SCH) is significantly more prevalent than overt hypothyroidism. The majority of the

time, an autoimmune condition known as Hashimoto's thyroiditis or atrophic thyroiditis is the underlying cause [1]. Hyperthyroidism, on the other hand, is significantly less frequent than hypothyroidism. Graves' disease is the most prevalent form of hyperthyroidism, and it primarily impacts young people. Toxic multinodular goitre is a less common form of hyperthyroidism and it primarily impacts older age groups [1]. A dysfunctional thyroid, particularly hypothyroidism, can have an effect on practically every system in the body. It can have an effect on the cardiovascular, respiratory, alimentary, central and peripheral neurological systems, musculoskeletal, and endocrine systems [1]. It can also impact the skin and its appendages. It causes a decrease in the amount of glucose that is disposed of by skeletal muscle and adipose tissue when the energy metabolism is dysfunctional. Additionally, it has an effect on lipid metabolism, inhibiting both the production and breakdown of lipids, which ultimately results in a buildup of low density lipids and triglycerides [3, 4, 5, 6]. The interval that passes after menopause is referred to as postmenopause. Due to the cessation of ovarian follicular function, menopause is identified after the fact as occurring after a woman has gone amenorrheic for a period of twelve months in a row. There are significant alterations in hormone levels [7]. There is a reduction in the levels of reproductive hormones such as progesterone and estradiol, while there is an increase in FSH and LH. Women who have gone through menopause are more likely to develop hypothyroidism [2] which can either be a subclinical or overt condition. Autoimmunity, the development of which is common with advancing age and can include autoimmune thyroid disease [2], is one of the primary reasons. This further raises the risk of cardiovascular disease that is caused by dyslipidemia, as well as the risk of ischemic heart disease and stroke [4, 5, 6]. The American Association of Clinical Endocrinologists (AACE) reports that millions of women who have menopausal-like symptoms that have not been resolved may actually be suffering from a kind of thyroid disease that has not been properly recognised. Despite the fact that menopause is commonly associated with symptoms such as weariness, sadness, mood swings, and sleep difficulties, menopause does not cause these symptoms. There is also a possibility that these symptoms point to hypothyroidism. It was discovered that one in every seventy-one women over the age of sixty-five had obvious signs of thyroid malfunction. These ladies had a prevalence of 2% for obvious hypothyroidism, which was shown to be the case. Screening can efficiently detect the presence of thyroid dysfunction in postmenopausal women and has been recommended as a means of doing so [8]. This is significant because women spend one third of their lives after menopause. So this study puts in an effort to conduct research on the rate of thyroid dysfunction in women who have passed menopause.

Materials and Methods

Data was collected using a pretested proforma meeting the objectives of the study. Detailed history and necessary investigations were undertaken. The purpose of the study was explained to the patient and informed consent obtained. Minimum of 100 patients were selected randomly who were fulfilling the inclusion and exclusion

criteria. Relevant history including symptoms and signs at presentation, past medical history, menstrual history, drug history and examination findings were noted.

Inclusion criteria

Postmenopausal women attending outpatient and inpatient of General Medicine and Endocrinology Department.

Exclusion criteria

1. Known cases of diabetes mellitus, thyroid dysfunction, hypertension, chronic kidney disease.
2. Patients on Hormone replacement therapy.
3. Diagnosed cases of ovarian and uterine malignancy.
4. Patients on drugs like iodide, amiodarone, salicylates, propranolol, octreotide, phenytoin, lithium, glucocorticoid, amphetamine, aminoglutethemide, somatostatins.

T3, T4 and TSH were noted.

Results

Table 1: Correlation of Thyroid dysfunction of patients and age in years

Age in years	Thyroid dysfunction			
	Normal	SCH	Hypothyroid	Thyrotoxicosis
45-49	46	6	01	1
50-54	21	2	02	0
55-59	3	1	02	2
60-64	2	2	06	2
Total	72	12	11	5

Table 2: Correlation of Thyroid dysfunction of patients and Duration of menopause

Duration of menopause	Thyroid dysfunction			
	Normal	SCH	Hypothyroid	Thyrotoxicosis
0-4 years	18	02	2	0
5-9 years	31	00	4	1
10-14 years	19	08	4	1
15-19 years	4	00	1	3
Total	72	12	11	5

