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Original Research Article

Association of classical symptomatology with actual thyroid disease and the assessment of variations observed in thyroid profile: a comparative study between the elderly and the young adults

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ABSTRACT

Background: The classical symptoms of thyroid dysfunction are valuable in being related to the value of TSH (thyroid stimulating hormone) and the occurrence of actual thyroid disease. There are significant variations seen in the clinical presentation of thyroid disorder in elderly patients, when compared to young adults, and the biochemical parameters of thyroid function also vary according to age and gender. Authors aimed to study the association of classical symptomatology of thyroid dysfunction with the presence of actual biochemically proven thyroid disorder, separately in two groups: one comprising elderly patients (≥60 years)-Group A and other comprising young adult patients (25-50 years)-Group B.
Methods: Patients attending the General Medicine out-patient department at Pushpagiri Medical College Hospital, Tiruvalla, Kerala, from December 2019 to January 2020 having any of the classical symptomatology as described in the inclusion criteria, were enrolled. Clinical assessment and data collection was followed by statistical analysis after sorting out the patients into two groups.
Results: In Group A, the symptoms which turned out non-significant for biochemical thyroid disease were chronic constipation, menorrhagia, pedal edema and pallor. In Group B, the picture was somewhat similar, but importantly, chronic constipation turned out to be significant for hypothyroidism while menorrhagia, pedal edema and pallor were insignificant with actual disease. Overt hypothyroidism was the most common thyroid disorder detected in both the groups.
Conclusions: appreciating the variability and importance of clinical symptoms of thyroid disorders helps in correctly diagnosing them, especially in the vulnerable elderly population.

Keywords: Elderly, Symptomatology, Thyroid, Thyroid stimulating hormone

INTRODUCTION

The classical symptoms of thyroid dysfunction have been shown to be qualitatively and quantitatively linked to the occurrence of actual thyroid disease and with the values of TSH(thyroid stimulating hormone).[1] There are significant variations seen in the clinical presentation of thyroid disorder in elderly patients, when compared to young adults, namely in the frequency and sensitivity of classical signs and symptoms.[2] The biochemical parameters of thyroid function(namely serum TSH, free T4 and T3 levels) also vary according to age and gender, especially in the older population.[3] The present study has included a substantial number of patients who present

with symptoms which are classically or traditionally defined for thyroid disorders – either hypothyroidism or hyperthyroidism, dividing them into two groups based on age, while collecting the demographic and clinical data, and comparing these with the detection of actual thyroid disorder in them, proven by standard laboratory testing.

Authors aims and objectives was to study the association of classical symptomatology of thyroid dysfunction with the presence of actual biochemically proven thyroid disorder, separately in two groups :- one comprising elderly patients (≥60 years) and other comprising young adult patients (25-50 years) and also to study the profile of thyroid hormone abnormalities, namely TSH (thyroid stimulating hormone), FT4 (free T4) and T3 levels, based on age and gender.

METHODS

Patients attending the General Medicine outpatient department at Pushpagiri Medical College Hospital, Tiruvalla, Kerala, from December 2019 to January 2020, having any of the classical symptomatology of thyroid dysfunction (easy fatiguability, weight gain/loss, decreased cognition, chronic constipation/diarrhea, dry skin, hyperhidrosis, intolerance to heat/cold, voice hoarseness, palpitations, recession of frontal hair/eyebrows, menorrhagia, proximal muscle weakness, fine tremors, goiter, bradycardia/tachycardia, delayed ankle jerk relaxation time, bilateral pedal edema, pallor) were sorted into two groups:

GROUP A (age ≥60) and GROUP B (age 25-50), following the written informed consent and ruling out exclusion criteria(unwilling patients/patients with any acute illness or known case of thyroid disease/patients on thyroid-altering drugs or with history of thyroid surgery or radioactive iodine/contrast media exposure). Serum TSH, FT4 (free T4) and T3 levels were done for all patients as a routine along with other tests deemed necessary by clinical examination, since early detection of underlying thyroid disorder is of utmost importance for the patient's health and the presenting symptoms may be a part of actual thyroid disease.

