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PREVALENCE AND CHARECTERISTICS ASSOCIATED WITH THYROID DYSFUNCTION AMONG ELDERLY PATIENTS OF A TERTIARY CARE HOSPITAL, TAMILNADU

Medicine

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ABSTRACT

BACKGROUND

Thyroid physiology changes with age. Gland anatomy, hormone synthesis, metabolism, etc. Prevalence of thyroid dysfunction is high in elderly and their presentations are also different. Also many of the symptoms of thyroid disease especially hypothyroidism can easily be confused with symptoms. The incidence of hypothyroidism varies from 1% to 17% with women being affected more than men, and subclinical hypothyroidism is being more common than overt. Hyperthyroidism is also quiet common incidence is being 0.5% to 3% of all elderly patients. The symptoms of hypothyroidism are non-specific and difficult to differentiate from age related symptoms like alopecia, memory disturbances, cognitive decline, dry skin, constipation etc. Hence the physician needs high index of suspicion to diagnose thyroid illnesses in elderly. Treatment part depends on the symptomatology and TSH levels and cardiovascular risk of the patient.

AIM

Among geriatric patients to assess the prevalence of thyroid dysfunction and correlate with symptoms and to explore the possibility of recommending routine screening for serum TSH.

METHODOLOGY

This is a cross sectional study conducted over a period of one year in Coimbatore medical college hospital from August 2017 to July 2018. Study population includes 100 geriatric age group individuals attending geriatric outpatient department in Coimbatore medical college hospital. We measured serum TSH, serum T4, serum T3 levels for all the study participants by immunochemiluminescence method.

RESULTS

In total study population 100 individuals, 64 were euthyroid biochemically and 36 were showing thyroid dysfunction. Among the participants with hypothyroidism total of 29; 18 (62.1%) were asymptomatic whereas symptomatic patients were only 11 (37.9%). The subjects with hyperthyroidism those who had not showed any symptoms were 5 (71.4%) whereas symptomatic were 2 (28.6%).

CONCLUSION

In our study we have found that the prevalence of thyroid dysfunction in elderly population 36 out of 100 patients which has a considerable impact on their morbidity and mortality of the patients. Hence we recommend screening with serum TSH is mandatory in all the elderly patients whether they are symptomatic or not.

KEYWORDS

INTRODUCTION

A variety of changes in thyroid function occur naturally as a person ages. With an increase in age, marked changes in thyroid hormone production, metabolism and action occur. This results in increase in prevalence of subclinical thyroid disease in the elderly. Thyroid problems are especially important to understand because they do occur with rather high frequency and their mode of presentation is frequently different from those seen in younger patients. Also many of the symptoms of thyroid disease especially hypothyroidism can easily be confused with symptoms of aging. When hypothyroidism is looked in large population studies of elderly patients, the incidence varies from 1% to 17% with women being affected more than men, and subclinical hypothyroidism is being more common than overt hypothyroidism. Hyperthyroidism is also quiet common incidence is being 0.5% to 3% of all elderly patients.

The clinical presentation varies in elderly when compared to younger individuals. The term “apathetic thyrotoxicosis” described in text books denotes the masked symptoms of thyrotoxicosis in elderly patients. Hypothyroidism in elderly also more common than hyper like 1 in 4 patients in OPD. The symptoms of hypothyroidism are non-specific and difficult to differentiate from age related symptoms like alopecia, memory disturbances, cognitive decline, dry skin, constipation etc. Hence the physician needs high index of suspicion to diagnose thyroid illnesses in elderly. Treatment part depends on the symptomatology and TSH levels and cardiovascular risk of the patient. Several studies on natural course of thyroid function tests in elderly are often complicated by confounding factors such as the increased prevalence of autoimmune subclinical hypothyroidism, of chronic (non-thyroidal) illness and of medication induced changes in thyroid function tests. Therefore subclinical hypo and hyperthyroidism as well as thyroid neoplasms, the prevalence of which increases with age, require special attention in elderly subjects.

The reason behind the special attention paid in elderly patients is because of the controversy in deciding whether to treat subclinical thyroid diseases or not due to cardiovascular risks. There are only few studies available that studied the thyroid dysfunction in elderly age group.

AIMS AND OBJECTIVES

Among geriatric patients,

- To assess the prevalence of thyroid dysfunction by measuring serum thyroid stimulating hormone(TSH)
- To correlate serum TSH level with the symptoms
- To explore the possibility of recommending routine screening for serum TSH if needed.

