ECG waves

(0:00 - 0:44)

Welcome to Proven Doctors with another episode of ECG basic. In this video we will speak about ECG waves. ECG uses external electrodes to measure the electrical conduction signals of the heart and record them as characteristic lines.

Six letters are used to describe deflections from baseline on ECG. The P wave reflects the atrial depolarisation. Normally, impulses originates from pacemaker cells of the sinoatrial node and is conducted to the right and left atria.

(0:45 - 1:18)

The atrial repolarisation is not visible on ECG in healthy people. The QRS complex follows the P wave. It corresponds to the depolarisation of the right and left ventricle.

Depolarisation wave spreads from the inner to the outer layers of the myocardium. The Q wave is the first negative downward deflection in the QRS complex. Normal Q waves represent depolarisation of the ventricular septum.

(1:18 - 1:34)

The R wave follows as an upward deflection. The S wave is any downward deflection after the R wave. The T wave represents the repolarisation of the ventricles.

(1:36 - 2:42)

The interval from the beginning of the QRS complex to the peak of the T wave reflects the absolute refractory period. The second half of the T wave reflects the relative refractory period. The refractory period is the interval during which cardiomyocytes don't respond to stimuli.

During absolute refractory period, cardiomyocytes don't respond on stimuli at all. But during the relative refractory period, a new action potential may be elicited under some circumstances. Sources of the U wave is unclear.

There are four theories of U wave appearance. Repolarisation of the papillary muscles, delayed repolarisation of Purkinje fibres, after potential from the ventricular wall, prolonged repolarisation of mid-myocardial cells. The U wave can sometimes be seen in normal younger athletic individuals.

(2:42 - 2:50)

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