

# A Study on Normal Variations in Electrocardiogram in the Adults

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## ABSTRACT

**Background:** We have conducted this study on 400 normal healthy adults, males were 288, Females were 112 and the age group is 20 to 50 years. Electrocardiogram were taken after careful history and clinical examination and after ruling out any cardiac abnormality and other conditions also. The diseases particularly respiratory, electrolyte and endocrinal abnormalities will causes ECG changes. We have excluded symptomatic persons in the study. Aims and Objectives: To study the pattern of Rate, Rhythm, QR's Duration, PR interval, QT duration and ST. T changes which occurs in normal individuals and their relation to age. **Material and Methods:** In our study we have included 400 normal healthy subjects out of 400, 288 were males, 112 were female. We have taken the 12 lead ECG with standardization of 10mm. **Results:** Sinus Bradycardia is observed in 4 persons, tachycardia is observed in 16 subjects. Incomplete RBBB was observed in 8 subjects. **Conclusion:** Healthy individuals may have so many variations in ECG which were considered as with in Normal limits, so understanding normal ECG and deviations in normal individuals is very important to interpret the disease states and treating them.

**Keywords:** Electrocardiogram, PR interval, Bradycardia, Tachycardia.

## INTRODUCTION

The ECG is used to asses cardiac Rhythm and condition of provides information about chamber size also.<sup>[1]</sup> The electrical activity is initiated in SA Node and then to AV node and to from budle of His, from that through the purnkinje system spreads to myocardium.<sup>[2]</sup> The intensity of electrical activity decrease as the distance increase from heart. Hence the electrical activity can be recorded from any part of body. ECG can be taken with the help of frontal plane leads which includes lead I, II, III and AVR, AVL and AVF and horizontal plane leads V1, V2,V3,V4,V5,V6.

The Standard Leads I, II, III forms the triangle which is called as Enthiven's triangle. Rhythm strip is used to read heart rate and rhythm. Cardiac axis is normal if QR's complex is positive in is lead I and II.<sup>[3]</sup>

The aim of the present study is to know the variations of ECG is normal healthy individuals.

## MATERIALS AND METHODS

We have examined four hundred adults who are

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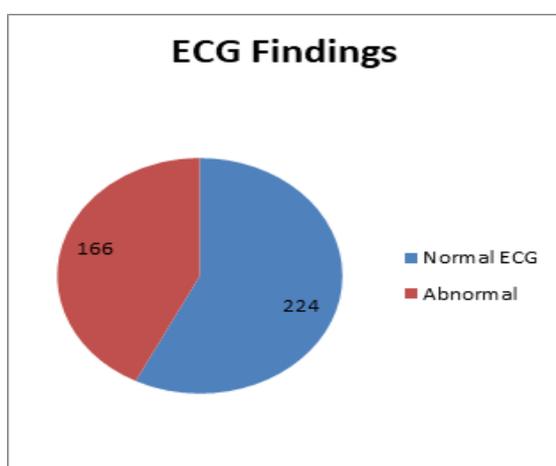
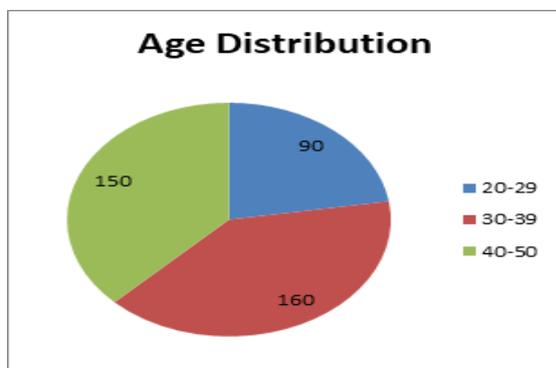
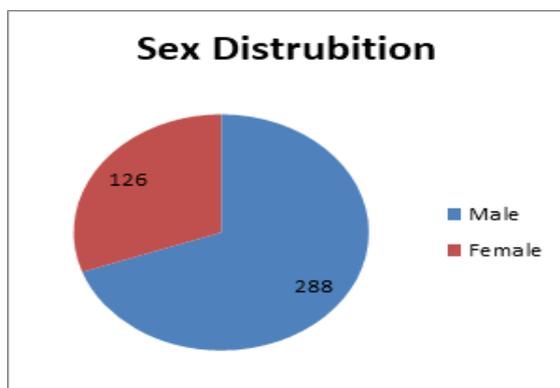
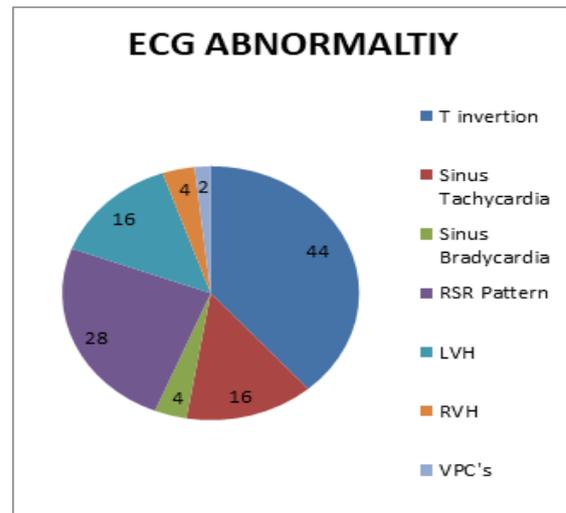
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healthy males were 288, females 112. And the age group is 20 to 50 years. Electrocardiogram were taken after careful history and clinical examination to rule out cardiac, respiratory, electrolyte and endocrinal abnormalities. And investigation done for CBP, FBB, PPBS T3T4TSH, Sr NA, K+. The persons with normal parameters were included is in study smokers were excluded. Persons with COPD and alcoholism which were known to alter ECG changes were also excluded. COPD, alcoholism may cause atrial fibrillation. Persons with obesity which may cause low voltage complex es were also excluded. Asymptomatic congenital heart disease like ASD, history of CAD is also excluded. The ECG with leads L1, L11, L111, AVR, AVI, AVF and V1 to V6 were taken.

