

Cardiac Review Ventricular Rhythms

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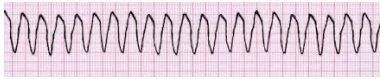
Ventricular Rhythm Review


VENTRICULAR TACHYCARDIA RHYTHM


RATE: 100 to 220 bpm
RHYTHM: Regular
P WAVES: Not apparent
PR / QRS

- PR interval none
- QRS interval **WIDE** greater than 0.12 seconds

Definition: Three or more PVCs in a row and is either non-sustained (less than 30 seconds) or sustained (more than 30 seconds). Adequate blood pressure is difficult to sustain due to the rapid rate. Can lead to ventricular fibrillation.




INTERVENTION


LETHAL RHYTHM

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VENTRICULAR TACHYCARDIA CAUSES

- Hypoxemia
- Digitalis toxicity
- Myocardial infarction
- Ischemic heart disease
- Mitral valve prolapse
- Cardiomyopathy


INTERVENTION


CAUTION RHYTHM


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VENTRICULAR TACHYCARDIA INTERVENTIONS

- Without Pulse**
 - Use the Ventricular Fibrillation algorithm for treatment
- With Pulse**
 - Oxygen if oxygenation is not adequate
 - Synchronized cardioversion
 - Adenosine (regular and monomorphic V Tach)
 - Antiarrhythmics (Amiodarone)
 - Lidocaine


INTERVENTION


CAUTION RHYTHM

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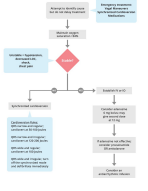
VENTRICULAR TACHYCARDIA INTERVENTIONS

SYNCHRONIZED CARADIOVERSION

- Involves delivery of a low-energy shock which is timed or synchronized to be delivered at a specific point in the QRS complex to avoid causing ventricular fibrillation

SYNCHRONIZED CARADIOVERSION PROCEDURE

- Obtain a 12-lead ECG if the patient is stable
- Prepare proper sedation since cardioversion is painful and have emergency equipment ready in case of complications (code cart)
- Place defibrillator pads on patient and set monitor to synchronized (sync) mode
 - Sync mode will deliver concurrent energy with the QRS
- Engage the sync mode before each attempt
- Look for the sync markers above each R wave




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VENTRICULAR TACHYCARDIA INTERVENTIONS

SYNCHRONIZED CARADIOVERSION PROCEDURE

- Initial recommended voltage doses**
 - Narrow regular:** 50 - 100 joules (SVT or Atrial Flutter)
 - Narrow irregular:** 120 - 200 joules biphasic or 200 joules monophasic (atrial fibrillation)
 - Wide regular:** 100 joules (monomorphic ventricular tachycardia)
 - Wide irregular:** defibrillation dose (not synchronized cardioversion)
- Clear all personnel from the patient prior to the shock
- Press the "charge" button, "clear" the patient, and press the "shock" button
- After the shock, reassess the patient's rhythm for additional shocks



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VENTRICULAR TACHYCARDIA INTERVENTIONS

ADENOSINE

- First drug of choice for stable narrow-complex Supraventricular Tachycardia (may be considered for unstable narrow-complex while preparations are made for cardioversion)
- Does not convert atrial fibrillation, atrial flutter, or Ventricular Tachycardia

ADENOSINE DOSING

- Patient placed in mild reverse Trendelenburg position
- Initial bolus of 6 mg given rapidly over 1 to 3 seconds followed by Normal Saline 20 mL. Elevate the extremity.
- Second dose of 12 mg IV push over 1 to 2 minutes if needed



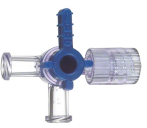
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VENTRICULAR TACHYCARDIA INTERVENTIONS

ADENOSINE INJECTION TECHNIQUE

- Record rhythm prior to administration
- Draw up the adenosine dose and Normal Saline flush in 2 separate syringes
- Connect port to IV and attached both syringes
- Push IV adenosine as quickly as possible
- Push Normal Saline rapidly while maintaining pressure on adenosine syringe




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VENTRICULAR TACHYCARDIA INTERVENTIONS

ADENOSINE INJECTION CONSIDERATIONS

- Not to be used in poison, drug induced tachycardias, or second/third degree heart blocks.
- Side effects may include flushing, chest tightness, and brief period of asystole or bradycardia.
- Dosing may change based on medications or central venous access follow provider orders
- If administered for polymorphic wide-complex tachycardias may cause hypotension



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VENTRICULAR TACHYCARDIA INTERVENTIONS

AMIODARONE

- Can cause toxicity, used in patients with life-threatening arrhythmias when administered with sufficient monitoring:
 - Ventricular Fibrillation, Ventricular Tachycardia unresponsive to cardioversion, CPR, and a vasopressor
 - Hemodynamically unstable Ventricular Tachycardia

AMIODARONE DOSING

- Maximum of 2.2 grams IV over 24 hours**
- Rapid infusion: 150 mg IV over 10 minutes (15 mg/min), may repeat every 10 minutes PRN
- Slow infusion: 360 mg IV over 6 hours (1 mg/min)
- Maintenance infusion: 540 mg IV over 18 hours (0.5 mg/min)




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VENTRICULAR TACHYCARDIA INTERVENTIONS

AMIODARONE CONSIDERATIONS

- Rapid infusion may cause hypotension
- Multiple dosing over 2.2 grams in 24 hours may cause severe hypotension
- Do not administer with other drugs that prolong the QT interval (procainamide)**
- Half life lasts up to 40 days**



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VENTRICULAR TACHYCARDIA INTERVENTIONS

LIDOCAINE

- Lidocaine is considered immediately after the return of spontaneous circulation (ROSC) from Ventricular Fibrillation/Pulseless Ventricular Tachycardia cardiac arrest
- Alternative to amiodarone in cardiac arrest for Ventricular Fibrillation/Ventricular Tachycardia, stable monomorphic Ventricular Tachycardia



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VENTRICULAR TACHYCARDIA INTERVENTIONS

LIDOCAINE DOSING FOR CARDIAC ARREST

- Initial Dose: 1 to 1.5 mg/kg IV or IO
- Refractory Ventricular Fibrillation: additional dose of 0.5 to 0.75 mg/kg IV push every 5 to 10 minutes (**maximum 3 doses or total of 3 mg/kg**)

LIDOCAINE DOSING FOR CARDIAC ARREST

- For stable Ventricular Tachycardia, wide complex tachycardia: 0.5 to 0.75 mg/kg and up to 1 to 1.5 mg/kg may be used
- Repeat doses: 0.5 to 0.75 mg/kg every 5 to 10 minutes (**maximum total dose 3 mg/kg**)

LIDOCAINE DOSING FOR MAINTENANCE DOSING

- 1 to 4 mg/min (30 to 50 mcg/kg/min)



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VENTRICULAR TACHYCARDIA INTERVENTIONS

LIDOCAINE CONSIDERATIONS

- Prophylactic use in acute myocardial infarction is contraindicated
- Reduce the dosage for maintenance doses when impaired liver function or left ventricular dysfunction is present
- Discontinue infusion if toxicity signs are present



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