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A CRITICAL MANIFESTATION OF HYPOTHYROIDISM W.S.R. TO ECG INDIFFERENT *DEHAPRAKRITI*

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ABSTRACT

Background: Hypothyroidism is the clinical syndrome that results from decreased secretion of thyroid hormones from the thyroid gland. Hypothyroidism is associated with increased cardiovascular morbidity and mortality. Cardiac manifestations of hypothyroidism are quite dramatic and include bradycardia, diastolic hypertension, diastolic dysfunction, pericardial effusion, systolic dysfunction. Cardiac abnormalities associated with hypothyroidism attracted great deal of investigational effort. There are only few studies done in our country to access CVS Parameters in hypothyroid patient Thus, Hypothyroidism is known to cause reversible cardiac dysfunction in humans. **Objectives**: The objectives of the study are to study various cardiovascular manifestations and abnormalities in ECG, reassessing the need of treatment in milder form of disorder and to find out its Prevalence in different *dehaprakriti* with ECG Changes of hypothyroid patient. **Methodology:** This study was a hospital based prospective observational study comprising 50 hypothyroid patients attending the department of *Kaychikitsa*, SAM and Hospital, Nagpur, between July, 2015to June, 2016.**Result:** In this Study**,** Most cases found in the age group of 36-40 yrs. The female population constituted about 72% of the total. In case of Sex distribution, 72% of female with ECG changes in Hypothyroid Patient remains male as 28%.Normal ECG is found in 32% of patients. Bradycardia is most common finding seen in 22 patients counting for 44%. Low voltage complexes are seen in 36 % patients. As ECG Changes in different *deha Prakriti* with Bradycardia was seen in 44% of study Group and low voltage complex and STT changes mostly found in *Kaphapradhan Prakriti* and followed by *Pittapradhan* and *Vatapradhan* respectively.
Conclusion: In this study consisting of 50 new hypothyroid Patients bradycardia is the most common abnormal finding followed by low voltage complexes in ECG and which is mostly found in *Kaphapradhan Prakriti.*

Keywords: Cardiac, bradycardia, diastolic hypertension, diastolic dysfunction, pericardial effusion, systolic dysfunction, *Dehaprakriti.*

INTRODUCTION

Cardiovascular manifestations of hypothyroidism include reduced myocardial contractility leading to reduced stroke volume, reduced pulse rate leading to bradycardia, increased peripheral resistance accompanied by hypertension, particularly diastolic and pericardial effusions in upto 30% but rarely compromise cardiac function.[1] Thyroid hormones enhance the responses to catecholamines that are mediated by beta adrenergic receptors while inhibiting those mediated by alpha adrenergic receptors. This dual control is impaired in hypothyroidism or thyrotoxicosis.

In hypothyroidism, abnormalities in diastolic relaxation are thought to be due to decreased activity of sarcoplasmic reticulum calcium ATPase. Most consistent cardiac abnormality recognized in subclinical hypothyroid patients is LV diastolic dysfunction characterized by slowed myocardial relaxation and impaired early ventricular filling at rest as well as with exercise.

In hypothyroidism, there is decrease in the basal, average and maximal heart rates. Mechanism by which these changes occur may be related to their effects on sodium pump density and enhanced sodium and potassium permeability. All of them returned to normal after treatment [2]

Cardiac excitability is altered by thyroid hormones leading to arrhythmias. In this regard atria are more sensitive than ventricles. The atrial preference may be due to high beta adrenergic receptor density. In hypothyroidism, AV blocks, Sinus Bradycardia have been reported. Electrocardiographic findings in hypothyroidism include Sinus Bradycardia, Low voltage complexes, atrioventricular and interventricular block and QT prolongation, incomplete or complete RBBB, Ventricular tachycardia.

Most of cardiac manifestations are reversible with adequate and timely thyroid therapy. Early diagnostic approach in patients with thyroid dysfunctional states is important for avoidance of cardiac complications that accompany these disorders [3]Thus, the need of the study is to assess the cardiovascular parameters in newly discovered hypothyroid patients by ECG.

The symptoms of hypothyroidism are nonspecific. There are no specific symptoms that all hypothyroid patients will always have and its manifestation varies from person to person. *Ayurvedic* system of medicine is one of the oldest healthcare systems which adopts a personalized approach towards the patient by means of *Prakriti*[4].

Prakriti is the psycho-somatic constitution of an individual, which is determined at the time of conception and later, influenced by environmental factors like diet and regimen of mother, race, age etc. According to *Ayurveda*, an individual's basic constitution to a large extent determines his predisposition to diseases. This basic constitution, *Prakriti* gives vital insights into the prognosis of any disease, the appropriate therapy, and also the lifestyle, which is best, suited for him.