The association, sensitivity, specificity, and predictive values of the classical symptoms, individually and together, for actual biochemical thyroid dysfunction in these patients were obtained and analysed. The thyroid function profile of patients who turn out to be biochemically non-euthyroid (clinical or subclinical hypothyroidism or hyperthyroidism) will be compared in between the groups and inside each group. An age-wise and gender-wise variation assessment was done with the above data, using statistical analysis. Prior ethical approval was obtained from Institutional Review Board (IRB) of Pushpagiri Group of Institutions (IRB study reference no.27/2019). This is a single centre observational study done over a period of 2 months. Serum TSH, FT4 and T3 level were done at Pushpagiri Medical College Hospital Laboratory by ELFA (Enzyme linked Fluorescent Assay) and CLIA (Chemiluminescence Immunoassay) methods using advanced technology machines (Siemens Advia Centaur CP for CLIA and BioMerieux MINI VIDAS for ELFA). Normal values are: TSH 0.35-5.5 mIU/ml, T3 - 0.92-2.79 nmol/L and FT4 - 58-141 nmol/L. Overt hypothyroidism was defined as TSH value more than 5.5 with low FT4 and/or T3 levels while clinical hyperthyroidism was defined as TSH less than 0.35 with high FT4 and/or T3 levels. Subclinical hypothyroidism was defined as high TSH values with normal range FT4 and T3 values.

Subclinical hyperthyroidism was defined as low TSH values with normal range FT4 and T3 values. Euthyroid meant persons with normal thyroid hormone profile. Since the primary objective of the study is to assess the predictive efficacy of classical symptomatology to actual biochemically proven disease, the reference study for calculating sample size was taken from the work of Canaris GJ et al, taking the symptom of chilliness(cold intolerance) as reference for comparing in young adults and elderly, in view of its statistical significance. The commonly used formula for calculating the sample size for two proportions was used in the present study to derive at a minimum sample size of 45 in each group (Group A and B).

Age, values of TSH, T3, FT4 and other quantitative variables are analysed and expressed as mean±standard deviation. Data was digitized using Microsoft Excel and analysed using SPSS 23.0. Sensitivity, specificity and positive predictive value of each symptom in case of young adults and elderly (Group A and B) was separately studied. Chi-square test was used to find the association between thyroid symptomatology and thyroid disease. Independent sample t-test was used to compare the biochemical parameters of thyroid profile, in both the groups. A p value of <0.05 was considered statistically significant.

RESULTS

Association of gender with actual biochemically proven thyroid disorder

Figure 1 shows that in Group A comprising of patients aged atleast 60 years, out of total 129 patients, we had 77 males and 52 females. Of these, 32 males (41.6% of males) had overt hypothyroidism while among females, only 15 (28.8%) had overt hypothyroidism. 13 males and 9 females were found to have subclinical hypothyroidism, which turned to be average 17% in each gender. Overt hyperthyroidism was seen in 9 males (11.7%) and 8 females (15.4%). Among all these patients with classical symptoms of thyroid disease, no biochemical thyroid abnormality was observed in 23 males (29.9%) and 20 females (38.5%).

Figure 2 shows that in Group B comprising of patients aged 25-50 years, out of total 127 patients, we had 76

males and 51 females. Of these, 32 males (42.1% of males) had overt hypothyroidism while among females, only 14 (27.5% of females) had overt hypothyroidism. 12 males (15.8%) and 9 females (17.6%) were found to have subclinical hypothyroidism. Overt hyperthyroidism was seen in 9 males (11.8%) and 8 females (15.7%). Among all these patients with classical symptoms of thyroid disease, no biochemical thyroid abnormality was observed in 23 males (30.3%) and 20 females (39.2%).

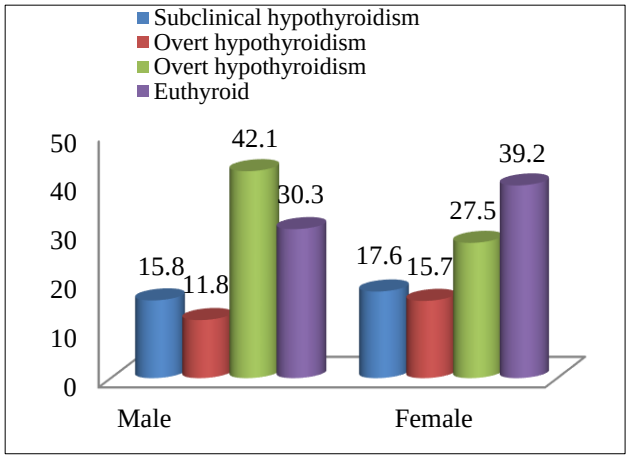

Figure 1: Association of gender with actual biochemically proven thyroid disorder for participants of age>=60 (Group A).