## RESULTS

We have examined 400 individual of these 288 males and 126 females, highest age is 50 yrs lowest age is 20 yrs. The heart rate is between 56 and 108 the normal heart rate range is 60-100 beats/ minute and bradycardiac is called when the heart rate is < 60 beats/minute Tachycardiac is called > 100 beats /minute normal sinus rhythm is observed is 224 subjects we also observed that is most young adults were having higher heart rate.

Bradycardiac is observed in 4 persons with age is 45years. 16 individuals were having sinus tachycardiac with ages is 38 years females were 4 and males were 12. PR interval varied between 0.12 sec to 0.22sec (normal is 0.12 to 0.20 sec) QRS duration is between 0.08sec to 0.12sec. most of the individuals were having 0.08sec only. 8 were having incomplete right bundle branch block. The electrical positional of the heart is determined by complexes is AVL and AVF whether they are positive or negative. T wave abnormality is most common abnormality .T Inversion is seen in 44 subjects sinus arrhythmia seen is 60 individuals RSR pattern was seen in 28 persons. Left ventricle hypertrophy is seen in 16 individuals. Right ventricle hypertrophy is seen in 4 persons. Premature ventricular contractions were noted in 2 male persons. Which is benign.



## DISCUSSION

Electrocardiogram is graphic representation of electrical activity of the heart which can be recorded from various parts of the body like limbs and chest. ECG is easily available and one of the best investigations to diagnose Acute myocardial infarction. Rate and rhythm and electrolyte abnormalities can also detected by ECG. The ECG is normal individuals shows many variations from individual to individual which may be normal most of the times, eg: PVC'S incomplete RBBB, and T Inversion.<sup>[4-6]</sup> In cong. heart disease like artial sepal defect which is asympatic most of the times if we detected we can prevent further complications like PAH.<sup>[7-9]</sup> The frequently observed abnormalities are bradycardia, tachycardia other abnormalities like PVC'S, T inversion, incomplete RBBB also observed.

Atrial Fibrilation can also be decteded in sub clinical hypothyrodism. We can also detect pain less infarction in diabetic patients and old age persons. Certain abnormalities are known to occur in normal individuals. They include benign nature like PVC's (Per-mature Ventricular Contraction). The frequently observed abnormalities are Tachycardia, and Bradycardia. Less frequently seen abnormalities are LAD, l 'heart block PVC's, RIIBB. So understanding normal and deviations in normal individuals is very important to interpret the diseased states, treating them and giving the prognosis.

## CONCLUSION

Healthy individuals may have so many variations in Electro Cardiogram which were considered as within normal limits. So, understanding normal Electrocardiogram and deviations in normal subjects is very important to interpret the disease states and treating them.

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