EMC 451

Advanced ECG Interpretation

Unit 7: Differentiating Ventricular Tachycardia and SVT with Aberrancy

Unit Objectives

- Upon completion of this unit, you should be able to:
  - Define aberrancy.
  - Discuss the importance of differentiating among broad complex tachycardias.
  - List and apply the Brugada criteria.
  - List and apply other criteria for differentiating ventricular tachycardia and PSVT with aberrancy.
  - Describe the circumstances under which an unequivocal differentiation cannot be made.
  - Describe a practical approach for clinically differentiating ventricular tachycardia and aberrancy.

Aberrancy

- Aberrancy refers to an abnormal conduction pattern of impulses through the ventricles.
- The typical mechanisms is a delay through the RBB.
- The delay prevents the areas of the myocardium normally supplied by the RBB from depolarizing.
- These areas are depolarized by current flowing from the depolarized left ventricle.
- The result is a wide QRS complex that resembles a PVC or ventricular tachycardia, yet is actually a supraventricular rhythm.

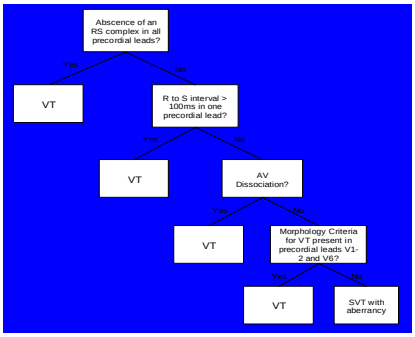
Importance of Differentiating Among Wide QRS Tachycardias

- VT may result in immediate hemodynamic collapse and/or deteriorate into V-fib.
- Treating V-tach with Verapamil may accelerate the tachycardia and precipitate V-fib.

Conditions in which Unequivocal Diagnosis cannot be Made

- RBBB or LBBB pattern favors SVT with aberrancy, but VT can exhibit the same morphology.
- Constant P and QRS relationship because retrograde atrial conduction occurs in 50% of patients with VT.
- QRS $\leq$ 0.14 seconds, as some fascicular tachycardias may have a relatively narrow QRS complex
- Some types of WPW syndrome

Brugada Criteria



Brugada Criteria continued

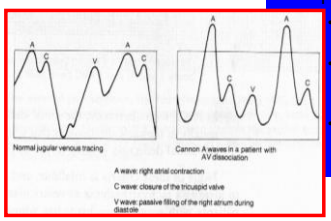
- Original Sensitivity 98.7%
- Original Specificity 96.5%
- Revised Sensitivity 83%
- Revised Specificity 70%
- Assumes diagnosis of VT and diagnosis of SVT made by exclusion criteria for VT
- 80% incidence of VT in literature

Other Criteria

- History
  - In one study, structural heart disease suggested VT in 95% of cases and a history of MI was associated with VT in 98% of cases.

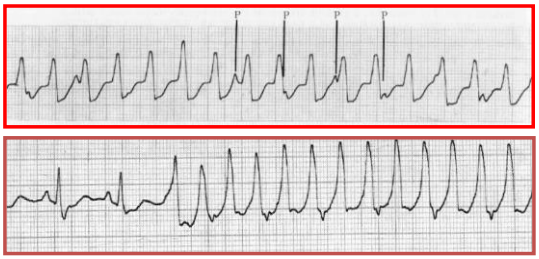
Other Criteria continued

- AV Dissociation
  - Appears in 75% of VT cases
  - Physical Signs
    - Varying intensity of the first heart sound
    - Beat-to-beat changes in systolic BP
    - Irregular cannon A waves in jugular pulse



Other Criteria continued

- ECG signs
  - Look for distortions caused by P waves
  - Look for retrograde atrial conduction



Other Criteria continued

- ECG Signs continued
  - QRS duration ≥ 0.14 seconds suggests VT.
  - Extreme right axis deviation never occurs in SVT
  - Concordant patterns (either all positive or all negative complexes in the precordial leads)
  - QRS morphology

ECG Signs Favoring Aberrancy

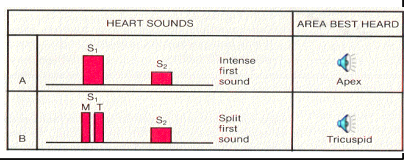
QRS Pattern in V1		QRS Pattern in V6	
rSR'		qRS	
rR'			

ECG Criteria Favoring VT

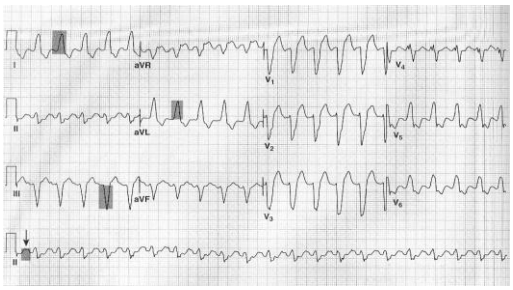
QRS Pattern in V1		QRS Pattern in V6	
R		rS	
qR		S	
RS		qR or QR	
Slurred downslope R		R	

Other Criteria continued

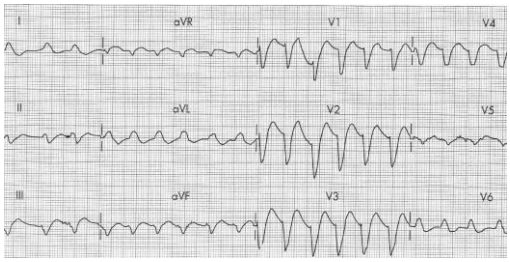
- Clinical Correlation
  - Hemodynamic status is non-diagnostic
  - Vagal maneuvers may terminate PSVT but will have no effect on VT.
  - Split of S1



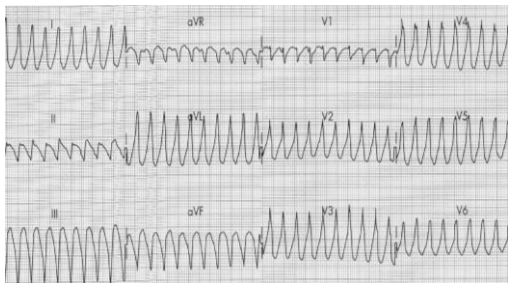
EKG 1



EKG 2



EKG 3



EKG 4