ELECTRO CARDIOGRAPHIC OBSERVATIONS IN BUFFALOES
(BASE APEX LEAD SYSTEM)

K. Suresh, N. Syamaa Sundar and K. Rajesh

ABSTRACT

In clinical veterinary practice, even after the most painstaking physical examination, accurate diagnosis of cardiac diseases is often very difficult to arrive at. One of the tools for studying the disease conditions of the heart is electrocardiography (ECG) on which literature pertaining to buffaloes is very limited (Upadhyay and Rao, 1986). Electrocardiography provides a basis for accurate diagnosis of certain cardiac abnormalities. The major use of ECG in large animals is in the detection and diagnosis of conduction abnormalities and arrhythmic heart disease. These are detected by measurement of the various wave forms and intervals in ECG that represent conduction and depolarization of heart and by observation of their absence or abnormality (Gay and Radostits, 2000).

Keywords: electrocardiography, ECG, cardiac diseases, buffalo

INTRODUCTION

The base apex lead system is commonly used for recording ECG in large animals. Literature on normal wave forms and patterns and values of duration and amplitude obtain for buffaloes obtained using this method of recording is scarce, and so this preliminary study was undertaken on eight buffaloes utilizing the 'Base-Apex' ECG lead system.

MATERIALS AND METHODS

Eight male Murrah buffaloes were used for the present study. All the animals were clinically examined for soundness before the experiment as per the procedure described by Rosenberger (1979). All the animals were apparently healthy and normal at the time of study and all the vital signs were within the normal range. The ECG recordings were made by using Cardiart 6208 (BPL India Limited). Recordings were made at a paper speed of 50 mm/sec and 10 mm deflection per volt.

Lead System: The right arm electrode is attached to neck (thoracic wall) two thirds of the way down the neck and the left arm electrode is placed over the apex of the heart just behind the elbow (Radostits et al., 2000). The animals were kept in quiet surroundings at the time of recording. The electrodes were placed using alligator clips and a gel contact. In order to ensure good adherence to the skin, the skin was shaved and cleaned with alcohol prior to the application of the gel.

The recordings were analyzed for the P wave, the QRS complex, the PR interval, the ST segment, the QT interval and the T wave.

RESULTS AND DISCUSSION

The patterns of P wave were analyzed and found to be round (1), peaked (6) and slightly isoelectric (1). P wave amplitude ranged from 0.1
mV to 0.3 mV with a mean of 0.16 mV+0.034. Duration of P wave varied from 0.04 seconds to 0.08 seconds with a mean duration of 0.068+0.006 seconds.

The PR intervals in animals ranged from 0.16 seconds to 0.24 seconds with an average duration of 0.215+0.013 seconds.

The QRS complex always showed negative deflection in all the animals. The amplitude of the QRS complex varied from 0.7 mV to 1.3 mV and the mean depths of R wave was 0.91+ 0.08 mV.

The duration of QRS complex ranged from 0.08 to 0.16 seconds, and the mean duration was found to be 0.09+0.009 seconds.

The S-T interval was from 0.16 seconds to 0.24 seconds with an average duration of 0.213+0.027 seconds.

The T wave in all the buffaloes was positive with amplitudes varying from 0.1 mV to 0.5 mV and durations of 0.04 seconds to 0.12 seconds. The mean amplitude and duration of the T wave were 0.21+0.05 mV and 0.078+0.01 seconds, respectively.

The Q-T interval ranged from 0.36 seconds to 0.48 seconds with an average duration of 0.46+0.016 seconds.

The Q wave was always above the base line with a duration varying from 0.02 seconds to 0.06 seconds and a mean of 0.033+0.006. The amplitude of the Q wave varied from 0.1 mV to 0.2 mV with a mean value of 0.12+0.013.

The values obtained in this experiment were well within the normal range as indicated by earlier workers (Jackson and Cockcroft, 2002; Rosenberger1979). Almost similar readings were recorded in lead II ECG recording of previous workers (Jayanthy et al., 1996; Lakshmi Rani et al., 2007).

Although severe cardiovascular disease is relatively uncommon, it is important that the clinician examines this system with care during the routine
clinical examination of the bovine patient. Early detection of cardio vascular disease might enable appropriate remedial action be taken and an accurate prognosis of the patients condition to be offered. (Jackson and Slater, 1997). 

REFERENCES


