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Normal ecg report format

Electrocardiogram (ECG) is one of the easiest and oldest cardiac reviews available, however it can provide a wealth of useful information and remains an essential part of assessing heart patients. With modern machines, surface ECGs are quick and easy to achieve alongside clinical and are relatively simple based on electrophysiological concepts. However newly arrived doctors often find them difficult to interpret. This is the first in a short series of articles that are aimed at: helping readers understand and interpret ECG recordings. Reducing some teens experience anxiety often when faced with ECG. What are the basic principles of ECG? ECG is simply a representation of the electrical activity of the heart muscle as it changes with time, usually printed on paper for easier analysis. Like other muscles, cardiac muscles contract muscles in response to electrical depolysation of muscle cells. This is the sum of this electrical activity, when it is only amplified and recorded for a few seconds as we know it as an ECG. The basic electrophysiology of the heart (see Figure 1) of the normal heart cycle begins with the depolarization of the sinus node itself, an area of specialized tissue located in the upper right atrium (RA). A wave of electrical depolarization then spreads through RA and across the inter-atrial septum into the left atrium (LA). Atria is separated from the ventricles by an inoperable electrical fibrous ring, so that in the natural heart the only pathway for transferring electrical depolysis from atria to the ventricles is through the ventricular atrio node (AV). The AV node delays the electrical signal for a short time, and then the depolysation wave extends to the bottom of the ventricular septum (IVS), through his bundle and the branches of the right and left bundles, to the right ventricles (RV) and left (LV). Therefore, with the natural guidance of the two ventricles simultaneously, they are simultaneously contraction, which is important in maximizing the efficiency of the heart. After the heart is fully depolarized, the myocardius will then have to be repeated again, before it can be ready to depolarize again for the next cardiac cycle. Figure 1. The basic electrophysiology of the heart's electrical axis and the registration of lead vectors (see figures 2 and 3) of ECG are measured by placing a series of electrodes on the patient's skin - so it is known as 'ECG surface'. The electric depolarization wave extends down from atria though ivs into the ventricles. Therefore, the direction of this depolarization is usually superior to the more important aspect of the heart. The direction of the depolysation wave is typically left due to the left orientation of the heart in the chest and muscle mass is more ventricle left than the right. This general direction of the journey of electrical depolysation through the heart is known as the electrical axis. A basic principle of electro-cardiac recording is that when the depolyce wave travels towards a recording leads to these results in Positive or upward deviation. When it travels away from recording this leads to a negative or downward deviation. The electrical axis is normally downward and left but we can estimate it more accurately in individual patients if we understand which 'direction' of each lead recording measures ECG. Figure 2. The orientation of the leading organs showing the direction from which each lead 'appears' in the heart by convention, we recorded the standard ECG level using 12 different lead recordings 'directions,' though rather confusing only 10 recording electrodes on the skin needed to achieve this. Six of these are recorded from the heart's over-the-chest - the chest or precocial leads. Four of the organs are recorded - the organ leads. It is essential that each of the 10 electrodes recorded is in its correct position, otherwise the appearance of the electro-heart will change significantly and prevent correct interpretation. The leading organs record electro-heart in the coronal plane, and can therefore be used to determine the electrical axis (which is usually measured only in the coronal plane). Leading organ clues are called I, II, III, AVR, AVL and AVF. Figure 2 shows the relative direction from which they 'look' at the heart. A horizontal line through the heart and steering to the left (exactly in the direction of lead I) is conventionally labeled as a reference point of 0 degrees (0 o). The directions from which it leads no longer 'look' at the heart are described in terms of angles in degrees of this base. The electric axis of depolysation is also expressed in degrees and typically ranges from 0-30 to +90 0. A detailed explanation of how to determine the axis goes beyond the scope of this article, but the principles mentioned here should help readers understand the concepts involved. Chest clues record ECG in