Combining the data from Figures 1 and 2, authors get the analysis of Table 1, where 41.8% of males and 28.2% of females, irrespective of age, presenting with symptoms traditionally defined for thyroid disease, turned out to be having actual overt hypothyroidism. An average 17% patients in males and females each, were found to have subclinical hypothyroidism. Biochemically euthyroid status was observed in 30.1% males and 38.8% females.

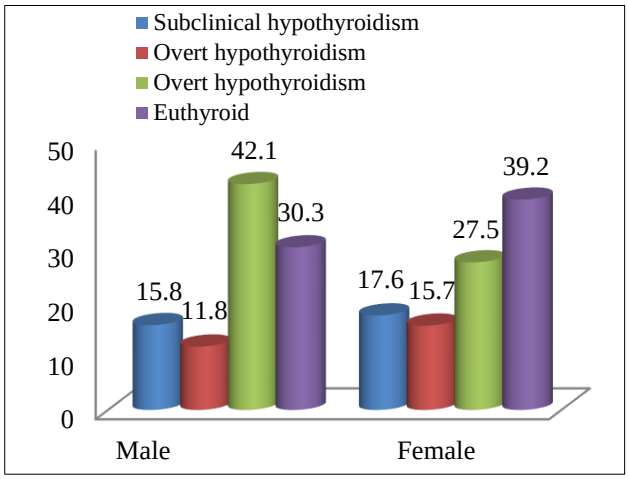

Figure 2: Association of gender with actual biochemically proven thyroid disorder for participants of age 25-50 (Group B).

Table 1: Association of gender with actual biochemically proven thyroid disorder for participants irrespective of age.

Gender	Subclinical hypothyroidism	Overt hyperthyroidism	Overt hypothyroidism	Euthyroid	χ^2	p
Male	25 (16.3)	18 (11.8)	64 (41.8)	46 (30.1)	5.28	0.152
Female	18 (17.5)	16 (15.5)	29 (28.2)	40 (38.8)		

Association of classical symptomatology of thyroid dysfunction with the presence of actual biochemically proven thyroid disorder

Table 2 depicts the association of each of the classical symptoms for the patients in Group A to the actual biochemical evaluation done in them, revealing the percentage of each symptoms culminating into thyroid profile abnormality, hence leading to a definite thyroid disorder(subclinical or clinical). Hence the predictive association of each of these symptoms is calculated and significance is noted for all, except for chronic constipation, menorrhagia, pedal edema and pallor, at $p<0.01$.

Table 3 depicts the association of each of the classical symptoms for the patients in Group B to the actual biochemical evaluation done in them, revealing the percentage of each symptoms culminating into thyroid profile abnormality, hence leading to a definite thyroid disorder(subclinical or clinical). Hence the predictive association of each of these symptoms is calculated and significance is noted for all, except for menorrhagia, pedal edema and pallor, at $p<0.01$. Table 4 depicts the association of individual symptom, irrespective of age, combining the data from both the groups, with actual biochemically proven thyroid disorder. Only pedal edema was inconclusive or not significant in predicting actual thyroid profile abnormalities ($p<0.01$).

DISCUSSION

This study enrolled a total of 129 patients in Group A and 127 patients in Group B by using the inclusion and exclusion criteria. In Group A, 77 males and 52 females participated while there were 76 males and 51 females in Group B.

Overt Hypothyroidism was the most common disorder noted. This turned out to be in 47 patients in Group A of which 32 were males, while the same in Group B was 46 with 32 males. Subclinical Hypothyroidism was found in 22 patients in Group A and 21 patients in Group B. 43 patients in each group turned to be euthyroid. The rest patients were found to have hyperthyroidism.

Table 2: Association of classical symptomatology of thyroid dysfunction with the presence of actual biochemically proven thyroid disorder for participants of age>=60 (Group A).

