



RESEARCH ARTICLE

CLINICAL PROFILE OF THYROID DISORDERS

\*Dr. Shubhangi Vithal Dhadke, Dr. Vithal Narayan Dhadke, Dr. Milind Bhausaheb Korade and  
Dr. Shashikala Anant Sangle

Dr. Vaishampayan Memorial Government Medical College, Solapur, Maharashtra, India

ARTICLE INFO

**Article History:**

Received 27<sup>th</sup> June, 2014  
Received in revised form  
05<sup>th</sup> July, 2014  
Accepted 22<sup>nd</sup> August, 2014  
Published online 18<sup>th</sup> September, 2014

**Key words:**

Hypothyroidism,  
Pericardial effusion,  
Thyroid function test

ABSTRACT

**Aims and Objectives:** To study incidence, signs, symptoms, response to treatment & follow up of patients with thyroid disorders.

**Methods and Material:** One hundred fifty patients of thyroid disorder are studied for signs, symptoms and investigations like thyroid function test, lipid profile, ECG, 2-D echo, USG neck. All patients are followed up after 2 months of treatment.

**Observations and Results:** Thyroid disorders are common in females (80%). Ninety three patients (62%) are hypothyroid, 35 are hyperthyroid and 22 euthyroid patients having nodular disorder. Generalised weakness and lethargy is most common complaint in 51 (54.84%) and dry skin is most common finding in 46 (49.46%) hypothyroid patients. Tremulousness is most common complaint in 20(57.14%) and tremors is most common finding in 22(62.86%) hyperthyroid patients. Colloid goiter is most common ultrasound finding in 23 cases. There is statistically significant difference in level of TSH, FT-3 and FT-4 in hypothyroid and hyperthyroid patients after 2 months of treatment ( $p < 0.01$ ). and TSH suppression therapy.

**Conclusions:** Thyroid disorders are very common in young and middle aged females. Hypothyroidism is treatable cause of weight gain, menstrual irregularities, infertility, pericardial effusion and dyslipidemias. High index of suspicion is required for thyroid disorders, in special population like young, middle aged females, pregnant females, patients with arrhythmias. Early Diagnosis, Prompt treatment, Regular follow up with thyroid function tests, accordingly change in treatment regimen and compliance to treatment have significant role in thyroid disorders and their prognosis.

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INTRODUCTION

Once diabetes is excluded, thyroid diseases constitute the main bulk of endocrine problems. Thyroid diseases presents with excess hormonal activity, with symptoms due to under production of the hormone or with a swelling due to a neoplastic process or due to the pressure effects. In the present study, clinical profiles of patients with various thyroid disorders are studied in which incidence of thyroid disorders, different symptoms and signs of presentation, treatment and follow up are included.

MATERIALS AND METHODS

One fifty patients thyroid disorder, newly diagnosed or existing cases who are currently symptomatic and/or taking irregular treatment are studied at tertiary care centre. Cases excluded from study are all existing cases of thyroid

disorders who are asymptomatic and on regular treatment, subclinical hypothyroidism, subclinical hyperthyroidism, known case of ischaemic heart disease, valvular heart disease, hypertensive heart disease, cardiomyopathy, congenital heart disease, tubercular and infective pleural effusion. Investigations like serum lipid profile, thyroid function test by ultrasensitive ELISA, electrocardiography, 2D echocardiography, ultrasound neck. Patients of hypothyroidism have started treatment with Tb. Levothyroxine, according to TSH and of hyperthyroidism with Tb. Carbimazole, Tb. Propranolol, Tb. Propylthiouracil accordingly All patients included in study followed up after 2 months (8 weeks) for thyroid function test and 2DEchocardiography, wherever indicated.

RESULTS AND DISCUSSION

In the present study, total 150 cases of thyroid disorders included are categorized into –

- Hypothyroid
- Hyperthyroid
- Euthyroid but presented with Thyroid Swelling (Nodular Disease).

\*Corresponding author: Dr. Shubhangi Vithal Dhadke,  
Dr. Vaishampayan Memorial Government Medical College, Solapur,  
Maharashtra, India.

