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Original Research Article.

To Study the Cardiovascular Manifestations of Hypothyroidism and Their Response to Levothyroxine in Hilly Region of Northern India

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ABSTRACT

Background: Hypothyroidism is a syndrome characterized by clinical and biochemical manifestations of thyroid hormone deficiencies in target tissues. It has multi systemic involvement among which cardiovascular manifestations are well known.

Aims and Objective: This study was done to detect and analyze the cardiovascular manifestations of hypothyroidism and their response to treatment with Levothyroxine.

Material and Methods: This study was carried out in the Department of Medicine, SGRRIM & HS, Dehradun. Total 200 patients of newly diagnosed hypothyroidism where analyzed for cardiovascular manifestations and response of levothyroxine therapy was analyzed after six months of initiation of therapy.

Results and Conclusion: This study included a total of 200 newly diagnosed patients of hypothyroidism. There was a female preponderance (80%) and most common in 4th decade of life. After 6 months of treatment with Levothyroxine, Cardiovascular manifestations showed significant improvement.

Keyword: Hypothyroidism, Cardiovascular Manifestations, Levothyroxine.

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INTRODUCTION

Hypothyroidism is a syndrome characterized by clinical and biochemical manifestations of thyroid hormone deficiencies in target tissues.[1] Thyroid disorders are among the commonest endocrine disorders worldwide.

According to various studies on thyroid diseases, it has been estimated that about 42 million people in India are suffering from thyroid diseases.[2]

Hypothyroidism is characterized by a broad clinical spectrum ranging from an overt state to myxedema, end organ effects and multi-system failure to an asymptomatic or subclinical hypothyroidism (raised TSH but normal T4 & T3).[3]

Cardiovascular complications are some of the most profound and reducible clinical findings associated with increased cardiovascular mortality and morbidity. The dysfunction ranges from functional systolic/diastolic dysfunction to overt failure and coronary artery disease.[4] Hypothyroidism has a multi-systemic involvement among which CV manifestations are well known but one of the less researched upon topics.

AIMS & OBJECTIVES

This study was aimed at detecting and analyzing the cardiovascular manifestation of hypothyroidism and their response to six months treatment with levothyroxine.

MATERIALS AND METHODS

This study was carried out in the Department of Medicine, SGRRIM & HS, Dehradun, Uttarakhand (India) on 200 patients between December 2016 to December 2017.

Inclusion Criteria

- All Newly diagnosed patients of hypothyroidism.

Exclusion Criteria

- Old cases of hypothyroidism on drug treatment.
- Known cases of CHD, HTN, DM, IHD, Cardiomyop- athy, COPD, Pregnancy and other endocrine disorders.
- Patients taking medications like steroids, beta-blockers, lithium, oral contraceptives pills.

Study Design

- A detailed history taking & clinical examination was done (particular reference to hypothyroidism)
- CBC, TSH (3rd Generation), FT4, FT3, RBS, Lipid Profile, USG-thyroid gland, ECG, Echocardiography etc.
- Patients were treated with Levothyroxine (25- 100µ g/d) depending upon serum TSH Level.
- FT3, FT4 & TSH 3ml of early morning fasting blood sample was collected and tested using ELISA method.
- Patients were reinvestigated after taking six months levothyroxine therapy.

Table 1: Age & Sex distribution

AGE	MALE		FEMALE		TOTAL	
Years	No.	%	No.	%	No.	%
21-30	10	25	36	22.5	46	23
31-40	24	60	90	56.25	114	57
41-50	4	10	24	15	28	14
51-60	2	5	10	6.25	12	6
Total	40	100	160	100	200	100

Table 2: Symptomatology

Symptoms	No. (Total patients 200)	%
Lethargy	182	91
Hoarseness of voice	40	20
Dyspnoea	60	30
Weight gain	170	85
Constipation	148	74
Cold intolerance	164	82
Depression	60	30
Dry skin	130	65
Menstural symptoms	101	50.50

Table 3: General Examination Findings

Signs	No. (Total patients 200)	%
BMI >25	180	90
Dry skin	134	67
Pallor	146	73
Edema	82	41
Goitre	40	20
Bradycardia	105	52.5

Table 4: Systemic Examination

	No. (Total patients 200)	%
Cardiomegaly	22	11
Diminished Heart Sounds	151	75.50
Delayed Ankle Jerk	128	64

Table 5: ECG Findings

	MALE		FEMALE	
	First Visit	After six months levothyroxine therapy	First Visit	After six months levothyroxine therapy
Normal	4	11	15	36
A F	2	1	5	2
Bradicardia	22	16	122	78
Low Voltage Complexes	34	23	137	110
LBBB/RBBB	2	2	0	0

Table 6: 2 D- Echocardiography Findings

	MALE		FEMALE	
	First Visit	After six months levothyroxine therapy	First Visit	After six months levothyroxine therapy
Normal	21	30	92	122
Diastolic Dysfunction	17	8	65	28
Systolic Dysfunction	0	0	2	1
Pericardial Effusion	6	0	10	0
Increased IVS Dimension	3	1	7	4

RESULTS AND DISCUSSION

This study showed female preponderance (80%) as well as high prevalence in age group 31-40 yrs. Our finding is consistent with Harrison's principle of internal medicine (19th Ed.)[5] and a similar study by Shashi-et- al[6] & Vishwanath-et-al.[7]

Lethargy was the most common presenting symptom seen is 91% Cases followed by weight gain (85%) and cold intolerance (82%). Dry skin, Constipation & hoarseness of voice along with menstrual symptoms & depression were also observed.

20% Patients presented with goitre which is consistent with study done by Shashi-et-al (2006)[6] and Vishwanath et-al (2008).[7]

Abnormal ECG finding such as bradycardia (72%), low voltage complexes (85.5%) cases showed significant improvement after Levothyroxine treatment. Echo was normal in 56.5% cases, 8% Cases had pericardial effusion, 41% had diastolic dysfunction & 5% had ↑ IVS dimension. Around 76% Patients showed normal echo parameter after six months treatment with Levothyroxine.

CONCLUSION

Hypothyroidism is very common in females (80%) and most commonly presents in age group (31-40 yrs). Most common symptom is lethargy followed by weight gain & cold intolerance. During examination, bradycardia, weight, gain, delayed ankle jerk were the common findings. This study reflects the importance of early diagnosis and treatment with levothyroxine to prevent cardiovascular complication.

REFERENCES

1. J. Larry Jameson and Leslie J. De-Groot- Endocrinology, Adult and paediatric pg no.1607(6th edition)

2. Unnikrishnan AG, Usha V Menon, Thyroid disorders in India: An epidemiological perspective. Indian Journal of Endocrinology and Metabolism; 2011; 15(Supplement 2); S78-S81.

3. Ambika Gopalakrishnan Unnikrishnan, Sanjay Kalra, Rakesh Kumar Sahay, Ganapathi Bantwal, Mathew John, Neeraj Tewari. Prevalence of hypothyroidism in adults: An epidemiological study in eight cities of India. Indian journal of Endocrine and metabolism 2013;17:647-52.

4. Rawat B, Satyal A. An echocardiographic study of cardiac changes in hypothyroidism and response to treatment. Kathmandu University Medical Journal. 2003.Vol 2.3(7):182-87

5. Harrison's Principles of Internal Medicine (19th Ed., 2289-90)

6. Shashi-et-al. A study of cardiovascular changes in newly detected hypothyroid patients (2006). (RGUHS)

7. Vishwanathan et al. Cross sectional study of cardiovascular manifestations of hypothyroidism (2007). (RGHUS)

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