Symptoms		Subclinical hypothyroidism	Overt hyperthyroidism	Overt hypothyroidism	Euthyroid	χ^2	p
Easy fatiguability	Yes	14 (37.8)	0 (0)	18 (48.6)	5 (13.5)	28.22	p<0.01
	No	8 (8.7)	17 (18.5)	29 (31.5)	38 (41.3)		
Weight gain	Yes	10 (19.2)	0 (0)	17 (32.7)	25 (48.1)	17.74	p<0.01
	No	12 (15.6)	17 (22.1)	30 (39)	18 (23.4)		
Weight loss	Yes	0 (0)	13 (59.1)	0 (0)	9 (40.9)	57.07	p<0.01
	No	22 (20.6)	4 (3.7)	47 (43.9)	34 (31.8)		
Decreased cognition	Yes	8 (24.2)	0 (0)	24 (72.7)	1 (3)	35.43	p<0.01
	No	14 (14.6)	17 (17.7)	23 (24)	42 (43.8)		
Chronic constipation	Yes	5 (18.5)	0 (0)	7 (25.9)	15 (55.6)	10.64*	0.014
	No	17 (16.7)	17 (16.7)	40 (39.2)	28 (27.5)		
Chronic diarrhea	Yes	0 (0)	8 (66.7)	0 (0)	4 (33.3)	35.8	p<0.01
	No	22 (18.8)	9 (7.7)	47 (40.2)	39 (33.3)		
Dry skin	Yes	5 (26.3)	0 (0)	12 (63.2)	2 (10.5)	11.9**	0.008
	No	17 (15.5)	17 (15.5)	35 (31.8)	41 (37.3)		
Hyperhidrosis	Yes	0 (0)	13 (72.2)	0 (0)	5 (27.8)	66.72	p<0.01
	No	22 (19.8)	4 (3.6)	47 (42.3)	38 (34.2)		
Heat intolerance	Yes	0 (0)	8 (66.7)	1 (8.3)	3 (25)	34.12	p<0.01
	No	22 (18.8)	9 (7.7)	46 (39.3)	40 (34.2)		
Cold intolerance	Yes	9 (50)	0 (0)	8 (44.4)	1 (5.6)	21.28	p<0.01
	No	13 (11.7)	17 (15.3)	39 (35.1)	42 (37.8)		
Hoarseness of voice	Yes	0 (0)	0 (0)	8 (88.9)	1 (11.1)	11.66**	0.009
	No	22 (18.3)	17 (14.2)	39 (32.5)	42 (35)		
Palpitation	Yes	0 (0)	7 (53.8)	1 (7.7)	5 (38.5)	24	p<0.01
	No	22 (19)	10 (8.6)	46 (39.7)	38 (32.8)		
Hair loss over face	Yes	10 (38.5)	0 (0)	14 (53.8)	2 (7.7)	22.17	p<0.01
	No	12 (11.7)	17 (16.5)	33 (32)	41 (39.8)		
Menorrhagia	Yes	5 (18.5)	1 (3.7)	6 (22.2)	15 (55.6)	9.32*	0.025
	No	17 (16.7)	16 (15.7)	41 (40.2)	28 (27.5)		
Proximal myopathy	Yes	1 (11.1)	5 (55.6)	3 (33.3)	0 (0)	16.64	p<0.01
	No	21 (17.5)	12 (10)	44 (36.7)	43 (35.8)		
Fine tremors	Yes	0 (0)	17 (81)	1 (4.8)	3 (14.3)	101.34	p<0.01
	No	22 (20.4)	0 (0)	46 (42.6)	40 (37)		
Goitre	Yes	5 (13.2)	13 (34.2)	19 (50)	1 (2.6)	36.52	p<0.01
	No	17 (18.7)	4 (4.4)	28 (30.8)	42 (46.2)		
Bradycardia	Yes	10 (33.3)	0 (0)	16 (53.3)	4 (13.3)	18.98	p<0.01
	No	12 (12.1)	17 (17.2)	31 (31.3)	39 (39.4)		
Tachycardia	Yes	0 (0)	13 (72.2)	0 (0)	5 (27.8)	66.72	p<0.01
	No	22 (19.8)	4 (3.6)	47 (42.3)	38 (34.2)		
Delayed ankle jerk	Yes	9 (37.5)	0 (0)	13 (54.2)	2 (8.3)	19.19	p<0.01
	No	13 (12.4)	17 (16.2)	34 (32.4)	41 (39)		
Pedal edema	Yes	7 (26.9)	1 (3.8)	9 (34.6)	9 (34.6)	4.06	0.255
	No	15 (14.6)	16 (15.5)	38 (36.9)	34 (33)		
Pallor	Yes	9 (22)	9 (22)	14 (34.1)	9 (22)	6.78	0.079
	No	13 (14.8)	8 (9.1)	33 (37.5)	34 (38.6)		