**Table 1. Age wise and Sex wise Distribution**

Age (yrs)	Female	Male	Total	Percentage
13 – 20	22	04	26	17.33 %
21 – 30	27	09	36	24 %
31 – 40	35	10	45	30%
41 – 50	19	05	24	16 %
51 – 60	09	02	11	7.33 %
>60	08	00	08	5.33 %
Total	120	30	150	100 %

As shown in Table 1, 120 (80%) are females and 30 (20 %) are males. Male : Female is 1 : 4. Most common age group is 31–40years, 45 cases (30%).

**Table No. 2 Age wise Distribution of Cases**

Age (yrs)	Hypothyroid	Hyperthyroid	Euthyroid (Nodular Disorder)	Total
13 – 20	15	07	04	26
21 – 30	18	10	08	36
31 – 40	28	11	06	45
41 – 50	17	04	03	24
51 – 60	08	03	-	11
>60	07	-	01	08
Total	93 ( 62%)	35 ( 23.33%)	22 (14.67%)	150

As shown in Table 2, Hypothyroid are most common include 93 cases (62%) and Hyperthyroid include 35 cases (23.33%). Nodular disorder found in 14.67% i.e. 22 cases. Hypothyroid : Hyperthyroid is 2.66 : 1.

**Table 3. Distribution of Cases in Females**

Age (yrs)	Hypothyroid	Hyperthyroid	Euthyroid (Nodular Disorder)	Total
13 – 20	14	05	03	22
21 – 30	13	08	06	27
31 – 40	21	09	05	35
41 – 50	14	03	02	19
51 – 60	06	03	-	09
>60	07	-	01	08
Total	75 (62.5%)	28 (23.33%)	17 (14.17%)	120

As per Table 3, out of 120 females, 75 are Hypothyroid i.e. (62.5%) and 28 are Hyperthyroid (23.33%), Hypothyroid : Hyperthyroid is 2.68 : 1

**Table 4. Symptomatology of Hypothyroidism**

S.No.	Symptoms	Females (75)	Males (18)	Total (93)	Percentage
1.	Generalized weakness and Lethargy	43	08	51	54.84%
2.	Weight Gain	33	05	38	40.86%
3.	Dry Skin	28	05	33	35.48%
4.	Cold Intolerance	09	05	14	15.05%
5.	Hoarseness of Voice	19	06	25	26.88%
6.	Constipation	08	02	10	10.75%
7.	Breathlessness	07	02	09	9.68%
8.	Poor memory and concentration	14	03	17	18.28%
9.	Thyroid swelling	27	05	32	34.41%
10.	Menorrhagia	09	-	09	9.68%
11.	Oligomenorrhea	08	-	08	8.60%
12.	BOH (Bad Obs. History) and Infertility	04	-	04	4.30%

According to table no. 4, out of 93 Hypothyroid cases, most common presenting complaint is Generalized weakness & Lethargy found in 51 (54.84%) patients.

**Table 5. General Examination in Hypothyroidism**

S.No.	Signs	Females (75)	Males (18)	Total (93)	Percentage
1.	Dry Skin	38	08	46	49.46%
2.	Peripheral, Non pitting, Oedema	25	05	30	32.26%
3.	Bradycardia	18	04	22	23.65%
4.	Delayed DTR Relaxation	23	06	29	31.18%
5.	Carpal Tunnel Syndrome	-	-	-	-
6.	Hypertension	17	03	20	21.50%
7.	Pallor	20	03	23	24.73%
8.	Goiter	37	07	44	47.31%
9.	Tachycardia	04	-	04	4.30%

As shown in table no. 5, out of 93 cases of Hypothyroidism, most common finding on General examination is Dry Skin in 46 cases (49.46%) followed by other common signs like Goitre (47.31%)

**Table 6. Symptomatology of Hyperthyroidism**

Symptoms	Females (28)	Males (7)	Total (35)	Percentage
Tremulousness	16	04	20	57.14%
Palpitations	14	03	17	48.57%
Irritability, Hyperactivity	06	01	07	20%
Heat Intolerance	05	-	05	14.29%
Fatigue & Weakness	16	01	17	48.57%
Weight Loss	10	03	13	37.14%
Diarrhea	-	-	-	-
Oligomenorrhea	03	-	03	8.57%
Thyroid Swelling	10	02	12	34.28%

As per table no.6, out of 35 Hyperthyroid patients in the study, Tremulousness is the most common symptom seen in 20 patients (57.14 %), followed by Palpitations & Fatigue, Weakness seen in 17 cases (48.57%) each.