Table 3: Correlation of Thyroid dysfunction of patients and BMI

BMI (kg/m2)	Thyroid dysfunction			
	Normal	SCH	Hypothyroid	Thyrotoxicosis
Up to 22.9	34	00	1	2
23-24.9	9	00	3	0
25.0-29.9	24	02	4	1

> 30	5	08	3	2
Total	72	12	11	5

Discussion

Endocrine conditions affecting the thyroid gland are extremely common in adults. Females are more likely to be affected by this condition than males [1]. In females, the incidence rises with increasing age. Many of the signs and symptoms that women experience during postmenopause are quite similar to those that are associated with thyroid issues. Hypothyroidism is linked to dyslipidemia, which in turn raises the risk of coronary artery disease and other cardiovascular system diseases. In addition, hyperthyroidism has been linked to cardiovascular system abnormalities such as arrhythmias. These thyroid diseases are ailments that may or may not respond to treatment. The purpose of this particular study was to ascertain the prevalence of thyroid disorders in postmenopausal women and the influence that these disorders have on lipid metabolism.

This research was carried out over the course of one year within the General Medicine and Endocrinology department. Screening for thyroid dysfunction and lipid abnormalities was performed on a total of one hundred postmenopausal women who were patients in the department of medicine's outpatient and inpatient facilities. These women were included in the study.

An estimated 23.2% of the general population had a thyroid condition that had not yet reached the clinical stage. 73.8 percent of people diagnosed with subclinical thyroid illness had hypothyroidism, whereas 26.2 percent had hyperthyroidism [11]. According to the findings of two distinct investigations [9], the incidence of SCH falls somewhere in the region of 4% to 10%. According to the research that Pearce E.N. cited in his paper, thyroid dysfunction is quite common among women who are over the age of 50 [2].

In the prospective study conducted, it was discovered that SCH women had significantly elevated concentrations of serum total cholesterol (TC), LDL cholesterol (LDLc), and triglycerides. In a study that was similar, it was shown that an increase of 1.0 mIU/L in serum TSH was associated with an average rise in TC levels of 0.09 mmol/L in women. According to the second study, the impact of TSH increase was significantly influenced by age. As a result, the effect of SCH on the serum lipid profile appears to be more evident in women, and it also becomes worse with increasing age [10]. After 12 months of L-thyroxine replacement, in another study [11] found that serum total cholesterol levels dropped by 0.29 mmol/L, while LDLc levels dropped by 0.33 mmol/L. However, the effect was shown to be at its strongest in patients whose baseline blood TSH levels were greater than 12 mIU/L. Similarly, Caracio *et al*. [12] observed mean reductions in serum TC and LDLc concentrations of 0.47 mmol/L and 0.41 mmol/L, respectively, in a carefully selected group of patients with Hashimoto's thyroiditis and a slightly increased blood TSH level (10 mIU/L). In a second trial that was also controlled by randomization and came from the same group [13, 14] L-thyroxine replacement was associated with a considerable improvement in both the lipoprotein profile and the carotid artery intima-media thickness: A proxy

measure of early atherosclerosis and cardiovascular events that is generally recognised.

Individual data on more than 50,000 individuals from 11 prospective cohorts were obtained, which revealed that CHD mortality was raised in people with serum TSH >7 mIU/L and that the risk of CHD events was significantly elevated once serum TSH >10mIU/L [15]. These findings were based on the fact that CHD mortality was increased in participants with serum TSH >7 mIU/L. Patients younger than 70 years old who were initiated on L-thyroxine had a decreased incidence of coronary heart disease (CHD) throughout an 8-year follow-up period, as shown by a recent observational analysis of 4500 SCH patients taken from the United Kingdom General Practitioner Research Database [15]. These findings imply that treatment with L-thyroxine for SCH is risk-free, and the findings are in line with the hypothesis that such medication confers a slight improvement in prognosis.

Conclusion

In our study, the predominant dysfunction seen is subclinical hypothyroidism, followed by overt hypothyroidism. The incidence of thyrotoxicosis was very less in our study subjects. Screening is required for postmenopausal women for thyroid dysfunction to avoid confusion with menopausal symptoms.

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