

Experiment: 6

ELECTROCARDIOGRAM

NUTD341, HUMAN ANATOMY AND PHYSIOLOGY

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Objective:

How to use ECG and record normal ECG.

Introduction:

Recording of an electrocardiogram was a helpful experiment, which helped us to know how to record normal ECG, and to know how to read the ECG paper and see if it is normal. It is also known as EKG, so it is a diagnostic tool that is used to assess the electrical and muscular function of the heart. There are two tones for the heart: the "dub" it's the first tone & "lub" is the second tone, these tones give the electrical activity, there is 12 leads that are placed in the limbs and chest to record the electrical activity, but in this LAB we've just used 4 leads were placed on hands and legs. There are some factors that effect on the electrical activity of the myocardium such as:

* Change in posture.
* Vigorous activity.
* Exaggerated respiratory movement.
* Drinking ice water
* Smoking.

MATERIALS:

1. Electrocardiogram machine.
2. ECG recording paper.
3. Electrodes.
4. Electrocardiography gel.
5. Recliner stretcher.

METHOD:

1-Prepare the electrocardiograph for use in a quiet room

2-The person should remove any accessories he wears.

3-Let the person lie down and be relaxed and comfortable.

4-we’ve put The black electrode which used as a control on the right leg.

5-The green on the left leg.

6-The yellow on the left arm.

7-The red on the right arm.

CALCULATION#1:

Standard information: 1mm=0.04s

11 heart beats

HR = 1500/small boxes= 1500/18= 83.33 bpm

CALCULATION#2

P wave = 1.5

QRS= 18

T wave = 1

|  |  |  |
| --- | --- | --- |
| Wave | mm | mV |
| P = 1.5 | 1.5x1 | 1.5x0.1= 0.15 |
| QRS= 18 | 18x1 | 18x0.1= 1.8 |
| T wave | 1x1 | 1x0.1= 0.1 |

CALCULATION#3:

Standard speed= 25mm/s

25 square = 1s

1mm = 0.04s

QRS = 1.9 x 0.04 = 0.076sec

ST wave = 0.6mm x 0.04 = 0.064sec

P = 1mm x 0.04 = 0.04sec

CALCULATION#4:

Lead 1 QRS = 2 mm

Lead 2 QRS= 5 mm

Lead 3 QRS = 3 mm

Lead 1 + 3 = 5 mm

DISCUSSION:

It is very important to prepare and place the ECG correctly in order to get the most accurate results. Improperly placed electrodes can potentially lead to mistaken interpretation, misdiagnosis of conditions and mismanagement of patient care. Smart phones, metal, and jewellery can also lead to incorrect readings. (1) When my ECG was taken, I had to take off my shoes (Nike) because they kept blocking the electrical waves and the ECG could not be taken. Some other factors that might affects the results of ECG are: Obesity, smoking before the test, movement during the test, electrolyte imbalances, laughing, and anxiety. (2)

The ECG in this lab was taken while sitting down so the results might have been not accurate, since it has to be taken while lying down. The waves on an ECG include the P wave, Q wave, R wave, S wave, T wave and U wave. The P wave represents atrial depolarization. The QRS complex consists of Q waves, R waves and S waves and represents ventricular depolarization. The T wave appears after the QRS complex and shows ventricular repolarization. The QRS for my ECG was 0.076 seconds, the ST wave was 0.064 seconds, and the P wave was 0.04 seconds. The heart rate bpm was determined by counting the small boxes between two peeks and dividing them by 1500, which resulted with a bpm of 83.33.

CONCLUSION:

We learned to use the electrocardiogram to measure the electrical activity of our heart and how small differences in the PQRST can indicate that one might have a serious health issue. And we concluded that the ECG is a very sensitive device which requires a lot of preparation and experience in order to be done accurately.

REERENCES:

1. <https://www.hillrom.com/en/knowledge/article/three-factors-that-could-be-impacting-your-ecg-interpretation/>
2. Electrocardiogram, What is an electrocardiogram?<https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=92&contentid=P07970>