**Table 7. General Examination in Hyperthyroidism**

Sign	Females (28)	Males (7)	Total (35)	Percentage
Tremors	18	04	22	62.86%
Tachycardia	14	03	17	48.57%
Warm, moist Skin	07	01	08	22.86%
Ophthalmopathy	01	-	01	2.86%
Proptosis	07	01	08	22.86%
Goiter	16	03	19	54.28%
Hypertension	03	-	03	8.57%

According to table no.7, most common finding on general examination is Tremors seen in 22 cases (62.86%) patients. Tachycardia is found in 17 cases (48.57%).

**Table 8. ECG Findings in Hypothyroidism**

ECG	Female (75)	Male (18)	Total (93)	Percentage
Low voltage complexes	12	02	14	15.05%
Bradycardia	18	04	22	23.65%
ST-T changes & T wave Inversion	10	03	13	13.98%
Atrial Fibrillation	02	-	02	2.15%
Sinus tachycardia	02	-	02	2.15%

According to table no.8, most common ECG Abnormality in Hypothyroid patients found is Sinus Bradycardia seen in 22 cases (23.65%).

**Table 9. ECG Findings in Hyperthyroidism**

ECG Finding	Females (28)	Males (7)	Total (35)	Percentage
Sinus Tachycardia	6	3	9	25.71%
SVT	4	-	4	11.43%
AF	4	-	4	11.43%
ST-T Changes	2	-	2	5.71%

As shown in table no.9, Sinus Tachycardia is most common ECG abnormality in Hyperthyroid patients, seen in 9 cases (25.71%).

**Table 10. 2-D Echo Findings in Thyroid disorders**

2 D Echo Finding	Hypothyroid (93)	Hyperthyroid (35)	Euthyroid (22)	Total(150)
Systolic Dysfunction	2	1	-	3
Diastolic Dysfunction	18	-	-	18
Mild	12	-	-	-
Moderate	4	-	-	-
Severe	2	-	-	-
Pericardial Effusion	23	-	-	23
Mild	13	-	-	-
Moderate	6	-	-	-
Severe	4	-	-	-
Increased S Thickness	6	-	-	6
Chamber Enlargement	1	1	-	2
Total	50	2	-	52

As per table no.10, out of 93 hypothyroid patients, 2 D Echo abnormality is seen in 50 patients. Most common is Pericardial Effusion found in 23 cases (24.73%), followed by Diastolic dysfunction is seen in 18 cases (19.35%).

**Table 11. Lipid Profile In Thyroid Disorders**

Parameters	Hypothyroid (93) (Mean ± SD)	Hyperthyroid (35) (Mean ± SD)	Euthyroid (Nodular) (22) (Mean ± SD)	Significance Value
Total Cholesterol (mg/dL)	209.78±24.84	143.23±8.41	152.63±12.33	1) t = 15.39#, p<0.01* 2) t = 10.39###, p<0.01*
HDL-C (mg/dL)	41.10±05.98	44.23±6.36	45.86±9.50	1) t = 1.17#, p>0.05** 2) t = 1.56##, p>0.05**
LDL-C (mg/dL)	144.30±9.50	93.11±9.63	103.68±15.48	1) t = 26.85#, p<0.01* 2) t = 15.58###, p<0.01*
Sr. Triglycerides (mg/dL)	142.81±16.10	130.11±14.64	104.36±27.19	1) t = 4.04#, p<0.01* 2) t = 8.58###, P<0.01*

Unpaired 't' test, \* p<0.01 – significant, \*\*p>0.05 – non significant, # - comparison of hypothyroid and hyperthyroid, ## - comparison of hypothyroid and euthyroid (nodular). As shown in table no. 11, Total cholesterol, LDL-C, Sr. Triglycerides levels are significantly higher in hypothyroid patients, as compared to hyperthyroid and euthyroid (nodular) patients. (p<0.01).

