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A study on thyroid dysfunction in postmenopausal women

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Abstract
Thyroid dysfunction, mainly hypothyroidism affects almost all systems of body. It affects skin with its appendages, cardiovascular, respiratory, alimentary, central and peripheral nervous system, musculoskeletal and endocrinal systems. In energy metabolism dysfunction it causes reduction in glucose disposal to skeletal muscle and adipose tissue. The purpose of the study was explained to the patient and informed consent obtained. Minimum of 100 patients are selected randomly who fulfil the inclusion and exclusion criteria. Relevant history including symptoms and signs at presentation, past medical history, menstrual history, drug history and examination findings was be noted. In our study, among 23 patients with 0-4 years menopause duration, 4 patients had SH, 1 patient had hypothyroidism. Among 40 patients with 5-9 years menopause duration, 6 patients had SH, 2 patients had hypothyroidism, 1 patient had thyrotoxicosis. Among 34 patients with 10-14 years menopause duration, 10 patients had SH, 4 patients had hypothyroidism, 1 patient had thyrotoxicosis. Among 3 patients with 15-19 years menopause duration, 2 patients had SH and 1 patient had hypothyroidism.

Keywords: Thyroid dysfunction, postmenopausal women, amenorrhoea

Introduction
Thyroid disorders are common disorders of general population, more common in females [1]. Thyroid dysfunction may be in the form of increased (Hyperthyroidism/Thyrotoxicosis) or decreased (Hypothyroidism) function, it may be subclinical or overt.
Hypothyroidism is a common thyroid disorder and is more common in elderly women [2]. Subclinical is more common than overt hypothyroidism. It is usually autoimmune in origin presenting as Hashimoto's thyroiditis or as atrophic thyroiditis [1]. In contrast Hyperthyriodism is less common than hypothyroidism. In hyperthyroidism Graves disease is most common, mainly affecting young adults and Toxic multinodular goitre is less common mainly affecting older age group [1].
Thyroid dysfunction, mainly hypothyroidism affects almost all systems of body. It affects skin with its appendages, cardiovascular, respiratory, alimentary, central and peripheral nervous system, musculoskeletal and endocrinal systems [1]. In energy metabolism dysfunction it causes reduction in glucose disposal to skeletal muscle and adipose tissue. It also affects lipid metabolism by depressing both synthesis and degradation of lipids leading to accumulation of low density lipids and Triglycerides [3, 4, 5, 6].
Postmenopause is the period of time after menopause. Menopause is diagnosed retrospectively, as twelve consecutive months of amenorrhoea, due to loss of ovarian follicular function. There occurs dramatic hormonal changes [7]. There is fall in reproductive hormones like progesterone, estradiol and rise in FSH, LH. Therefore there is loss of beneficial effects of reproductive hormones, example, loss of beneficial effect of estrogen on lipid metabolism, which causes increase in low density lipids and decrease in high density lipids. Therefore postmenopause is a state of increased cardiovascular risk mainly due to dyslipidemia.
Postmenopausal women have increased risk of developing Hypothyroidism [2] which may be subclinical or overt. One important reason being autoimmunity which develops easily with age including autoimmune thyroid disease [2]. This further adds to cardiovascular risk due to dyslipidemia and increases risk of IHD and stroke [4, 5, 6].
According to the American Association of Clinical Endocrinologists (AACE), millions of women with unresolved menopausal like symptoms may be suffering from undiagnosed

thyroid disease. While symptoms such as fatigue, depression, mood swings and sleep disturbances are frequently associated with menopause. They may also be signs of hypothyroidism.

Overt thyroid dysfunction was found to be present in 1 in 71 women of over 60 years of age. The prevalence of overt hypothyroidism was found to be 2% in these women. As women spend one third of their lives after menopause, screening can effectively detect the presence of thyroid dysfunction in postmenopausal women and has been recommended [8].

Methodology

Data was collected using a pretested proforma meeting the objectives of the study. Detailed history and necessary investigations was undertaken. The purpose of the study was explained to the patient and informed consent obtained. Minimum of 100 patients are selected randomly who fulfil the inclusion and exclusion criteria. Relevant history including symptoms and signs at presentation, past medical history, menstrual history, drug history and examination findings was be noted.

Inclusion criteria

Postmenopausal women attending outpatient and inpatient of Medicine 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.

Results

Table 1: Thyroid status of patients studied

Thyroid status	Number(n=100)	%
Euthyroid	68	68.0
Subclinical hypothyroid	22	22.0
Hypothyroid	8	8.0
Thyrotoxicosis	2	2.0

In our study, among 100 patients, 32 patients had thyroid dysfunction. Among these 32 patients, 22 patients were found to have subclinical hypothyroidism, 8 had clinical hypothyroidism and 2 had thyrotoxicosis. Remaining 68 were euthyroid. After screening 100 postmenopausal women, 22% had SH, 8% had overt hypothyroidism, 2% had thyrotoxicosis, remaining 68% were euthyroid.