As our first step in investigating the link between ECG changesand Hypothyroidism, collected data by an observational Cross-sectional study about Hypothyroidism using Thyroid Profile and Electrocardiogram will guide to know the Cardiac manifestation of disorder also, the assessments of *DehaPrakriti*with their special features of different hypothyroid patient and it will help in taking preventive measures, because thyroid-related problems affect nearly all systems of the body.

MATERIALS AND METHODS

This study was a hospital based prospective observational study comprising 50 hypothyroid patients attending the department of *Kaychikitsa*, SAM and Hospital, Nagpur between July 2015to June 2016.

Sample Size: Diagnosed 50 Cases of new hypothyroidism

Table 1:

Age in years	Male		Female		Total	
	No.	%	No.	%	No.	%
20-25	2	14.2	4	11.11	6	12
26-30	4	28.6	4	11.11	8	16
31-35	4	28.6	12	33.33	16	32
36-40	4	28.6	16	44.45	20	40
Total	14	100	36	100	50	100

Inclusion Criteria:

Hypothyroid patients which include

a) Age of Patient between 20 to 40 years.

b) Newly diagnosed patients.

c) Detected hypothyroid patients not on treatment

d) Patients on L-thyroxine for less than 4 months.

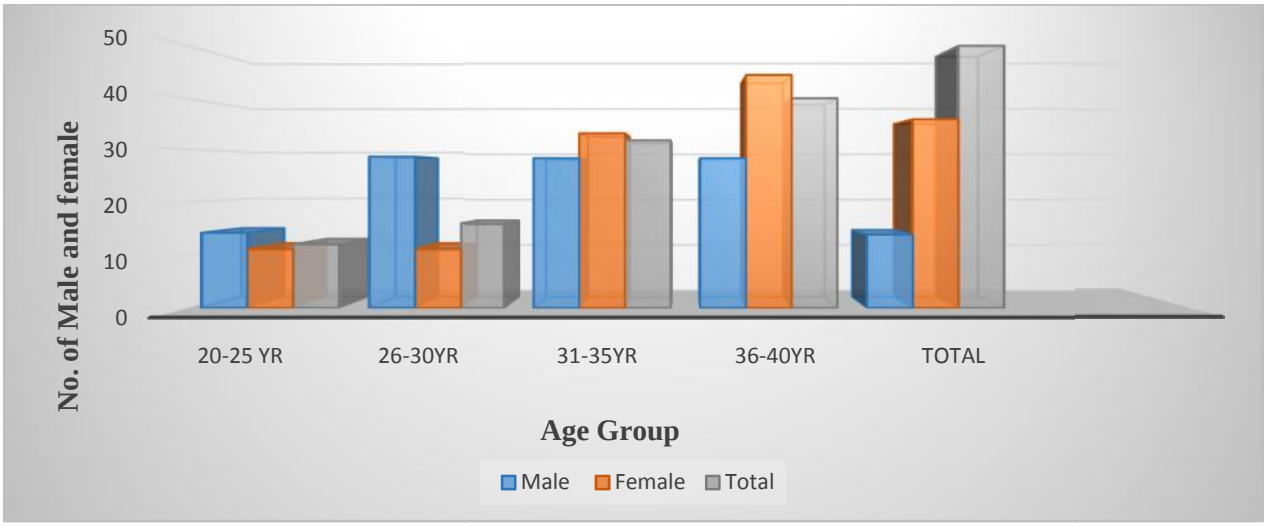
Exclusion criteria:

1) Patients with known cardiac disease.