**Table 12. Ultrasonography Neck (Thyroid) Findings**

USG Finding	Hypothyroid (93)	Hyperthyroid (35)	Euthyroid (Nodular) (22)	Total (150)
Diffuse Enlargement of Lobe	10	03	-	13
Colloid Goitre	18	02	03	23
Colloid Goitre with Diffuse enlargement of lobe	12	02	01	15
Goitrous Enlargement with Cystic Degeneration	06	03	02	11
Solitary nodule	02	02	11	15
Multinodular Goitre	-	07	01	08
Malignancy	-	-	04	04
Total	48	19	22	89

As per table no. 12, most common USG finding in thyroid disorder is Colloid goiter seen in 23 cases (15.33%), out of which 18 are hypothyroid.

## Treatment and Follow up

**Table 13 (a). Treatment and Follow up of Hypothyroid Cases**

Sr.TSH Level (mIU/L)	No. of Patients (93)				
	Before Treatment	Response to Treatment after 8 wks (TSH levels after 8 wks) mIU/L			
		<4.25	4.25-20	20-40	>40
4.25-20mIU/L	46	10	36	-	-
20-40 mIU/L	27	-	13	14	-
>40 mIU/L	20	-	-	07	13
Total	93	10	49	21	13

According to Table no. 13(a), 93 patients of hypothyroidism are treated with L- thyroxine according to TSH levels and symptoms and followed up after 8 weeks for Thyroid Function Test. Out of 46 patients with TSH between 4.25 to 20 mIU/L, after 8 weeks treatment, TSH levels of 10 patients reduced to <4.25 mIU/L and of 36 patients remained in same range of 4.25 to 20mIU/L.

**Table 13 (b). Treatment and Follow up Of Hypothyroid Cases**

(n = 93)	Before Treatment (Mean ± SD)	After 8 wks Treatment (Mean ± SD)	Significance Value
FT-3 (pg/mL)	0.92±0.22	1.21±0.20	(35.97)# p<0.01*
FT-4 (ng/dL)	0.36±0.13	0.48±0.13	(35.23)# p<0.01*
TSH (mIU/L)	25.22±15.54	20.04±13.50	(15.95)# p<0.01*

# paired 't' test, \* p<0.01 – significant

Thus, as shown in Table no 13(b), TSH value of 93 hypothyroid significantly decreased after treatment as compared to values before treatment (p<0.01) and Free T3 and Free T4 levels are significantly increased after treatment. (p<0.01)

**Table 14. Treatment and Follow up Of Hyperthyroid Cases**

n = 35	Before Treatment (Mean ± SD)	After 8 wks Treatment (Mean ± SD)	Significance Value
FT-3 (pg/mL)	9.806±2.564	6.525±1.956	(15.39)# p<0.01*
FT-4 (ng/dL)	6.369±2.440	4.038±1.830	(16.87)# p<0.01*
TSH (mIU/L)	0.078±0.043	0.143±0.073	(8.07)# p<0.01*

#paired 't' test, \* p<0.01 – significant

As per Table 14, 35 hyperthyroid patients treated with Tb.Carbimazole, Tb. Propranolol and Tb.Propylthiouracil (in ANC patients) and Thyroid Function test repeated after 8 weeks.

Free T3 and Free T4 levels are significantly reduced and TSH levels are significantly increased after treatment. (p<0.01)

## DISCUSSION

In the present study, male: female is 1 : 4. Jeelani RG (2009) found male : female as 1 : 4.46 in hypothyroid patients. Most common age group is 31 – 40 years, 45 cases (30%). Similar results seen by Samanta BB, have most common age group is 31 – 45 years having 40% cases of hypothyroidism. Hypothyroid are most common include 93 cases (62%) in which most common presenting complaint is Generalized weakness and Lethargy found in 51 (54.84%) cases. Correlating with present study, Dogra and Dua (2005) found lethargy (65.62%) as prominent symptoms and Samanta BB found, fatigue and lethargy in 46.61% as prominent symptom. In the present study of 93 cases of Hypothyroidism, most common finding is Dry Skin in 46 cases (49.46%) correlating with Dogra and Dua (2005) - 56%cases, Jeelani (2009) 66.47%, Samanta BB<sup>2</sup>40% cases and Raju *et al.* (2008), Chaurasia *et al.* (2008) 69.23%. Goitre is seen in 44 (47.31%) cases, correlating with Raju *et al.* (2008) in 26.16% cases, Jeelani RG (2009) in 34.09% cases. Bradycardia seen in 22 cases (23.65%), similar to finding of Samanta BB asbradycardia seen in 16.6% cases but Jeelani (2009) found bradycardia in 51.58% may be due to variation in sample size.