Table 2: Correlation of Thyroid dysfunction of patients and age in years

Age in years	Total no. of patients	Thyroid dysfunction			
		Normal	SH	Hypo	Thyrotoxicosis
45-49	7	7(100%)	0(0%)	0(0%)	0(0%)
50-54	31	27(87.1%)	3(9.7%)	1(3.2%)	0(0%)
55-59	33	20(60.6%)	9(27.3%)	3(9.1%)	1(3%)
60-64	29	14(48.3%)	10(34.5%)	4(13.8%)	1(3.4%)
Total	100	68(68%)	22(22%)	8(8%)	2(2%)
Inference	Age in years is significantly associated with thyroid dysfunction with P=0.052+ (4x4 Fisher Exact test)				

In our study, in 45-49 years age group all 7 patients were euthyroid. In 50-54 years age group, among 31 patients, 3 patients had SH, 1 patient had hypothyroidism and remaining 27 patients were euthyroid. In 55-59 years age group, among 33 patients 9 patients had SH, 3 patients had hypothyroidism, 1 patient had thyrotoxicosis, remaining 20 patients were euthyroid. In 60-64 years age group, 10 patients had SH, 4 patients had hypothyroidism, 1 patient had thyrotoxicosis and remaining 14 patients were euthyroid.

Age in years was found to be significantly associated with thyroid dysfunction.

With maximum SH patients in 55 to 64 years age group.

Table 3: Duration of menopause

Duration of menopause	Number (n=100)	%
0-4 years	23	24.0
5-9 years	40	40.0
10-14 years	34	33.0
15-19 years	3	3.0

In our study, among 100 patients, 23 patients had 0-4 years menopause duration, 40 patients had 5-9 years of menopause duration, 34 patients had 10-14 years menopause duration and 3 had 15-19 years menopause duration. Among 100 patients, maximum had 5- 9 years of menopause duration.

Table 4: Correlation of Thyroid dysfunction of patients and Duration of menopause

Duration of menopause	Total no. of patients	Thyroid dysfunction			
		Normal	SH	Hypothyroid	Thyrotoxicosis
0-4 years	23	18(78.3%)	4(17.4%)	1(4.3%)	0(0%)
5-9 years	40	31(77.5%)	6(15.0%)	2(5%)	1(2.5%)
10-14 years	34	19(55.9%)	10(29.4%)	4(11.8%)	1(2.9%)
15-19 years	3	0(0%)	2(66.7%)	1(33.3%)	0(0%)
Total	100	68(68%)	22(22%)	8(8%)	2(2%)
Inference	Duration of menopause is statistically associated with thyroid dysfunction with P=0.079 (4 x 4 Fisher Exact test)				

In our study, among 23 patients with 0-4 years menopause duration, 4 patients had SH, 1 patient had hypothyroidism.

Among 40 patients with 5-9 years menopause duration, 6 patients had SH, 2 patients had hypothyroidism, 1 patient

had thyrotoxicosis. Among 34 patients with 10-14 years menopause duration, 10 patients had SH, 4 patients had hypothyroidism, 1 patient had thyrotoxicosis. Among 3 patients with 15-19 years menopause duration, 2 patients had SH and 1 patient had hypothyroidism.

Discussion

In our study, most patients were found to be in 50 to 64 years age group with maximum in 55-59 years age group. Mean age of patients in study was 56.5 +_ 5.47 years. Out of 100 patients, 22 patients were found to have subclinical hypothyroidism, 8% had overt hypothyroidism and 2% had hyperthyroidism. According to Schindler A E the incidence of thyroid disease in postmenopausal women is as follows, clinical thyroid disease about 24%. Subclinical thyroid disease about 23.2%. Among the group of subclinical thyroid disease 73.8% are hypothyroid and 26.2% are hyperthyroid. According to two studies the incidence of SH varies between 4 and 10% [9].

Age was found to be significantly (P=0.052) associated with thyroid dysfunction with maximum patients of subclinical hypothyroidism in the 55 to 64 years of age. Pearce E.N in his publication states that thyroid dysfunction is common among women over the age of 50 [2]. Dima L Diab in his publication states that hypothyroidism is common among older women and that subclinical hypothyroidism is more prevalent than overt hypothyroidism [10].

In our study, among 100 patients, maximum, that is 40 patients had 5-9 years of menopause duration. It was found that, with increasing duration of menopause the prevalence of hypothyroidism (both SH and clinical) also increased.

Maximum patients had a BMI of upto 22.9 i.e., 39% of patients had a normal BMI. 10% of patients were overweight and 34% were grade 1 obesity and 17% of patients had grade 2 obesity. BMI was significantly associated with thyroid dysfunction $P<0.001$. In our study, maximum patients had 5-9 years of menopause. Duration of menopause was found to be statistically associated with thyroid dysfunction (P=0.079).

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.
- In our study, hypothyroidism, both SH and clinical hypothyroidism was seen more in women with increasing age.

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