ACTIVE LEARNING TEMPLATE: *Diagnostic Procedure*

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PROCEDURE NAME Electrocardiogram (ECG/EKG) REVIEW MODULE CHAPTER_____

Description of Procedure

Electrocardiography uses an electrocardiograph to record the electrical activity of the heart over time. The ECG is connected by wires (leads) to skin electrodes placed on the chest and limbs of the client.

Indications

Dysrhythmias
-Sinus bradycardia and tachycardia
-Atrioventricular (AV) blocks
-Atrial fibrillation
-Ventricular asystole
-Premature atrial complexes (PACs) and premature ventricular complexes (PVCs)
-Supraventricular tachycardia
-Ventricular tachycardia
-Ventricular fibrillation

Interpretation of Findings

-Normal Sinus Rhythm:
Rate: 60-100 bpm; P-wave: Sinus; QRS: Normal; Conduction: P-R Normal; Rhythm: Regular
-Sinus Tachycardia:
Rate: >100 bpm; P-wave: Sinus; QRS: Normal; Conduction: Normal; Rhythm: Regular or slightly irregular
-Sinus Bradycardia:
Rate: <60 bpm; P-wave: Sinus; QRS: Normal; Conduction: P-R normal or slightly prolonged at slower rates; Rhythm: Regular or slightly irregular
-Atrial Fibrillation:
Rate: 400-650 bpm; P-wave: No P waves; QRS: Normal; Conduction: Variable AV conduction; if untreated the ventricular response is usually rapid
-Premature Atrial Complexes (PAC):
Rate: Normal or accelerated; P-wave: Usually have a different morphology than sinus P waves because they originate from an ectopic pacemaker; QRS: Normal; Conduction: Normal, however the ectopic beats may have a different P-R interval; Rhythm: PAC occur early in the cycle and they usually do not have a complete compensatory pause
-Premature Ventricular Complexes (PVC):
Rate: Variable; P-wave: usually obscured by the QRS, PST or T wave of the PVC; QRS: wide; morphology is bizarre with the ST segment and the T wave opposite in polarity. May be multifocal and exhibit different morphologies; Conduction: the impulse originates below the branching portion of the Bundle of His; full compensatory pause is characteristic; Rhythm: Irregular, PVC may occur in single, couplets or triplets; or in bigeminy, trigeminy or quadrigeminy
-Ventricular Tachycardia:
Rate: 100-220 bpm; P-wave: Obscured if present and are unrelated to the QRS complexes; QRS: Wide and bizarre morphology; Conduction: The impulse originates below the branching portion of the bundle of His; full compensatory pause is characteristic; Rhythm: Three or more ventricular beats in a row; may be regular or irregular.
-Ventricular Fibrillation:
Rate: Variable; P-wave: Normal if the underlying rhythm is sinus; QRS: wide; Conduction: This block occurs in the right or left bundle branches or in both. The ventricle that is supplied by the blocked bundle is depolarized abnormally; Rhythm: regular or irregular depending on the underlying rhythm.

CONSIDERATIONS

Nursing Interventions (pre, intra, post)

PREPROCEDURE:
-Position the client in a supine poisition with chest exposed.
-Wash the client's skin to remove oils.
-If the area on which the electrode is to be placed has hair on it, clip-do not shave - the area to provide skin adherence and electrical conduction.
Attach one electrode to each of the client's extremities by applying electrodes to flat surfaces above the wrists and ankles and other six electrodes to the chest, avoiding chest hair.
INTRAPROCEDURE:
-Monitor for manifestations of dysrhythmias (chest pain, decreased LOC, SOB) and hypoxia.
POSTPROCEDURE:
-Remove leads from the client, print the ECG report, and notify the provider.
-Apply a Holter monitor if the client is on a telemetry unit and/or needs continuous cardiac monitoring.
-Continue to monitor the client for dysrhythmia.
-To conduct a rhythm analysis, perform the following steps:
-Determine the heart rate.
-Determine whether the heart rhythm is regular or irregular.
-Analyze the P waves for regularity and shape.
-Measure the PR interval for consistency.
-Measure the QRS duration and for consistency in appearance.
-Examine the ST segment. Depression or elevation is unexpected.
-Assess the T wave.
-Measure the QT interval.

Client Education

-Remain still and breathe normally while the 12-lead ECG is performed.
-Follow instructions on checking your pulse.
-Report palpitations or irregularities.

Potential Complications

-Embolism: cardioversion can dislodge blood clots, potentially causing a pulmonary embolism, a cerebrovascular accident, or an MI.
-Decreased cardiac output and heart failure: cardioversion might damage heart tissue and impair heart function.

Nursing Interventions

-Provide therapeutic anticoagulation for clients who have dysrhythmias.
-Monitor for manifestations of decreased cardiac output (hypotension, syncope, tachycardia) and heart failure (dyspnea, productive cough, edema, venous distention).
-Provided medications to increase output (inotropic agents) and to decrease cardiac workload.