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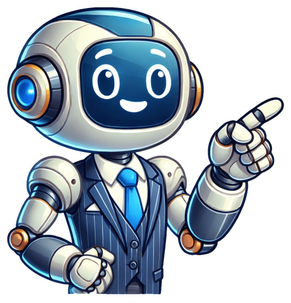

An exercise ECG (sometimes called an exercise tolerance test or stress test) will be done in hospital.You'll be asked to take off the clothes on the top half of your body, behind a screen. You may be given a hospital gown to wear.The healthcare professional will attach sticky patches, called electrodes, to your chest, which are attached to an ECG machine.You'll be asked to walk on a treadmill or cycle on an exercise bike.The exercise will start slowly and then gradually get faster and more difficult. It'll be stopped when you start having symptoms or feel too tired. It usually lasts between 40 and 60 minutes.When the test is over, the healthcare professional will remove the sticky patches from your skin. You might feel some slight discomfort when the patches are taken off, a bit like when you take off a plaster. If you're not able to run or cycle, you'll be given a medicine that raises your heart rate instead of having to do exercise.Brady WJ, Harrigan RA, Chan TC. 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Cummings Otolaryngology: Head and Neck Surgery. 7th ed. Philadelphia, PA: Elsevier; 2021:chap 150.Weinstein B. Disorders of hearing. In: Fillit HM, Rockwood K, Young J, eds. Brocklehurst's Textbook of Geriatric Medicine and Gerontology. 8th ed. Philadelphia, PA: Elsevier, 2017:chap 96.Page 7The following tests may be done:TREATMENTFixing the problem, if it can be found, may make your symptoms go away. (For example, your provider may remove ear wax.) If TMJ is the cause, your dentist may suggest dental appliances or home exercises to treat teeth clenching and grinding.Talk to your provider about all your current medicines to see if a medicine may be causing the problem. This may include over-the-counter medicines, vitamins, and supplements. Do not stop taking any medicine without talking to your provider.Many medicines are used to relieve symptoms of tinnitus, but no medicine works for everyone. Your provider may have you try different medicines or combinations of medicines to see what works for you.A tinnitus masker worn like a hearing aid helps some people. It delivers low-level sound directly into the ear to cover the ear noise. A hearing aid may help reduce ear noise and make outside sounds louder.Counseling may help you learn to live with tinnitus. Your provider may suggest biofeedback training to help with stress.Some people have tried alternative therapies to treat tinnitus. These methods have not been proven, so talk to your provider before trying them.Tinnitus can be managed. Talk with your provider about a management plan that works for you.The American Tinnitus Association offers a good resource center and support group.Page 8Chole RA, Sharon JD. Chronic otitis media, mastoiditis, and petrositis. In: Flint PW, Francis HW, Haughey BH, et al, eds. Cummings Otolaryngology: Head and Neck Surgery. 7th ed. Philadelphia, PA: Elsevier; 2021:chap 140.Matlock AG, Pfaff JA. Otolaryngology. In: Walls RM, ed. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Philadelphia, PA: Elsevier; 2023:chap 58.Pelton SI. Otitis externa, otitis media, and mastoiditis. In: Bennett JE, Dolin R, Blaser MJ, eds. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 9th ed. Philadelphia, PA: Elsevier; 2020:chap 61. An electrocardiogram (ECG) is a graphic record produced by an electrocardiograph that provides details about ones heart rate and rhythm and any other related abnormalities; it depicts if the heart has enlarged due to hypertension (high blood pressure) or evidence of a myocardial infarction previously (heart attack if any). Electrocardiogram (ECG) is one of the most common and effective tests for all drugs. It is easy to perform, non-invasive, yields outcomes instantly and is useful to identify hundreds of heart conditions.ECGs from healthy hearts have a distinct, characteristic shape. Any inconsistency in the rhythm of the heart or damage to the heart muscle can alter the hearts electrical activity thereby changing the shape on the ECG.Table of Content: ECG Test ECG test can be used to check the rhythm of the heart and the electrical movement. The electrical signals are detected due to the attachment of the sensors to the skin which are generated as and when the heart beats. These signals are recorded by the machine and examined by a medical practitioner for an unusual signs.Who is recommended an ECG test?ECG test is a common measure in monitoring the health of those diagnosed with heart ailments to aid in assessing the artificial cardiac pacemakers or in detecting the effects of some medications on the vital organ the heart.Doctor suggests ECG for those who are at a risk of heart diseases (family history of heart disorders), those who smoke, are obese, have diabetes, high blood pressure or cholesterol. ECG test could also be suggested to those that show the following signs and symptoms Shortness of breathDizzinessChest painPalpitationsWhy ECG is done?Two main forms of data are given by an ECG Determining time taken for electromagnetic pulse to travel through the heartTo find if areas of heart are overworked or too largeFirst, a