

# Rapid and Narrow

## Narrow QRS Complex Tachycardias

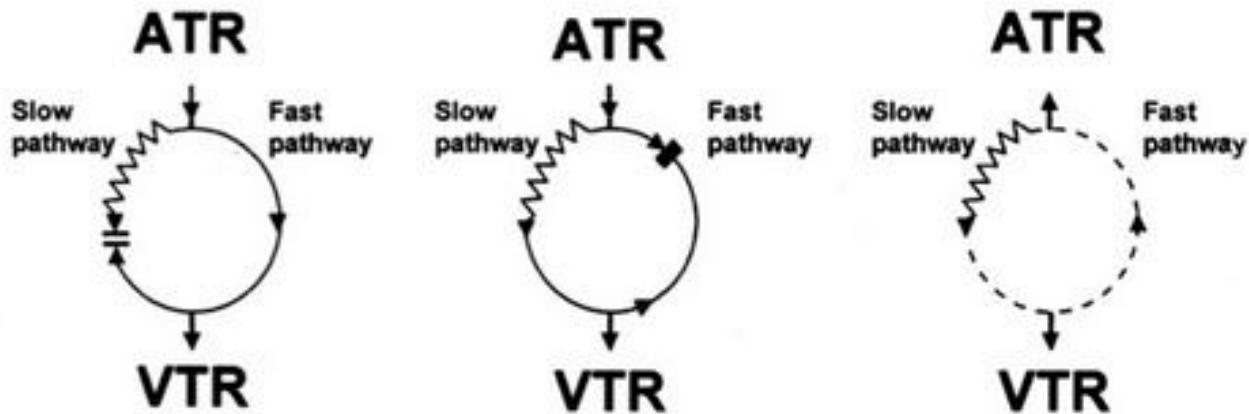
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# Definition

- Tachyarrhythmia's, abnormal heart rhythms with a ventricular rate  $> 100$  bpm
- Narrow QRS complex ( $<120$  ms) reflects rapid activation of the ventricles via the normal His-Purkinje system
- The arrhythmia originates above or within the His bundle (=supraventricular tachycardia).

- Origin may be in
  - Sinus node
  - Atria
  - Atrioventricular (AV) node
  - His bundle, or some combination of these sites

# Pathogenesis



Fox D J et al. Mayo Clin Proc. 2008;83:1400-1411

# Automaticity and triggered activity

- Enhanced normal automaticity
  - sinus tachycardia
- Abnormal automaticity
  - ectopic atrial or junctional tachycardia
- Triggered activity
  - digitalis intoxication

# Sign

- The response depending on how fast the heart is beating
- Blood pressure
- Tissue perfusion
- Underlying comorbidities, «important»

# Symptoms

- Palpitations
  - most common
  - rapid or irregular heart beat felt
- Syncope or presyncope
  - Rare: heart rate is not so rapid as to impair ventricular function and cardiac output.
- Dizziness
- Diaphoresis
- Chest pain
- Shortness of breath

# Diagnosis

- On physical examination;
  - palpitations when a pulse  $> 100$  bpm
- ECG:
  - heart rate  $> 100$  bpm
  - narrow QRS complexes  $< 120$  millisecond



# Types of Narrow QRS Complex Tachycardia

- Sinus tachycardia
- Reentrant tachycardia
  - Atrioventricular nodal reentrant tachycardia (AVNRT)
  - Atrioventricular reentrant tachycardia (AVRT)
  - Atrial tachycardia (AT)
  - Inappropriate sinus tachycardia
  - Sinoatrial nodal reentrant tachycardia (SANRT)
  - Intraatrial reentrant tachycardia (IART)

# Types of Narrow QRS Complex Tachycardia cont.

- Junctional ectopic tachycardia
- Nonparoxysmal junctional tachycardia
- Atrial fibrillation (AF)
- Atrial flutter
- Multifocal atrial tachycardia (MAT)

# Treatment

- Important;
  - the patient for symptoms and signs of hemodynamic stability (or instability)
  - patient's electrocardiogram (ECG) for clues to the type of tachycardia present

# Hemodynamic (In)stability

- The most important clinical sign and symptom for rapid heart rate.
  - Hypotension
  - Shortness of breath
  - Chest pain suggestive of coronary ischemia
  - Shock
  - Decreased level of consciousness

- On the other hand  
patient's symptoms are related to several factors;
  - age
  - presence of underlying cardiac disease.

# Determining the treatment

- Hemodynamically unstable and not sinus rhythm
- Hemodynamically unstable and sinus rhythm
- Hemodynamically stable

# Hemodynamically unstable

- If a patient has clinically significant hemodynamic instability  
+  
Narrow QRS complex tachycardia  
↓  
As quickly as possible to determine whether the rhythm is sinus tachycardia (ST).
- If the rhythm is not ST, or if there is any doubt that the rhythm is ST,  
↓  
**urgent conversion to sinus rhythm is recommended.**

# Unstable and sinus rhythm

- If the patient's rhythm is ST and clinically significant cardiac symptoms are present



**focus on the underlying cardiac disorder and on treat any contributing cause of the rapid heart rate** (such as coronary ischemia, respiratory or cardiac failure, hypovolemia, anemia, fever, pain, or anxiety).



# Hemodynamically stable

- Close examination of the 12-lead ECG and correct identification of the arrhythmia
- Simple vagal blocking maneuvers may slow the ventricular rate to better elucidate the underlying rhythm

# ECG for the rhythm

- Regular
  - sinus tachycardia
  - atrioventricular nodal reentrant tachycardia
  - atrioventricular reciprocating tachycardia
- Irregular
  - atrial fibrillation
  - multifocal atrial tachycardia

# Tachycardia algorithm (AHA)

## Stable patients

Adenosine;

- First dose: 6 mg rapid i.v. Push
- Second dose: 12 mg if required

# Resuscitation Council (UK) 2010

- If yes (unstable patient)
- ➤ Synchronised DC Shock (Up to 3 attempts)
- 
- 
- ➤ Amiodarone 300 mg IV over 10-20 min and repeat shock; followed by:
  - Amiodarone 900 mg over 24 h

# Resuscitation Council (UK) 2010

• Sinus rhythm restored? > if no

Seek expert help

➤ Possible atrial flutter

➤ Control rate

# Resuscitation Council (UK) 2010

- Probable **atrial fibrillation**

Control rate with:

- Blocker or diltiazem
- Consider digoxin or amiodarone if evidence of heart failure

Thank you for your listening  
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