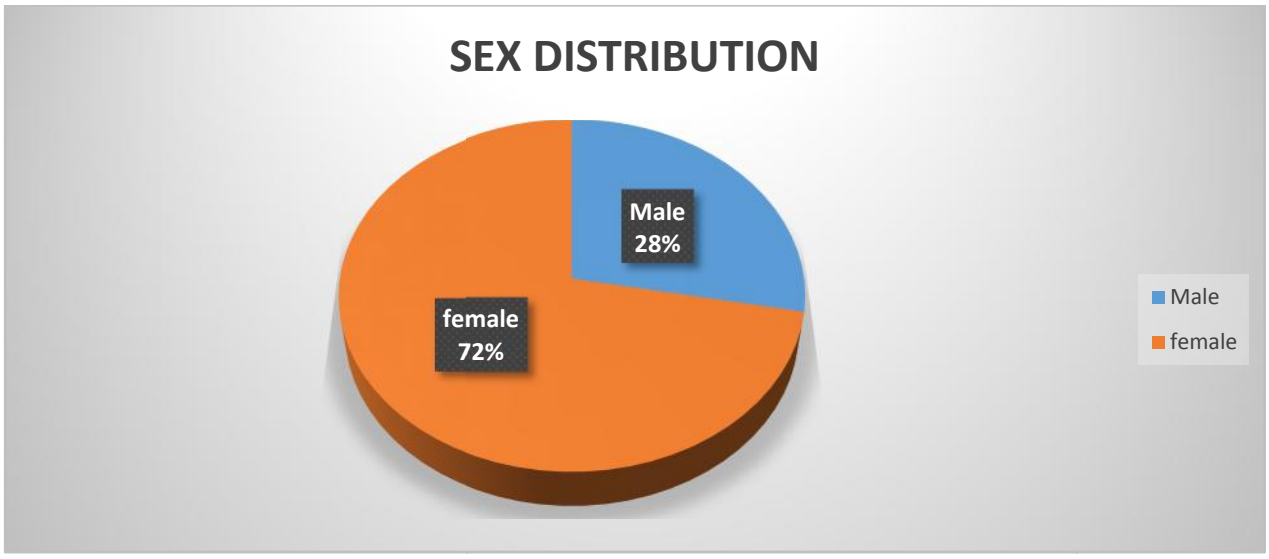
2) Patients with COPD, severe anemia, diabetes mellitus or any other endocrinal disorder.

3) Patients taking medications that alter the thyroid function like beta-blockers, lithium, OCP's, steroids & alcohol.

AGE AND SEX DISTRIBUTION



Most cases found in the age group of 36-40 yrs. The female population constituted about 72% of the total.



In case of Sex distribution, 72% of female with ECG changes in Hypothyroid Patient remains male as 28%.

Table 2: ECG changes and Hypothyroid Patient

ECG CHANGES	Number of Patient (n =50)	% (Percentage)
1.Normal	16	32
2.Bradycardia	22	44
3.Low voltage Complex	18	36
4.STT Changes	14	28
5.LBBB	3	6
6.RBBB	5	10

Normal ECG is found in 32% of patients. Bradycardia is most common finding seen in 22 patients counting for 44%. Low voltage complexes are seen in 36 % patients.

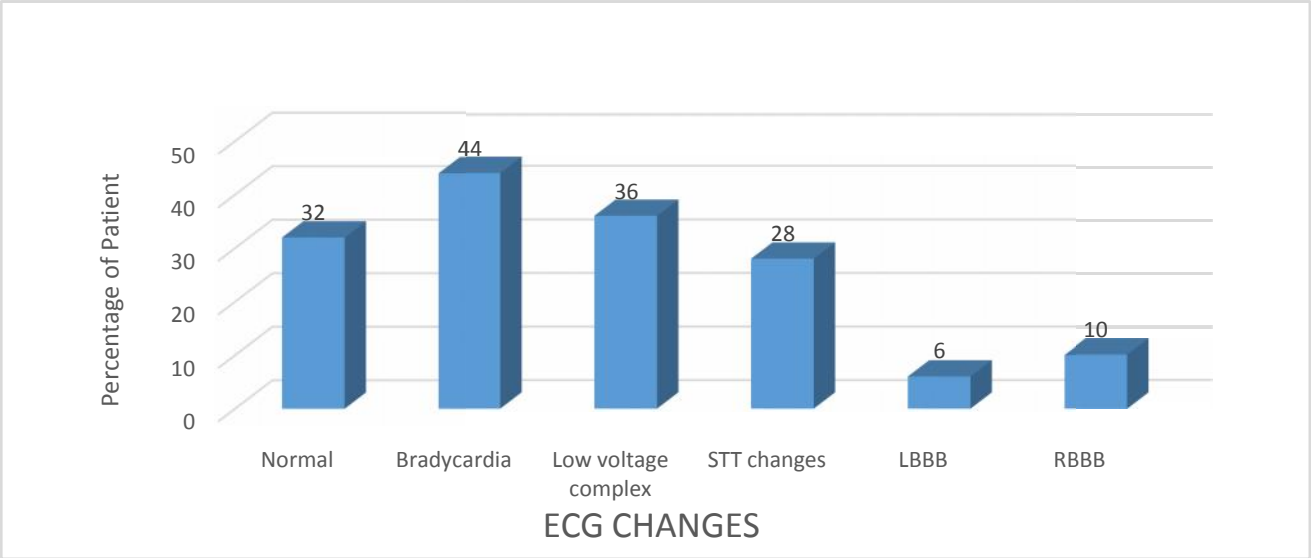
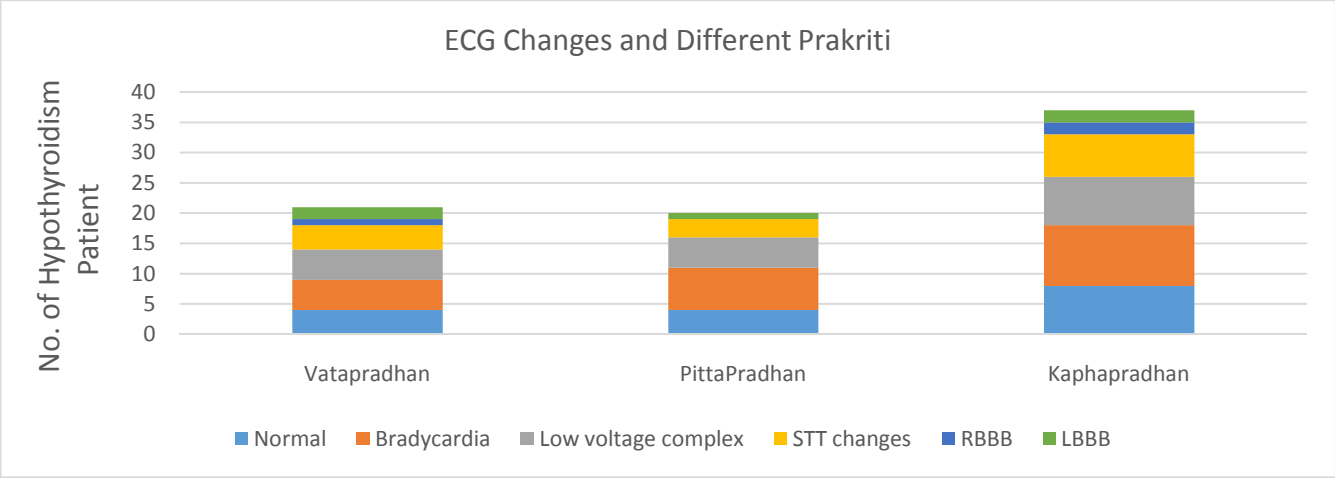