surgeon will determine how long it takes for the electromagnetic pulse to travel through the heart by calculating time intervals on the ECG. Whether the electrical activity is natural or sluggish, fast or erratic, figuring out how long a pulse takes to travel from one part of the heart to the next.Second, a cardiologist may be able to find out if areas of the heart are too large or overworked by measuring the amount of electrical activity that flows through the heart muscle. Ten electrodes are mounted on the arms of the patient and on the top of the heart in a traditional 12-lead ECG. The average strength of the electrical potential of the heart is then calculated from 12 different angles (leads) and reported over a period of time (usually 10 seconds). Throughout the cardiac phase, the total intensity and trajectory of the electrical depolarization of the heart are observed at each moment.Evidence does not support the use of ECGs as an attempt for prevention among those without symptoms or at low risk of cardiovascular disease. This is because an ECG may incorrectly suggest a concern, leading to misdiagnosis, initiation for invasive procedures, and overtreatment. Individuals working in certain sensitive professions, such as aeroplane pilots, may need to have an ECG as part of their routine safety evaluations.Objective of ECGThe overall objective of an ECG is to obtain information about the hearts electrical function. For this material, clinical needs are diverse and often need to be paired with knowledge of the heart anatomy and symptoms of physical examination to be understood. Some signs for an ECG are as follows:An ECG is used to measure:Any heart damage and weaknesses in various parts of the heart muscleHow quickly your heart beats and whether it normally beatsThe effects of drugs or devices used to control your heart (such as a pacemaker)The size and position of your heart chambersTo diagnose abnormal heart rhythmsAlso Check: Systole and DiastoleHow is an ECG carried out? ECG Test ProcedureAn ECG is a safe and painless test that usually takes only a few minutes.Using adhesive patches to bind leads from an electrocardiograph system to the skin on your hands, legs, and chest. This leads to your heart reading signals and sending this information to the electrocardiograph. On a paper strip or on a monitor, the computer then prints the text.Before the patches are attached, one is usually asked to remove the upper clothing, the chest needs to be cleaned or shaved. Once the patches are placed, hospital staff offers a gown to cover self. The ECG test takes about only a few minutes.There are three primary ECG types: Resting ECGIf your doctor is interested in how your heart works while youre in rest, youll be asked to lie down and relax while recording your heartbeat.Exercise ECGThe doctor may be interested in how the heart responds to movement and you may be asked to walk or run on a treadmill or cycle on an exercise bike when monitoring your pulse.24-hour ECGOften checking your rhythm throughout the day may be useful, so youll be asked to wear a portable electrocardiographic unit. A doctor will read the notes from the device when you access the machine. An ECG has three main components: the P wave, which denotes depolarising atria; the QRS complex, denotes the depolarization of the ventricles; and the T wave represents repolarising ventricles.During each pulse, a healthy heart has an ordered process of depolarization that starts with pacemaker cells in the sinoatrial node, extends throughout the atrium, and moves through the atrioventricular node into its bundle and into the fibres of Purkinje, spreading throughout the ventricles and to the left.The electrical activity occurs in a small patch of pacemaker cells called the sinus node during a regular heartbeat. This produces a small blip called the P wave when the impulse stimulates the atria. It then activates the main pumping chambers, the ventricles, and produces the large up-and-down in the middle, the QRS complex. The last T wave is a time of regeneration as the impulse reverses over the ventricles and travels back. If the heart is beating normally, it takes about a second (approximately 60 heartbeats per minute) for the entire cycle.NormalIn the normal ECG pattern, there is a regular pattern of The P wave, QRS complex, and T wave. They occur in a sequence.AnginaWhen the heart muscle doesnt get enough blood with oxygen, it causes discomfort, that feels like putting pressure on the chest. This condition is termed as Angina pain. It can sometimes be misunderstood as indigestion. As you can see in the figure above (see arrow), the ST-segment dips, which normally is flat.Serious heart attackThe elevated ST segment of the ECG is an indication of a serious heart attack. In the medical terminology, it is referred to as STEMI, which needs immediate attention. Generally, the ST segment remains flat.Atrial fibrillationAtrial fibrillation is the state when the atria and the ventricles show a lack of coordination of movement. It results in rapid heartbeat, weakness and shortness of breath. On ECG, it is represented by jumpy baseline and the P wave disappears.Difference between ECG and EKG