**: - Significant at 0.01 level, *: - Significant at 0.05 level

The classical symptomatology for thyroid disease was compared individually for each group and also as a combined analysis. Easy fatiguability, weight gain, decreased cognition, dry skin, cold intolerance, hoarseness of voice, hair loss over face, proximal myopathy, goiter, bradycardia, delayed ankle jerk were all found to be significantly associated ($p<0.01$) in Group A patients with biochemically proven hypothyroidism. Chronic diarrhea, weight loss, hyperhidrosis, heat intolerance, palpitation, tachycardia, and fine tremors were found to be significantly associated with biochemically proven hyperthyroidism.

Table 3: Association of classical symptomatology of thyroid dysfunction with the presence of actual biochemically proven thyroid disorder for participants of age 25-50 Years (Group B).

		Subclinical hypothyroidism	Overt hyperthyroidism	Overt hypothyroidism	Euthyroid	χ^2	p
Easy fatiguability	Yes	13 (36.1)	0 (0)	18 (50)	5 (13.9)	26.92	p<0.01
	No	8 (8.8)	17 (18.7)	28 (30.8)	38 (41.8)		
Weight gain	Yes	9 (18)	0 (0)	16 (32)	25 (50)	17.9	p<0.01
	No	12 (15.6)	17 (22.1)	30 (39)	18 (23.4)		
Weight loss	Yes	0 (0)	13 (59.1)	0 (0)	9 (40.9)	55.95	p<0.01
	No	21 (20)	4 (3.8)	46 (43.8)	34 (32.4)		
Decreased cognition	Yes	7 (21.9)	0 (0)	24 (75)	1 (3.1)	36.16	p<0.01
	No	14 (14.7)	17 (17.9)	22 (23.2)	42 (44.2)		
Chronic constipation	Yes	5 (19.2)	0 (0)	6 (23.1)	15 (57.7)	11.56**	0.009
	No	16 (15.8)	17 (16.8)	40 (39.6)	28 (27.7)		
Chronic diarrhea	Yes	0 (0)	8 (66.7)	0 (0)	4 (33.3)	35.1	p<0.01
	No	21 (18.3)	9 (7.8)	46 (40)	39 (33.9)		
Dry skin	Yes	5 (27.8)	0 (0)	11 (61.1)	2 (11.1)	11.2*	0.011
	No	16 (14.7)	17 (15.6)	35 (32.1)	41 (37.6)		
Hyperhidrosis	Yes	0 (0)	13 (72.2)	0 (0)	5 (27.8)	65.53	p<0.01
	No	21 (19.3)	4 (3.7)	46 (42.2)	38 (34.9)		
Heat intolerance	Yes	0 (0)	8 (66.7)	1 (8.3)	3 (25)	33.45	p<0.01
	No	21 (18.3)	9 (7.8)	45 (39.1)	40 (34.8)		
Cold intolerance	Yes	8 (47.1)	0 (0)	8 (47.1)	1 (5.9)	18.86	p<0.01
	No	13 (11.8)	17 (15.5)	38 (34.5)	42 (38.2)		
Hoarseness of voice	Yes	0 (0)	0 (0)	8 (88.9)	1 (11.1)	11.8**	0.008
	No	21 (17.8)	17 (14.4)	38 (32.2)	42 (35.6)		
Palpitation	Yes	0 (0)	7 (53.8)	1 (7.7)	5 (38.5)	23.45	p<0.01
	No	21 (18.4)	10 (8.8)	45 (39.5)	38 (33.3)		
Hair loss over face	Yes	9 (36)	0 (0)	14 (56)	2 (8)	20.81	p<0.01
	No	12 (11.8)	17 (16.7)	32 (31.4)	41 (40.2)		
Menorrhagia	Yes	5 (18.5)	1 (3.7)	6 (22.2)	15 (55.6)	9.11*	0.028
	No	16 (16)	16 (16)	40 (40)	28 (28)		
Proximal myopathy	Yes	1 (12.5)	5 (62.5)	2 (25)	0 (0)	18.66	p<0.01
	No	20 (16.8)	12 (10.1)	44 (37)	43 (36.1)		
Fine tremors	Yes	0 (0)	17 (81)	1 (4.8)	3 (14.3)	99.69	p<0.01
	No	21 (19.8)	0 (0)	45 (42.5)	40 (37.7)		
Goitre	Yes	5 (13.2)	13 (34.2)	19 (50)	1 (2.6)	36.4	p<0.01
	No	16 (18)	4 (4.5)	27 (30.3)	42 (47.2)		
Bradycardia	Yes	9 (32.1)	0 (0)	15 (53.6)	4 (14.3)	17.15	p<0.01
	No	12 (12.1)	17 (17.2)	31 (31.3)	39 (39.4)		
Tachycardia	Yes	0 (0)	13 (72.2)	0 (0)	5 (27.8)	65.53	p<0.01
	No	21 (19.3)	4 (3.7)	46 (42.2)	38 (34.9)		
Delayed ankle jerk	Yes	8 (34.8)	0 (0)	13 (56.5)	2 (8.7)	17.86	p<0.01
	No	13 (12.5)	17 (16.3)	33 (31.7)	41 (39.4)		
Pedal edema	Yes	6 (25)	1 (4.2)	8 (33.3)	9 (37.5)	3.35	0.341
	No	15 (14.6)	16 (15.5)	38 (36.9)	34 (33)		
Pallor	Yes	9 (22)	9 (22)	14 (34.1)	9 (22)	7	0.072
	No	12 (14)	8 (9.3)	32 (37.2)	34 (39.5)		

