

Free ekg research paper sample

[Business](#), [Leadership](#)



Explain the pathophysiology of the impulse origin and the electrical impulse pathway that is associated with the following rhythms:

Normal sinus rhythm

In NSR, there is normal conduction of the sinus impulse through the atria and ventricles. The impulse is generated from the sinoatrial node and is delivered through the atria. Once past the atria, the pulse reaches the AV node where it pauses before continuing through the ventricles. From there the impulse is conducted through the ventricles via bundle branches and Purkinje fibers.

Junctional rhythm

During a junctional rhythm, the SA node fails to fire. Cardiac cells all possess the ability of generating a pulse if the SA node were to fail. The rhythm is typically created within or near the AV node. From there, the conduction follows the normal pattern through the bundle branches and Purkinje fibers.

AV block

In an AV block, the AV node is not able to conduct impulses to the ventricles as a normal healthy heart should. The SA node will fire the impulse but there is a delay between the SA and the AV node. There are four types of AV blocks: first degree, second degree Type I, second degree Type II, and third degree.

Atrial fibrillation

In atrial fibrillation, more than one cell in the atria delivers an impulse to the AV node. This causes the atria to quiver, instead of contracting to push the

blood to the ventricles. These impulses are then sent in an unpredictable number through the ventricles.

Explain the different between a normal vs. abnormal Q wave

A normal Q wave precedes the R wave and is a negative deflection on the monitor.

An abnormal Q wave has a width of 0.04 seconds and a depth of greater than one fourth of the R wave amplitude. A pathological Q wave is indicative of myocardial muscle death secondary to a myocardial infarction.

Explain the criteria for a significant vs. insignificant (nonspecific) ST segment elevation or depression.

Significant - There is an abnormal QRS complex in which instead of having a R that drops straight down into an S, there is a T wave causing a hump in the complex. This is indicative of a myocardial infarction.

Nonspecific - These patients do not show signs of a myocardial injury on their ECG. Their symptoms and serum biomarkers indicate an MI but there is no ST elevation on the ECG.

List the landmarks for placement of all leads used to obtain an EKG.

V1 - fourth intercostal space, to the right of the sternum

V2 - fourth intercostal space, to the left of the sternum

V4 - fifth intercostal space in the midclavicular line

V3 – halfway between V2 and V4

V6 – midaxillary line, level with V4

V5 – anterior axillary line, level with V4

Describe and define artificial atrial and ventricular pacemakers and how to recognize their presence on an EKG.

Pacemakers are used when the heart rate is too slow or the heart is unable to initiate or conduct an impulse. Atrial pacemakers fire before the P wave and start the conduction. Ventricular pacemakers fire before the QRS complex. These impulses cause the atria or ventricles to contract.

On an EKG, the impulse is a straight line below the isometric line. There should be a subsequent wave after to confirm the heart has captured the impulse and is taking over.

Discuss the criteria, including leads, for diagnosing a/an:

Anterior wall MI – ST elevation in leads V1-V6; there is an infarct of the LAD coronary artery

Lateral wall MI – ST elevation in leads I, aVL, V5, V6; there is an infarct of the LCX or MO coronary artery

Inferior wall MI – ST elevation in leads II, III, aVF; there is an infarct in either the RCA coronary artery or RCX coronary artery

Posterior wall MI - ST elevation in leads V7, V8, V9; there is an infarct in the RCX coronary artery

Define what constitutes the following as well as the leads used for diagnosis:

Left ventricular hypertrophy – recognized as an increased QRS amplitude on the ECG

Look at lead V1 to determine the depth of the S wave

<https://assignbuster.com/free-ekg-research-paper-sample/>

Look at leads V5 and V6 to determine which lead has the tallest R wave
Add the height of the taller R wave and the deeper S wave. Left ventricular hypertrophy is suspected if the summation is equal or greater than 35.

Right ventricular hypertrophy – there must be extensive hypertrophy before it is apparent on and ECG

There are taller R waves and small S waves in leads V1 and V2.

There are deeper S wave and small R waves in leads V5 and V6.

Define the cause a bundle branch block, the criteria used to diagnose right vs. left bundle branch block and the leads used for the diagnosis of each.

A right bundle branch block is a delay in the impulse conduction of the right branches to the Purkinje fibers. The right ventricle is affected.

A left bundle branch block is a delay in the impulse conduction of the left branches to the Purkinje fibers. The left ventricle is affected.

The QRS complex will be 0.012 seconds or more in width and the QRS complex arises as a result of supraventricular activity. Lead V1 can differentiate right or left bundle block. A right bundle block is signified by a small R wave, an S wave, followed by another R wave. A left bundle block is signified by an initial negative depolarization, a small upright notch in the QRS complex, and then a deep S wave.

References

Aehlert, B. (2013). ECGs made easy (5th ed.). St. Louis, MI: Elsevier Mosby.
Sole, M. L., Klein, D. G., & Moseley, M. J. (2013). Introduction to critical care nursing (6th ed.). St. Louis, MO: Elsevier Saunders.