testAn ECG and an EKG have no difference. Hence, if an ECG is similar to an EKG, then why the difference in abbreviations? The answer iswhen translated into the German language, the word electrocardiogram is spelt Elektro-kardiographie. EKG is just the way few prefer to say ECG based on this translation.Also Read:What Is Dwarfism?What is Bioprocessing?Electrocardiogram (ECG) is defined as a recording of the hearts electrical activity. It is simple test, a graphic record produced by an electrocardiograph provides details about ones heart rate and rhythm and depicts if the heart has enlarged due to hypertension or evidence of myocardial infarction (if any).An ECG has three main components the P wave denotes the depolarization of the atria; the QRS complex denotes depolarization of the ventricles, and the T wave represents repolarising ventricles.An abnormal ECG mainly denotes a variation in the heart rate or heart rhythm. For example, an irregular QRS complex without a P wave denotes atrial fibrillation. Likewise, an elevated ST segment in an ECG is an indication of a serious heart attack. Body Fluids and Circulation Class 11 Biology (Zoology) Ep 16 | NEET 2022 Important Questions Share this: Facebook Twitter Reddit LinkedIn WhatsApp An electrocardiogram is an important part of the initial evaluation of a patient who is suspected to have a heart related problem. There are 12 small sticky electrodes that applied to the patients chest, arms and legs. However, with some systems, the electrodes may be applied to the chest, shoulders and the sides of the lower chest, or hips. The wires are used to connect the patient to the electrocardiogram machine. The patient will be asked to remain very still while a nurse or technician records the EKG. The electrical activity created by the patients heart is processed by the EKG machine and then printed on a special graph paper. This is then interpreted by your physician. It takes a few minutes to apply the EKG electrodes, and one minute to make the actual recording. The EKG is extremely safe and there is no risk involved. In rare cases, some people may develop skin irritation from the electrode adhesive, but no serious allergic reactions have been reported. The EKG can provide important information about the patients heart rhythm, a previous heart attack, increased thickness of heart muscle, and signs of decreased oxygen delivery to the heart, and problems with conduction of the electrical current from one portion of the heart to another. What Is EKG? The basic importance of electrocardiogram are diagnosing irregularities in the heart, record changes in the heart, and establish baseline for other EKG by using the electrocardiogram machine. An electrocardiogram (ECG or EKG) is a quick, painless test that records the electrical activity of the heart. It may be taken at rest or during exercise. It is the standard clinical tool for diagnosing arrhythmias (abnormal rhythms) and to check if your heart is getting enough blood or if areas of your heart are abnormally thick. Small patches called electrodes are placed on different parts of the body. Different tracings of the hearts electrical activity can be made and permanently recorded on paper or in a computer. Three major waves of electric signals appear on the ECG. Each one shows a different part of the heartbeat. The P wave records the electrical activity of the atria. The QRS wave records the electrical activity of the ventricles, and the T wave records the hearts return to the resting state. Doctors study the shape and size of the waves, the time between waves and the rate and regularity of beating. Importance of Electrocardiogram There are many importance of EKG but these are the main importance, diagnose irregularities in the heart, record changes in the heart, and establish baseline for other electrocardiogram. Diagnose irregularities in the heart means to provide what need to be done in the heart. It is important to know because there are different types of importance that need to be done in order to know the right heart record during the electrocardiogram testing. Some patient base on their history because a lot of their familys having failure heart problem too. This means that they need more exercise and eat more good meals. Arrhythmias may be seen on 12- leads ECGs strips of one more leads. This means that everything is required for the EKG test. It also improves the patient development because the doctor may tell the patient what is right or wrong. Condition Determined by EKG The condition determined by electrocardiogram are previous heart attack, Heart blocked, Enlarged heart muscle, Rhythm disturbances. It takes a few minutes to apply the EKG electrodes, and one minute to make the actual recording. The EKG is extremely safe and there is no risk involved. In rare cases, some people may develop skin irritation from the electrode adhesive, but no serious allergic reactions have been reported. The EKG can provide important information about the patients heart rhythm, a previous heart attack, increased thickness of heart muscle, and signs of decreased oxygen delivery to the heart, and problems with conduction of the electrical current from one