Int J Biol Med Res. 2012; 3(2): 1538-1539

Contents lists available at BioMedSciDirect Publications

International Journal of Biological & Medical Research

Journal homepage: www.biomedscidirect.com

Short report

A Study of Electrocardiogram variations among Agricultural workers in Rural area of East Godavari District, Andhra Pradesh, South India.

Venkata Venu Gopala Raju Srijampana*, Avinash P Tekade

**Assistant Professor; Department of Physiology, Katuri Medical College.*

ARTICLE INFO

Keywords:
Bazett's formula
Corrected QT interval (Qtc)
Sinus Bradycardia

ABSTRACT

To study and estimate the prevalence Electrocardiogram variations among the agricultural workers. Materials and methods: A cross sectional study was conducted in selected agricultural workers of rural area of East Godavari district. One hundred agricultural workers (30-40 yrs old) were included in the study with specific inclusion and exclusion criteria. The study was conducted from May to July 2011 (3 months). Mean and standard deviation values for all the parameters were calculated. QTc was calculated by Bazett's formula and 0.35 sec to 0.43 sec was considered as normal range for QTc. Results: Prolonged QTc (time corrected QT interval) was seen in 25% individuals (n=100). Sinus Bradycardia was found in 3%, (all were aged above 35 yrs). Conclusion: A high prevalence of Prolonged QTc among agricultural workers was found. It is important to understand the normal ECG and its variations among the agricultural workers, in interpretation of the disease states and treating them.

1. Introduction

In India, agricultural workers constitute a sizable segment of rural population and due to their nature of work, they have a limited exposure to health care facilities. Agricultural workers are physically active and their productive period of life is between 30 and 40 yrs. This study was planned to assess the prevalence of ECG variations and their distribution in agricultural workers.

2. Materials and Methods

Agricultural workers aged between 30 and 40 years, belonging to Muramalla and surrounding villages of East Godavari district were taken after careful clinical examination to rule out any cardiac abnormality in particular and other diseases in general. Agricultural workers with more than 10 years of exposure to labour work were considered for the study. Individuals with diabetic, hypertensive status and with habits like smoking and alcoholism were excluded from the study. Ribbon ECG machine (BPL company) was used to record ECG, after normal standardization. Mean and standard deviation values for heart rate, PR interval, QRS interval, QT interval, QTc interval, P axis and QRS axis, were calculated. QTc was calculated by Bazett's formula[1] [2]. Normal range[1,3] for QTc is 0.35 sec to 0.43 sec.

Bazett's formula : $QTc = QT\ interval / \sqrt{RR\ interval}$.

Heart rate less than 60 beats/minute is considered as Sinus Bradycardia(3). Heart rate is calculated from the RR interval[4].

3.Results and Discussion

Mean and standard deviation values for heart rate, PR interval, QRS interval, QT interval, QTc interval, P axis and QRS axis, were shown in Table No.1. Variation & distribution of QTc interval was shown in Table No.2. Prolonged QTc interval(1)(time corrected QT interval) was seen in 25% individuals (n=100). Sinus Bradycardia(3) was found in 3% individuals, all were aged above 35 yrs. ECG intervals vary with age(5) (6) and sex(1). Prolonged QTc interval in agricultural workers was interpreted as a normal variant of ECG(7).

Limitations of this study includes (i) Only male workers were included in the study, (ii) Trained interviewers may have minimized the possible bias regarding smoking and alcohol consumption, (iii) Further investigations and research is needed to exclude other causes of Pronged QTc interval[1].

* Corresponding Author : Dr Venkata Venu Gopala Raju Srijampana
Assistant Professor
Department of Physiology
Katuri Medical College
Guntur 522019
Andhra Pradesh, India.
Phone number: 91944042166
Email:jampanas@sify.com

Table No.1: Mean & Standard Deviation Values

Heart rate	Heart rate	PR interval	QRS interval	QT interval	Qtc interval	P axis	QRS axis
Mean	74.64	0.1648	0.082	0.3784	0.415	45.55	42.8
SD#	1.32	0.02	0.01	0.03	0.03	1.57	28.75

SD# Standard deviation

Table No.2: Variation and distribution of QTc Interval (n=100)

Qtc Interval	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47
No. of subjects	2	6	1	3	8	19	9	13	14	9	10	4	2

4.Conclusions

It is important to understand the normal ECG among the agricultural workers, in interpretation of ECG variations with the disease states. A high prevalence of Prolonged QTc (25%) among agricultural workers was found. Now this can be considered as a normal variation in ECG among agricultural workers, as we have taken subjects after careful clinical examination to rule out any cardiac abnormality in particular and other diseases in general.

Acknowledgments

The authors would like to thank Mr K.Raja Gopala Raju for his role in the field work.

5.References

[1] Leo Schamroth. An introduction to Electrocardiography. In: The QT interval. 7th ed. Thomson Press (India) Ltd, 1990, 28-32.

[2] Bazett HC. An analysis of the time relations of electrocardiograms. Heart 1920; 7:353-370.

[3] Galen S.Wagner. Marriots Practical Electrocardiography. In: Cardiac Rhythm. 11th ed. Wolters Kluwer (India) Ltd, 2008, 65-68.

[4] John R. Hampton. The ECG made easy. In: What the ECG is about. 6th ed. Churchill Liivingstone, 2003, 5-6.

[5] Bachman S et al, effect of aging on the electrocardiogram. Am. J. Cardiol 1981; 48, 513.

[6] Manning G.W. Electrocardiography in the selection of Canadian Air Force, A review, Circulaion1954; 10, 401.

[7] Edeikew J. Elevation of the RS-T segments in the right precardial leads as a probable normal variant. Am. Heart J. 1954; 48, 331.