Table 3: ECG changes in different Prakriti.

ECG Changes	Normal (16)	Bradycardia22)	Low Voltage Complex(18)	STT changes(14)	RBBB(3)	LBBB(5)
Vatapradhan	4	5	5	4	1	2
Pittapradhan	4	7	5	3	1	1
Kaphapradhan	8	10	8	7	1	2



ECG Changes in Different *Prakriti*-

As ECG Changes in different *Prakriti* with Bradycardia was seen in 44% of study Group and low voltage complex and STT changes mostly found in *Kaphapradhan Prakriti* and followed by *Pittapradhan* and *Vatapradhan* respectively.

DISCUSSION

The observations made in 50 new cases of hypothyroidism that presented to Department of *Kaychikitsa*, SAMH Nagpur are discussed here and results have been compared with other similar studies.

Age and Sex Distribution.

The age range of the study is between 20-40 years. Most patients belonged to the age groups of 36-40.There were an overall female preponderance over all age groups. The female population constituted about 72% of the total. Similar demographic profile was mentioned in most of medicine text books including Harrison text book of internal medicine.

ECG changes And Hypothyroidism.

ECG is normal in 16 patients (32%). Among abnormal ECG which constitutes 68% of the patients, low voltage complexes present in 36% of patients. On ECG the most common findings were bradycardia, present in 44% of cases,STT changes found in 28% patients. LBBB & RBBB found in 6% & 10% respectively. This finding is consistent with other studies like by R. Varma 2 except conduction disturbances [5] M. H. Nikoo1, M.D. SUMS 2002 also documented sinus tachycardia QT prolongation and also ventricular tachycardia which are not found in our study.

ECG Changes in different *Prakriti* –

Among abnormal ECG Bradiycardia, Low voltage complex and STT changes mostly seen in *Kaphapradhan Prakriti* followed by

Pittapradhan and *vatapradhan Prakriti*. So, we can say that ECG changes mostly seen in *kaphapradhan Prakriti* in hypothyroid patient.

As it is small 50 pt. of pilot study for better picture of ECG changes and *Prakriti* involvement needs large no. of Sample size and time span also .Study have lot of space of work in future with the aspect of *Aahar-vihar, Rasayana* on pt. with cardiac manifestation in hypothyroidism.

CONCLUSION

In this study consisting of 50 new hypothyroid Patients bradycardia is the most common abnormal finding followed by low voltage complexes in ECG and which found in mostly *KaphapradhanPrakriti*.

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