portion of the heart to another. Most of the Electrocardiogram physician and basically the one who help other people that has complaining about slow heart beat, fast heart beat, irregular heart beat or any symptom that they may encountered whatever they doing. It is very important to see the physician right away for check up before the heart beat will become severe problem and this will cause them to death. Junctional Tachycardia Junctional Tachycardia is believed to be caused by enhanced automaticity and is commonly the result of digitalis toxicity (Shade & Wesley, 2005). Another cause includes myocardial ischemia or infraction. It can also occur at the any age without a patient history of underlying heart disease. The patient will also complain to palpitations, nervousness, anxiety, vertigo, and syncope frequently accompany with dysrhythmia. When the patient get junctional tachycardia they may also sustained with rapid ventricular rates and retrograde depolarization in their atria because the ventricular filling is not as complete during diastole, leading to compromised cardiac output and the patient may occur heart disease. The rate of the person who has junctional tachycardia is 100 to v180v beats per minute and de P waves inverted may immediately precede, occur during the absent or follow the QRS complex (Shade & Wesley, 2005). Myocardial Infraction Myocardial infarction is the death of injured myocardial cells. This may occur when the person has a sudden decrease or total cessation of blood flow through the coronary artery. It is also commonly occurs when the intimacy of a coronary artery ruptures, exposing the atherosclerotic plaque to the blood within the artery. The area of the heart normally supplied by the blocked artery goes through a characteristic sequence of events describe as zones of ischemia, injury and infraction. There are also three key EKG indicators of myocardial ischemia, injury, and infarction; they are changes in the T wave, changes in the ST segment, and Enlarged Q waves or appearance of new Q waves. This means that means that anyone of this changes maybe present without anyone of the others. Placing leads on the client and setting machine control This are the steps they physician need to do before hooking up the EKG leads and electrodes to the patient. First wash hands, assemble the equipment like the EKG machine with electrodes, electrodes pad, alcohol wipes or skin cleansing agent, bath and blanket or sheet, and the patient grown. The physicians need also to identify the patient to make sure they have the right patient. Explain what you are doing, and reassure patient that this procedure is painless but the electrodes are sticky and its little bit cold and the patient need to avoid applying lotion before the test. Position the patient on bed or treatment table in a supine position with are relaxed beside their body. Covers the patient with a blanket leaving the arms and legs exposed to provide privacy. Wipe the skin with a cleansing agent to remove oils, scaly skin, or perspiration and the physician are now ready to apply the 12 electrodes. The patient needs to arrive 15 minutes before the test. There is no pain during the test and the result of the test will send it to your doctor and they will share the result with the patient in 2 weeks. There are 12 leads that will be place in the the body which is the arm, legs, and chest. What is Pacemaker? An electronic pacemaker is a small device use to control the heart rhythm. The Pacemaker electrical device use to prompt the pulses of the irregular heartbeat to a normal heartbeat. Pacemaker is people who have bradycardia. Cardiac pacing is a recognized and widely used treatment for patients presenting with bradycardia. Physicians expect patients to return to normal activities almost immediately post implantation. However, patients themselves may perceive interference to pacemaker function by various routine activities and devices, and hence continue to lead restricted, disabled lives. The aim of this study is to determine if routine activities are perceived by pacemaker patients to interfere with their device function (Pacemaker, 2008). This means that most of the patient who needs to have pacemaker is the old people because they starting to have a slow heartbeat and they need the pacemaker in order to help them breathing. The Pacemaker contains two parts the generator and the parts. The generator is tiny, hermetically sealed computer (Fogoros, 2003). This generator is roughly the size of a 50-cent piece, and approximately three times as thick. The battery life of most pacemaker generators today is 5 to 8 years. EKG interpretation Electrocardiograms are diagnosing irregularities in the heart record changes in the heart. The patient needs to arrive 15 minutes before the EKG test. Avoid using lotion around the chest, arms, and legs because the electrodes pads are sticky. For the women they may have to use gown in the hospital to avoid privacy and for the men if they have hairy hair in their chest the physicians may have to shaved if so that the 12 electrodes can hook up good. There are 12 electrodes that need to be connected during the EKG test (Electrocardiogram, 