**: - Significant at 0.01 level, *: - Significant at 0.05 level

Table 4: Association of classical symptomatology of thyroid dysfunction with the presence of actual biochemically proven thyroid disorder for participants irrespective of age.

		Subclinical hypothyroidism	Overt hyperthyroidism	Overt hypothyroidism	Euthyroid	χ^2	p
Easy fatiguability	Yes	27 (37)	0 (0)	36 (49.3)	10 (13.7)	55.12	p<0.01
	No	16 (8.7)	34 (18.6)	57 (31.1)	76 (41.5)		
Weight gain	Yes	19 (18.6)	0 (0)	33 (32.4)	50 (49)	35.61	p<0.01
	No	24 (15.6)	34 (22.1)	60 (39)	36 (23.4)		
Weight loss	Yes	0 (0)	26 (59.1)	0 (0)	18 (40.9)	113.02	p<0.01
	No	43 (20.3)	8 (3.8)	93 (43.9)	68 (32.1)		
Decreased cognition	Yes	15 (23.1)	0 (0)	48 (73.8)	2 (3.1)	71.52	p<0.01
	No	28 (14.7)	34 (17.8)	45 (23.6)	84 (44)		
Chronic constipation	Yes	10 (18.9)	0 (0)	13 (24.5)	30 (56.6)	22.14	p<0.01
	No	33 (16.3)	34 (16.7)	80 (39.4)	56 (27.6)		
Chronic diarrhea	Yes	0 (0)	16 (66.7)	0 (0)	8 (33.3)	70.9	p<0.01
	No	43 (18.5)	18 (7.8)	93 (40.1)	78 (33.6)		
Dry skin	Yes	10 (27)	0 (0)	23 (62.2)	4 (10.8)	23.07	p<0.01
	No	33 (15.1)	34 (15.5)	70 (32)	82 (37.4)		
Hyperhidrosis	Yes	0 (0)	26 (72.2)	0 (0)	10 (27.8)	132.25	p<0.01
	No	43 (19.5)	8 (3.6)	93 (42.3)	76 (34.5)		
Heat intolerance	Yes	0 (0)	16 (66.7)	2 (8.3)	6 (25)	67.57	p<0.01
	No	43 (18.5)	18 (7.8)	91 (39.2)	80 (34.5)		
Cold intolerance	Yes	17 (48.6)	0 (0)	16 (45.7)	2 (5.7)	40.12	p<0.01
	No	26 (11.8)	34 (15.4)	77 (34.8)	84 (38)		
Hoarseness of voice	Yes	0 (0)	0 (0)	16 (88.9)	2 (11.1)	23.46	p<0.01
	No	43 (18.1)	34 (14.3)	77 (32.4)	84 (35.3)		
Palpitation	Yes	0 (0)	14 (53.8)	2 (7.7)	10 (38.5)	47.45	p<0.01
	No	43 (18.7)	20 (8.7)	91 (39.6)	76 (33)		
Hair loss over face	Yes	19 (37.3)	0 (0)	28 (54.9)	4 (7.8)	42.95	p<0.01
	No	24 (11.7)	34 (16.6)	65 (31.7)	82 (40)		
Menorrhagia	Yes	10 (18.5)	2 (3.7)	12 (22.2)	30 (55.6)	18.42	p<0.01
	No	33 (16.3)	32 (15.8)	81 (40.1)	56 (27.7)		
Proximal myopathy	Yes	2 (11.8)	10 (58.8)	5 (29.4)	0 (0)	35.07	p<0.01
	No	41 (17.2)	24 (10)	88 (36.8)	86 (36)		
Fine tremors	Yes	0 (0)	34 (81)	2 (4.8)	6 (14.3)	201.03	p<0.01
	No	43 (20.1)	0 (0)	91 (42.5)	80 (37.4)		
Goitre	Yes	10 (13.2)	26 (34.2)	38 (50)	2 (2.6)	72.91	p<0.01
	No	33 (18.3)	8 (4.4)	55 (30.6)	84 (46.7)		
Bradycardia	Yes	19 (32.8)	0 (0)	31 (53.4)	8 (13.8)	36.14	p<0.01
	No	24 (12.1)	34 (17.2)	62 (31.3)	78 (39.4)		
Tachycardia	Yes	0 (0)	26 (72.2)	0 (0)	10 (27.8)	132.25	p<0.01
	No	43 (19.5)	8 (3.6)	93 (42.3)	76 (34.5)		
Delayed ankle jerk	Yes	17 (36.2)	0 (0)	26 (55.3)	4 (8.5)	37.01	p<0.01
	No	26 (12.4)	34 (16.3)	67 (32.1)	82 (39.2)		
Pedal edema	Yes	13 (26)	2 (4)	17 (34)	18 (36)	7.36	0.061
	No	30 (14.6)	32 (15.5)	76 (36.9)	68 (33)		
Pallor	Yes	18 (22)	18 (22)	28 (34.1)	18 (22)	13.76**	0.003
	No	25 (14.4)	16 (9.2)	65 (37.4)	68 (39.1)		

