Foundations EKG I - Unit 6 Summary

Approach to Tachyarrhythmias

Wide Complex

Wide QRS complex tachycardia should be thought of as **ventricular tachycardia** until proven otherwise. The first task in evaluating a wide complex tachycardia is to determine whether the patient is hemodynamically stable or unstable. **Unstable patients need to be immediately electrically cardioverted.**

In addition to ventricular tachycardia, wide QRS complexes may indicate a supraventricular rhythm with an aberrant pathway.

	Regular	**Irregular**
Narrow	Sinus tachycardia AVNRT Orthodromic AVRT 2:1 atrial flutter	Atrial fibrillation MAT
Wide	Ventricular tachycardia Antidromic AVRT	Atrial fibrillation with aberrancy

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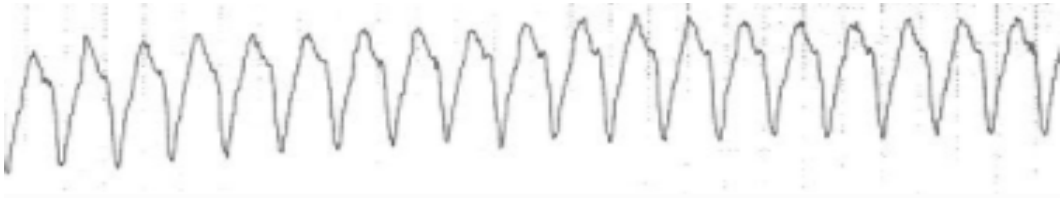
Ventricular tachycardia is likely if there is:

- AV dissociation
- QRS over 140s
- Positive precordial QRS complexes

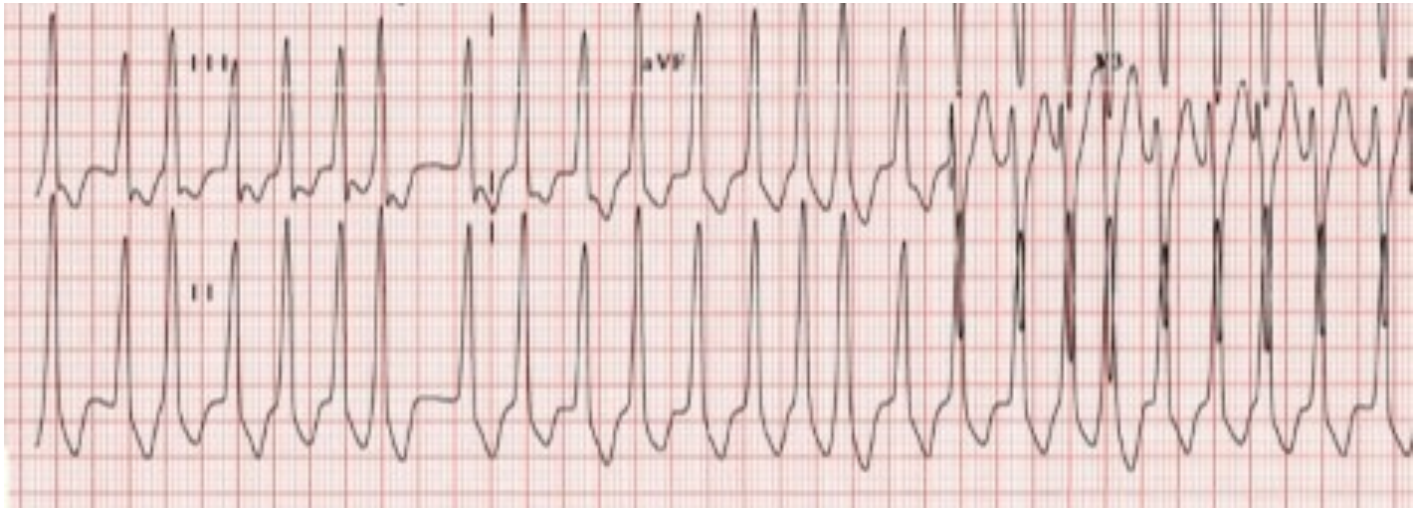
Sustained ventricular tachycardia lasts over 30 seconds.

Treatment of hemodynamically **stable** ventricular tachycardia may include administration of lidocaine, procainamide, or amiodarone. It is important to consider reversible causes (commonly referred to as the "Hs and Ts"). Unstable ventricular tachycardia mandates immediate synchronized cardioversion.



SVT with aberrant conduction pathways may also cause wide complex tachycardia. Conduction of AVRT may be orthodromic (traveling down the normal direction of the nerve fibers) or antidromic (opposite to the normal conduction pathway). Antidromic conduction tends to cause a wide QRS complex whereas orthodromic often causes a narrow complex .

Wolff-Parkinson-White (WPW) is a pre-excitation syndrome. Evidence of the accessory pathway causing tachycardia can be seen in the delta wave causing upslurring to the QRS with a short PR interval. Other clues that an EKG shows WPW include an irregularly irregular rhythm, changing QRS morphologies, and very rapid heart rate (even 250-300bpm). Management includes synchronized electrical cardioversion or chemical cardioversion with procainamide. **Blocking of the AV node is contraindicated** in this case because it forces even more conduction down the accessory pathway. Atrial fibrillation with a wide QRS complex should prompt you to think about WPW.



Courtesy of Edward Burns of Life in the Fast Lane

Sodium channel blockage, often due to **TCA overdose,** can also cause a wide QRS complex. Sodium channel blockade on EKG may show:

- QRS greater than 100ms in Lead II
- Terminal R wave greater than 3mm in aVR
- R/S ratio greater than 0.7 in aVR

Treatment includes sodium bicarbonate 1-2mmol/kg every 3 minutes until QRS starts to narrow and blood pressure parameters improve.

Hyperkalemia can cause widening of the QRS as well as tachycardia. Peaked T-waves and possible loss of P-waves in a patient with an appropriate story should prompt consideration and rapid treatment of hyperkalemia. Treatment may include: calcium administration, insulin/dextrose, albuterol, sodium bicarbonate, kayexalate, or dialysis.