2005). The physician needs to know if the patient has a normal heart beat or irregular heart that why its very important to go see the doctor right away when people have problems about the heart. It is very important because most of the people who having symptoms are just taking any kind types of medication. When the patient taking the wrong medication without the doctor prescription the body will affect and the body will become perilous. Horizontal lines measure time (1mm square- 0.04 secs), the vertical lines measure voltage (1mm square- 0.01 mV), and the tic mark will identify 6 sec strip intervals. Heart rate computation has the identify rate which measure ventricular rate unless otherwise specified and its also measure the R-wave. They choose to method to determine or make sure that the rate has six second method box and box method. The six second method count the number of QRS complexes occurring within 6 seconds and multiply the number by 10. During the Holter monitoring or electrocardiogram testing make sure that the V3 leads is under the right nipple if the patient is under 15 years old and if its older than 15 they can hook it up like adult. During the hook up of the Holter monitoring the first step they need to do is to take out the battery compartment and place AA battery, then insert the flashcard with the lip facing downward. Second, push the enter key twice, they will hear the beep sound, then you will be able to enter the social security of the patient by scrolling the up down side to side keys then select ok button. Third, scroll across the top check the channels 1-3 to make sure all the hook ups are all working and good. Fourth, they should also check the first time by scrolling across the date and time. Fifth, check the duration of the scan and pacer detector by going to the settings then go to start and press the enter button. Lastly, issue the patient what they need to do after 24 hours. The physician needs to hand his/her a log sheet for their activities and symptoms. Electrocardiogram Rhythm Sinus Rhythm is a regular normal rhythm of the heart set by the natural pacemaker of the heart called the sinoatrial node or sinus node. It is located in the right atrium and refers to the normal increase in heart rate that occurs during inspiration when they breathe. Its also a small, slow variation of the R-R interval variation of the normal sinus heart rate respiration (Medical, n.d.). There is also sinus tachycardia which means the sinus rhythm is 100 beats per minute. The QT interval decreases as the rate increases. The maximum rate in sinus rhythm is usually 220-age (Medical, n.d.). The sinus bradycardia or slow heart beat is 60 beats per minute and this may due to parasympathetic dominance at rest (Cardiac, n.d.). The premature ventricular complexes are observed in 60 percent of healthy adults in monitoring. This means that the patient can take home the Holter monitoring and they have a log sheet and they have to write the time and what are they doing. The sheet also is very important because it will record all the information that the physicians need it. The Holter monitor is the recording the heart beat the every time the patient realize of feel that they having a funny heart beat they may need to press the middle button of the Holter monitor. Atrial fibrillation is when human has two upper chambers and the two low chambers. The upper chambers are called the left atrium and the right atriums are the plural of atrium in the atria. When the two lower chambers contact at the excessively high rate, and its an irregular way, the patient has atrial fibrillation. (What, n.d.) Atrial flutter is when a patient complaining about their heartbeat. Most of the patient that has atrial flutter heartbeat has stop beating, and they cant realize any feeling. There are also times that when the patient is lying down they may experience fast heart beat. Most old people have experiencing this because of their age. They may need to stop drinking coffee, soda, lemonade or any drinks that has acid because this will may affect their heart beats. For the patient that has atrial flutter they have to go to emergency room right away and make sure the doctors take x-rays of the patients heart and lungs. To prevent this people need to exercise and eat healthy food. Ventricular Tachycardia is very rapid tachycardia. The causes are cardiomyopathy and heart failure can occur without heart disease. Ventricular Fibrillation: Right and Left Main Coronary Artery The right main coronary artery originates from the side of the aorta and passes along the antrioventricular sulcus between the right atrium and the ventricle. They divided into two branches, the marginal artery and the posterior interventricular artery. The portion of the myocardium supplied by the right coronary artery includes the right atrium, right ventricle, inferior and posterior wall of the left ventricle and the one third posterior of the intarventricular septum. The right coronary artery supplies blood to the SA node in about 60 percent of the population and to the AV node about 90 percent of the population. Also the posterior-inferior fascicle of the left bundle branch. The