In Group A, the symptoms which turned out non-significant for biochemical thyroid disease were chronic constipation, menorrhagia, pedal edema and pallor. In Group B, the picture was somewhat similar, but importantly, chronic constipation turned out to be significant for hypothyroidism while menorrhagia, pedal

edema and pallor were insignificant with actual disease. Combining the analysis of both groups, only pedal edema turned out to be insignificant.

Biochemical abnormalities in thyroid parameters are seen more in elderly patients due to multiple physiological and pathological reasons.[4] Age and gender have a significant role in the development of subclinical thyroid disease and its progression to overt thyroid disease.[5] The differences observed in elderly patients regarding thyroid dysfunction when compared to young patients are a consequence of aging, decrease in peripheral conversion of T4 to T3, decrease in the physiological function of thyroid gland, decrease in thyroid hormone receptor sensitivity and many other histo-pathological factors.[6,7] The Framingham study showed a significant prevalence of hypothyroidism (clinical and subclinical) in an unselected cohort of elderly people.[8] The study done by Natasha and Raju Badiger in 2017 covering 100 elderly patients with clinical symptoms similar to thyroid disease showed a 28% prevalence of thyroid disorders with the most common being hypothyroidism.[9] Samuels MH in 1998 showed that subclinical hypothyroidism occurs in 5-10% of elderly subjects.[10]

This study covers a larger random sample of patients who were compared based on age (Group A and B) and gender (in each group and combined). The most common disorder found was overt hypothyroidism which was found in a larger percentage in male patients with symptoms than females with similar symptoms. There was a considerable percentage of subclinical hypothyroidism patients in each group, thus supporting the literature data.

CONCLUSION

Clinical examination followed by laboratory confirmation form the cornerstone in the diagnosis of subclinical and clinical thyroid disease. This study tries to find the significance of each of the classical symptoms of hypothyroidism and hyperthyroidism in associating with actual biochemically proven thyroid disease. The thyroid profile alterations based on age and gender is a complex process and may need further studies on a larger scale, to enhance the knowledge on this subject.

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