MATERIALS AND METHODS

This is a cross sectional study conducted over a period of one year in Coimbatore medical college hospital from August 2017 to July 2018. Study population includes geriatric age group individuals attending geriatric outpatient department in Coimbatore medical college hospital. The participants were assessed with the proforma containing the details of the participants, their medical illnesses, treatment history, symptoms suggestive of hypo or hyperthyroidism which has been given in a questionnaire format with the biochemical reports attached.

SAMPLE SIZE

Assuming the prevalence of thyroid dysfunction (overt and subclinical) to 5%, the sample size calculated at 95% confidence limits is 73. Simple random sampling of the study participants was done. Random numbers were generated using computer/from statistical books. Considering 10%attrition, study planned to recruit 100 participants.

INCLUSION CRITERIA

All patients attending geriatric OPD (age >60years)

EXCLUSION CRITERIA

- Malnutrition

- Malignancy
- Patients on drugs (lithium, amiodarone, steroids, hormone replacement therapy, beta blockers)
- Patients not given consent

The biochemical parameters measured under this study were serum TSH, serum T4, serum T3 levels for all the study participants. These tests were done by immunochemiluminescence method in our hospital laboratory.

RESULTS

In this cross sectional study we included 120 participants were selected and 20 participants were excluded from the study according to the exclusion criteria that we have formulated out of which Males were 22 (22%), Females were 78 (78%). The study participants were questioned about the symptomatology pertaining to thyroid disorder and allowed to undergo thyroid function test that includes serum TSH, serum T4 and serum T3.

In our study males with mean age of 64.7±3.9 and females with 63.6±3.9 years were studied. They presented to our OPD with systemic hypertension, diabetes mellitus, CAD and other illnesses like short term infectious diseases, neurological illness and musculoskeletal disorders as shown in table 1. Hypertensive patients were 56, diabetic were 68, CAD patients were 35.

Table 1: Demographic and clinical characteristics of patients

SN	Characteristics	Male (N-22)		Female (N-78)		Total (N-100)	
		n	(%)	n	(%)	n	(%)
1	Mean age (±standard deviation) in years	64.7 (±3.9)		63.6 (±3.9)		63.9 (±3.9)	
2	**Presence of morbidities**						
	Systemic hypertension	10	(45.5)	46	(59)	56	(56)
	Diabetes mellitus	17	(77.3)	51	(65.4)	68	(68)
	Coronary heart disease	6	(27.3)	29	(37.2)	35	(35)
	Other comorbidities	4	(18.2)	24	(30.8)	28	(28)
3	**Presence of thyroid disorder symptoms**						
	No symptoms	20	(90.9)	59	(75.6)	79	(79)
	Hypothyroidism	1	(4.5)	12	(15.4)	13	(13)
	Hyperthyroidism	1	(4.5)	7	(9.0)	8	(8)
4	**Thyroid hormone levels**						
	Median T3 (IQR)	1.2 (0.8-1.5)		1.1 (0.8-1.4)		1.2 (0.8-1.4)	
	Median T4 (IQR)	8.4 (6.8-12.3)		9.4 (7.7-11.2)		9.2 (7.5-11.4)	
	Median TSH (IQR)	2.4 (1.6-5.2)		2.8 (1.4-5.3)		2.7 (1.4-5.2)	

IQR-Interquartile range (25th percentile to 75th percentile)

Among those participants only 21 presented with symptoms (hypothyroidism- 13; hyperthyroidism- 8) and 79 were asymptomatic. Among those who were asymptomatic 23 were found to have abnormal thyroid profile. The mean values of T3, T4, TSH are given in table 1. The distribution of thyroid disorder in elderly males is depicted in figure 1.

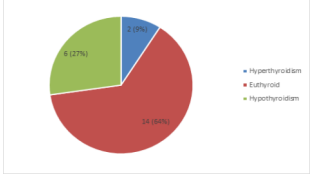


Figure 1. Thyroid disorder diagnosis based on TSH value among elderly-Male

The distribution of thyroid illness among elderly females is depicted in figure 2.

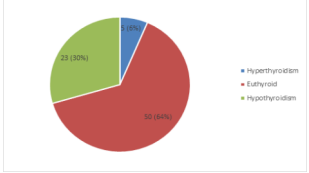


Figure 2. Thyroid disorder diagnosis based on TSH value among elderly-Female

The total distribution of thyroid illness among study population is well depicted in figure 3.