left coronary artery originates from the left side of the aorta. It divides into the anterior descending and circumflex branches. The anterior descending artery perfuses the anterior surface and part of the lateral surface of the left ventricle and the anterior two thirds of the intraventricular septum. The branches of the anterior descending artery, the diagonal artery and the septal perforators, help supply blood to the lateral walls of the left ventricle. The circumflex artery supplies the left atrium, anteriolateral, poster lateral, and the posterior wall of the left ventricle. The heart needs its own blood supply because the demand for oxygen in the myocardial cells is extremely high. The coronary arteries provide a continuous supply of oxygen and nutrients to the myocardial cell. The heart works constantly to pump blood to the body, so the oxygen consumption of the heart is greater than that of single organs. The terminal branches of the arteries have many interconnections, forming an extensive vascular network. Reciprocal Changes The reciprocal changes are the mirror image that occurs when you have two leads viewing the same myocardial infarction from opposite angles. The infracted zone is electrically neutral, so the lead directly over the heart registers only an unopposed vector moving away from it. This cause the waveform to be negative. The T wave is flipped because of depolarization abnormalities generated by the areas ischemia and injury. The concept is important to relate while looking at the EKG traces because it shows the different areas of the heart. Reciprocal change was noted in all patients with inferior infarction. This means that the ST segment depression is higher. If the Electrocardiogram traces are change the heart will detect the symptom right away or the ST segment will change. Anatomy and Physiology of EKG The heart is a hollow muscular organ that lies in the middle of the thoracic cavity behind the sternum, between the lungs and just above the diaphragm (Pre-reading). The blood enters to the heart for the major veins of the body. The superior vena cava feed the right atrium and the left atrium. The left ventricle supply the left atrium and the right ventricle are in the middle to return blood in the middle. The heart beat consist of two contractions, when the atriums contract the blood is squeezed simultaneously from the right atrium through the tricuspid valve and when the ventricles contract the blood squeeze from the right ventricle through the pulmonary valve and to the lungs. There are also two major veins that deliver blood all over the areas of the body especially in the right atrium. They called this superior vena cava and anterior vena cava. They divides directly in the heart and have different construction. Different Waves P-waves moves in a compression motion similar to the motion of a slinky, while the S waves move in a shear motion perpendicular to the direction of the wave that is travelling. P-wave is basically electrical signature of the current that cause atrial contraction. It is also the portion of the electrocardiogram tracing that represent the depolarization of the myocardium. Its depolarized in the left atrium and reflects to the right depolarization. QRS complex is the portion of the EKG tracing that represents depolarization in the myocardium and the ventricle are activated simultaneously. T-wave is deflection of the normal electrocardiogram following QRs complex and it represent repolarization or recovery of the ventricle. Sinus Arrest A rhythm can also appear irregular when a SA node fails to initiate an impulse. This can be called sinus arrest and is seen as the pause in the electrocardiogram rhythm. They rhythm leading up to the pause looks normal. Sometimes there is also suddenly absence of the P wave as well as the QRS complex and T wave. These are one whos creating gap or pause of the heartbeat. If a SA node fails to fire, then the escape pacemaker from the atria call AV injunction will initiates and impulses. Irregularity may also cause by premature ventricular heartbeat during the electrocardiogram test and the rhythm making R-R interval pause. The rhythm leading up to the pause looks normal if the EKG test is no irregular. A slightly rhythm is where the P-P intervals and R-R intervals vary. The changes of the pacemaker from site to site can lead to this type of irregularities. A cause of the slightly irregular rhythm is when initiation of the heartbeat changes from site to site of each beat. Each of the heart beat is initiates to other area. The QRS ventricle depolarize and it will become larger muscle mass. The ST segment is normally isoelectric and gently blends into upslope of T wave. The point where the ST segment is located will takes off from the QRS ventricle and it goes to the J point. Share this: Facebook Twitter Reddit LinkedIn WhatsApp What Is an Electrocardiogram (EKG or ECG)? Updated on 2024-03-14 14:52:19 0 What to expect when undergoing this testByRichard N. Fogoros, MDMedically reviewed byYasmine S. Ali, MD, MSCITheelectrocardiogram, also referred to as EKG, ECG, or 12-lead ECG, is a non-invasive diagnostic test that evaluates your heart's electrical