passing or horizontal aircraft, and are called V1, V2, V3, V4, V5 and V6 (see Figure 3). Figure 3. The thoracic passing section showing the orientation of the six leading chests in relation to the heart voltage and its timing intervals is customary to record electro-heart using standard measures for the amplitude of the electrical signal and for the speed of paper movement during recording. This allows: easy appreciation of heart rate and heart intervals and meaningful comparisons between ECGs recorded on different occasions or made by different ECG machines. The amplitude, or voltage, of the electrical signal recorded on an ECG is expressed in the vertical next and measured in millivlets (mV). On standard paper ECG 1mV is shown with a deviation of 10 mm. Increased amounts of muscle mass, such as left ventricular hypertrophy (LVH), usually lead to a larger electrical depolycere signal, and therefore a larger range of vertical deviation on the ECG. An essential feature of ECG is that the electrical activity of the heart is shown that it differs with time. Other words we can think of from ECG as a graph, drawing electrical activity on the vertical axis against time on the horizontal axis. The standard ECG paper moves at 25 mm/s during impromptu recording. This means that when looking at the printed ECG, the distance of 25 mm along the horizontal axis represents 1 second in time. ECG paper is marked with a network of squares small and large. Each small square represents 40 milliseconds (ms) in time along the horizontal axis, and each larger square consists of 5 small squares, representing 200 milliseconds. Standard paper speeds and square markings allow easy measurements of heart timing intervals. This enables calculating heart rate and detecting abnormal electrical conductivity inside the heart (see Figure 4). Figure 4. The standard ECG paper sample, which shows the voltage scale, measured on the vertical axis, will be determined against the time in the natural ECG horizontal axis from above, which is the first structure to be depolarized along the normal sinus rhythm, the right atrium, which is closely followed by the left atrium. So the first electrical signal on a natural ECG originates from Atria and is known as the P wave. Although there is usually only one P wave in most clues to an ECG, the P wave is actually the sum of electrical signals from two atria that are usually supersimuled. Then there is a short, physiological delay as the ventricular atrio node (AV) slows down electrical depolysation before it goes to the ventricles. This delay is responsible for the PR distance, a short period in which no electrical activity is seen on the ECG, which is represented by a direct horizontal line or 'isoelectric'. Depolycereization of the ventricles usually results in the largest part of the ECG signal (due to greater muscle mass in the ventricles) and this is known as the QRS set. The Q wave is the first initial downward deviation or 'negative', then the R wave is then the next upward deviation (provided it crosses the isoelectric line and becomes 'positive') the S wave is then the next deviation downwards, provided it crosses the isoelectric line to briefly turn negative before returning to the isoelectric base. In the case of ventricles, there is also an electrical signal reflecting myocardial repetition. This is shown as st section and T wave. The ST part is typically isoelectric, and the T wave in most leads is a right deviation of variable amplitude and duration (see figures 5 and 6). Figure 5. Major waves form a natural ECG single pattern 6. Natural example 12 ECG lead; Notice the downward deviation of all recorded signals from the lead aVR. This is normal, as the electrical axis directly away from it leads the normal intervals of electrobart recording on standard paper to allow the time taken to measure for different phases of electrical depolysis, usually in milliseconds. There is a natural recognized range for such 'intervals': PR distance From the beginning of the P wave to the first deviation of the QRS set). Normal range 120 – 200 ms (3 – 5 small squares on ECG paper). QRS duration (measured from the first deviation from the QRS set to the end of the QRS set on the isoelectric line). Normal range up to 120 ms (3 small squares on ECG paper). QT distance (measured from the first deviation from the QRS set to the end of the T wave on the isoelectric line). The normal range varies from up to 440 ms (though with heart rate and may take a little longer in women) the heart rate estimate of the ECG standard ECG paper allows approximate heart rate estimates (HR) of ECG recording. Each second of time is represented by 250 mm (5 large squares) along the horizontal axis. So if the number of large squares between each QRS set is this: 5 - HR is 60 beats per minute. 3 - HR is 100 per minute. 2 - HR is 150 per minute. Minutes.

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