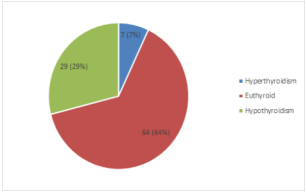


Figure 3. Thyroid disorder diagnosis based on TSH value among elderly-Total

Table 2 explains the median T3, T4, TSH values (interquartile range) in cases of hypothyroidism, hyperthyroidism and normal individuals. Median TSH among hypothyroidism is 8.6 (5.7-12.8), hyperthyroidism 0.05(0.01-0.09) and the normal value being 2.2 (1.4-3.2). Among total hypothyroidism patients 6 (20.7%) were elderly males and 23 (79.3%) were elderly females and those with hyperthyroidism 2 (28.6%) were elderly males and 5 (71.4%) were elderly females. 64 (Males 14- 21.9%; females 50- 78.1%) participants showed normal thyroid function biochemically.

Among the participants with hypothyroidism total of 29; 18 (62.1%) were asymptomatic whereas symptomatic patients were only 11 (37.9%). The subjects with hyperthyroidism those who had not showed any symptoms were 5 (71.4%) whereas symptomatic were 2 (28.6%).

Table 2: Thyroid hormone level and final thyroid diagnosis

SN	Characteristics	Hypothyroidism (N-29)		Hyperthyroidism (N-7)		Normal (N-64)	
		n	(%)	N	(%)	n	(%)
1	**Thyroid hormone level**						
	Median T3 (IQR)	0.99 (0.80-1.35)		2.4 (1.0-3.1)		1.2 (0.8-1.4)	
	Median T4 (IQR)	8.1 (6.1-9.8)		11.0 (8.8-14.7)		9.9 (7.9-11.8)	
	Median TSH (IQR)	8.6 (5.7-12.8)		0.05 (0.01-0.09)		2.2 (1.4-3.2)	
2	Mean age (±standard deviation) in years	63.7 (±3.7)		63.9 (±2.3)		64.0 (±4.1)	
3	**Sex**						
	Male	6	(20.7)	2	(28.6)	14	(21.9)
	Female	23	(79.3)	5	(71.4)	50	(78.1)
4	**Presence of co-morbidities**						
	Systemic hypertension	19	(65.5)	3	(42.9)	34	(53.1)
	Diabetes mellitus	19	(65.5)	7	(100)	42	(65.6)
	Coronary heart disease	9	(31.0)	2	(28.6)	24	(37.5)
	Other comorbidities	5	(17.2)	4	(57.1)	19	(29.7)
5	**Presence of thyroid disorder symptoms**						
	No symptoms	18	(62.1)	5	(71.4)	56	(87.5)
	Hypothyroidism	11	(37.9)	0	(0)	2	(3.1)
	Hyperthyroidism	0	(0)	2	(28.6)	6	(9.4)

DISCUSSION

Thyroid disorders are more common among older individuals compared to younger age group. The presentation also varies and most of the thyrotoxic symptoms were masked which is termed as apathetic thyrotoxicosis. Most of the hypothyroidism symptoms were confused with symptoms of older age group. So high index of suspicion is needed for the physician to suspect and diagnose. In our study among total participants of 100; 64 were having normal thyroid function test and 36 were having abnormal thyroid profile in the form either hypo or hyperthyroidism. Among the participants with hypothyroidism total of 29; 18 (62.1%) were asymptomatic whereas symptomatic patients

were only 11 (37.9%). The subjects with hyperthyroidism those who had not showed any symptoms were 5 (71.4%) whereas symptomatic were 2 (28.6%).

Our study clearly depicts that the screening with serum TSH in all elderly patients irrespective of whether they are symptomatic or not will pick up those with abnormal thyroid function. It will also be helpful in assessing and decision making in treating those in view of reducing the morbidity.

Madhuvan et al conducted a study on thyroid dysfunction in elderly in Bangalore showed 25% had thyroid disorder. In our study it is 36%. In both studies the incidence is higher among females.

Abhijit et al published an articles in 2014 study conducted in Pune stated that comparative study with one group being older age group and another one was younger age group. It concluded that TSH levels were high as the age advances and T3, T4 levels were found to be low.
Harish kumar et al conducted a study on clinical profile of thyroid dysfunction in elderly studied various clinical presentation of elderly Patients With thyroid disorder.

This study has been conducted in a small sample size. The measurements of Free T3 & T4 was not done. Analysis of various symptoms and their prevalence among elderly population has not been done.

CONCLUSION:

In our study we have found that the prevalence of thyroid dysfunction in elderly population 36 out of 100 patients which has a considerable impact on their morbidity and mortality of the patients. Hence we recommend screening with serum TSH is mandatory in all the elderly patients whether they are symptomatic or not, yet community based large scale studies are needed to further formulation of recommendation.

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