system to assess for heart disease. It uses flat metal electrodes placed on your chest to detect the electrical activity of your heart as it beats, which is then graphed.Your healthcare provider can analyze the patterns to get a better understanding of your heart rate andheart rhythm, identify some types of structural heart disease, and evaluate cardiac efficiency.Purpose of an EKG TestAnECGdetects your heart's electrical rhythm and produces what's known as a tracing, which looks like squiggly lines. This tracing consists of representations of several waves that recur with each heartbeat, about 60 to 100 times per minute. The wave pattern should have a consistent shape. If your waves are not consistent, or if they do not appear as standard waves, this is indicative of heart disease.There are a variety of characteristic changes that occur with different heart problems, and your healthcare provider can look at your ECG wave patterns to see if they are suggestive of certain types of heart disease.Many healthcare providers order an ECG as part of a yearly medical examination to screen for heart disease. This may apply to you if:You have had heart disease or other heart problems in the past.You have a medical condition that predisposes you to heart disease, such as hypertension, diabetes, high cholesterol, or inflammatory disease.You have other significantrisk factors for cardiac disease.1Electrocardiography may also be recommended if you have signs or symptoms of heart disease, such as chest pain, shortness of breath, heart palpitations, lightheadedness, dizziness, or fainting spells. Likewise, if you havesigns of a TIA or stroke, such as vision changes, numbness, weakness, or communication problems, you are also likely to need an ECG becausesome types of heart disease can cause a stroke.2If you have heart disease, you may need periodic ECG testing to evaluate whether your disease is worsening and to monitor the treatment effects of your heart medications.An ECG is also required prior to any type of heart surgery, including surgery for pacemaker placement. A pre-operative ECG is also needed before any surgical procedure that involves general anesthesia because heart disease increases the risk of adverse events from anesthesia. The screening also helps your anesthesiologists as they plan your anesthetic medications and surgical monitoring.ConditionsThere are a number of conditions that can be detected when your healthcare provider checks your pulse, such as tachycardia (rapid heart rate), bradycardia (slow heart rate), and arrhythmia (irregular heart rate). EKG wave patterns can verify these alterations in your heart rhythm, and certain changes in the shape of the waves provides information about the specific type of heart disease and which region in the heart is affected.LimitationsThe ECG is one of the most commonly used tests in medicine because it can screen for a large variety of cardiac conditions, the machines are readily available in most medical facilities, the test is simple to perform, safe, and relatively inexpensive.That said, an ECG has its limitations:The ECG reveals the heart rate and rhythm only during the few seconds it takes to record the tracing. If an arrhythmia (heart rhythm irregularity) occurs only intermittently, an ECG might not pick it up, andambulatorymonitoringmay be required.The ECG is often normal or nearly normal with many types of heart disease, such ascoronary artery disease.Sometimes, abnormalities that appear on the ECG turn out to have no medical significance after a thorough evaluation is done.Risks and ContraindicationsECG is a safe test that does not cause health complications. There are no medical conditions associated with any risks or adverse effects from an ECG.Before the ECG TestIf your healthcare provider or cardiologist orders an ECG, you generally do not need to have any special tests or procedures to prepare for it. In fact, you can have it right in the healthcare provider's office if there is available time, space, and equipment. Sometimes, depending on the reason for your ECG, your healthcare provider may ask you to stop taking some of your medications for a day or two before the test.TimingIf you are having an ECG as part of a healthcare provider's visit, anticipate needing an extra 10 to 15 minutes for the test. If you are going to have a special visit for the ECG, you should expect it to take longer because of the registration and check-in process.LocationOften, an ECG is done in the healthcare provider's office, sometimes in the same exam room where you are seeing the healthcare provider. Your healthcare provider's clinic may have a separate space where you may need to go to have your test.What to WearYou will need to change into a hospital gown so that electrodes can be placed on your chest. You may be asked to remove large necklaces or chains if they dangle or get in the way, but you do not need to worry about electrical interference from metal jewelry.Food and DrinkYou can eat or drink whatever you want prior to your test. If your healthcare provider is worried that you have an especially rapid heart rhythm, you may be asked to abstain from caffeine for six to 10 hours