In the present study, Hypertension seen in 20 cases (21.50%). Jeelani (2009), hypertension in 10.27%. Out of 35 Hyperthyroid patients, Tremulousness is the most common symptom seen in 20 patients (57.14%), thyroid swelling in 12 patients (34.28%). These findings correlates with study done by Zargar *et al.* (2000), in hyperthyroid patients Tremulousness is seen in 44.8% cases In the present study, most common ECG Abnormality in Hypothyroid patients is Sinus Bradycardia seen in 22 (23.65%) cases. Similarly, Samanta BB in 13.5% cases. Out of 93 hypothyroid patients, 2 D Echo abnormality is seen in 50 patients. Most common is Pericardial Effusion found in 23 (24.73%) cases, followed by Diastolic dysfunction is seen in 18 (19.35%) cases. Raju *et al.* (2008), Chaurasia *et al.* (2008) found pericardial effusion in 40.00% patients, early diastolic dysfunction in 23.08%.

### In the present study

Total cholesterol (209.78 ± 24.84), LDL-C (144.30± 9.50), Sr. Triglycerides (142.81 ± 16.10) levels are significantly higher

in hypothyroid patients, as compared to hyperthyroid and euthyroid (nodular) patients. (p<0.01). Similarly, Raju *et al.* (2008) found abnormal lipid profile in 73.17% cases. Jeelani (2009) found hyperlipidemia in 46.61% hypothyroid patients. In the present study, out of 93 hypothyroid patients, colloid goiter seen in 18 patients (19.35%), diffuse enlargement of lobe in 10 (10.75%) and colloid with diffuse enlargement of lobe in 12 (12.90%) cases. Similar results found in study of Jeelani RG (2009)<sup>1</sup> found diffuse thyroid swelling in 34.09% patients, thyroid nodule in 12.64% and colloid goiter in 11.51% patients of hypothyroidism. In the present study, 93 patients of hypothyroidism are treated with L- thyroxine according to TSH levels and symptoms and followed up after 8 weeks for Thyroid Function Test. Mean TSH level before treatment is 25.22 ± 15.54, which is decreased after 8 weeks to 20.04 ± 13.50, which is significant statistically. (p<0.01, paired 't' test) Similarly, mean FT-3 and mean FT-4 levels before treatment are 0.92±0.22 and 0.36 ± 0.13, respectively, which are increased to 1.21 ± 0.20 and 0.48 ± 0.13, which are also statistically significant. (p<0.01, paired 't' test)

Out of 23 hypothyroid patients having pericardial effusion, After 8 weeks treatment of L-Thyroxine, 4 cases showed complete resolution. Correlating with present study, Rawat B, Satyal (2003), Kerber and Sherman (1975) Khaleeli and Menon (1982) have similar results in resolution of pericardial effusion after treatment of hypothyroidism. In the present study, 35 hyperthyroid patients are treated with Tb.Carbimazole, Tb. Propranolol and Tb.Propylthiouracil (in ANC patients) and Thyroid Function test repeated after 8 weeks. Mean TSH level before treatment is 0.078 ± 0.043 which is increased significantly after treatment to 0.143 ± 0.073, which is statistically significant.(p<0.01, paired 't' test) Similarly, mean FT-3 and mean FT-4 levels before treatment are 9.806 ± 2.564 and 6.369 ± 2.440, respectively, which are decreased to 6.525 ± 1.956 and 4.038 ± 1.830, which are also statistically significant. (p<0.01, paired 't' test)

### Conclusion

In India, prevalence of thyroid disorder is increasing and there is gradual shift from Iodine deficiency disorder to Auto Immune Thyroid Disorder (AITD). In the present study, Hypothyroidism is more common, especially in females, in age group of 31-40 years. Early Diagnosis, Prompt treatment, Regular follow up with thyroid function tests, accordingly change in treatment regimen and compliance to treatment have significant role in thyroid disorders and their prognosis.

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