before the test.Cost and Health InsuranceGenerally, an ECG is covered by most health insurance plans, but there are always exceptions. If you are insured and concerned that your plan may not cover the test, or if you have a plan with minimal coverage, you might want to check your benefits in advance. As with many procedures, your plan may also require you to pay a copay, and you should be able to find out by calling the number on your insurance card.What to BringWhen you go for your ECG, you should bring your test order form (if applicable), your health insurance card, a form of identification, and a method of payment.During the TestYour test will be performed by a healthcare provider, a nurse, or a technician.Pre-TestYou will be asked to change into a hospital gown and lie down on an examination table.Once in position, a total of 10 electrodes are attached with a sticky, but easy-to-remove adhesive. One electrode is placed on each arm and leg, and six on the chest.Throughout the TestEach electrode is a flat, coin-shaped plate with wires attached to the ECG machine, which looks like a computer. The electrodes detect electrical activity produced by the heart and transmit this information to the machine, where it is processed and saved electronically or printed out as an ECG tracing.Readings will be taken for about five minutes. During this time, you will be asked to remain still, as movement can disrupt the pattern. There is no pain or discomfort associated with this test.Post-TestAfter the test, the electrodes are removed. If there is any sticky material remaining, it can be easily wiped off with an alcohol pad. You may experience some pulling of hair underneath the nodes, but generally, the technicians are very careful with taking them off.You should not expect any side effects after an ECG, and there are no limitations on your activity.1Rarely, the adhesive can cause allergic reactions or rashes, which may not be obvious until about 24 hours after the test. If you experience a rash in the area of the electrodes, call your healthcare provider.Interpreting the ECG ResultsThe electrical signals generated from the electrodes are processed to obtain the hearts electrical activity from 12 different angles, each of which shows a separate tracing. By examining any abnormalities on the ECG and which leads they are stemming from, your healthcare provider can get important clues about the status of the heart.Learning to read an ECG and recognize these patterns takes months of training and practice.The TracingA tracing consists of repeated waves that have a standard shape. The waves have sections named the P wave, QRS complex, ST segment, and T wave. There is also a PR interval between the P wave and the QRS complex, and a QT interval between the QRS complex and the T wave.Different conditions are associated with changes in the height, width, and length of these waves, and the intervals between them. A shortened QT interval, for example, can be a sign of elevated blood calcium levels.3Your ECG report may have a description of the wave pattern but is unlikely to describe your heart condition in detail. Your healthcare provider needs to take your symptoms and medical history into account when determining whether or not you could have a heart condition.Your healthcare provider will be able to explain your results to you. Among many things, an ECG can indicate:Heart arrhythmias, such aspremature ventricular complexesoratrial fibrillationWhether you have conduction abnormalities, which result from issues regarding how the electrical impulse spreads across the heart (such as with abundle branch block)Signs of an ongoing or a priormyocardial infarction(heart attack)Whether you have signs of severecoronary artery disease (CAD), such as stable angina or unstable anginaIf your heart muscle has become abnormally thickened, as inhypertrophic cardiomyopathySigns of congenital electrical abnormalities, such asBrugada syndromeElectrolyte imbalances, particularly elevated or decreased levels of potassium, calcium, or magnesiumCongenital (from birth) heart defectsInfections involving the heart, such as pericarditis, which is an infection of the protective tissue surrounding the heartFollow-UpWhile the ECG can make a cleardiagnosis of some cardiac conditions, such as a cardiac arrhythmia, it is more often used as a screening test. Therefore, abnormalities seen on the ECG often need to be followed by a more definitive test in order to make a firm diagnosis.For instance, If the ECG indicates possible coronary artery disease, astress testorcardiac catheterizationmight be needed. If ventricular hypertrophy is seen, anechocardiogramis often needed to check for diseases such asaortic stenosisor other structural abnormalities.4 This article is collected from the Internet, if there is any infringement, please contact us to delete it. MeSH Heading Electrocardiography Tree Number(s) E01.370.370.380.240 E01.370.405.240 Unique IDD004562 RDF Unique Identifier Scope NoteRecording of the moment-to-moment electromotive forces of the HEART as projected onto various sites on the body's surface, delineated as a scalar function of time. The recording is monitored by a tracing on