EMC 451

Advanced ECG Interpretation

Unit 8: Preexcitation Syndromes

Unit Objectives

- Upon completion of this unit, you should be able to:
  - Define preexcitation.
  - Describe an accessory pathway.
  - Discuss why accessory pathways predispose patients to dysrhythmias.
  - Recognize the ECG characteristics of Lown-Ganong-Levine Syndrome (LGL) and Wolf-Parkinson-White Syndrome (WPW).
  - List the treatment of WPW and LGL.

Preexcitation

- Normally, conduction between the atria and ventricles is delayed about 0.1 seconds in the AV node.
- AV delay allows atria to contract and fill the ventricles.
- In preexcitation syndromes, an accessory pathway bypasses the AV node, permitting the ventricles to contract earlier than normal.

Accessory Pathways

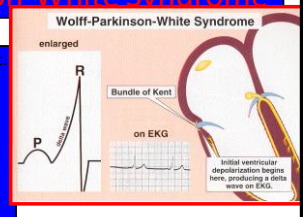
- Several have been identified.
  - Kent bundle (WPW)
  - Intranodal bypass tract (LGL)
  - Mahaim fibers
  - Atriofascicular bypass tract
- Present in less than 1% of population.
- Occurs predominantly in males.

Wolf-Parkinson-White Syndrome

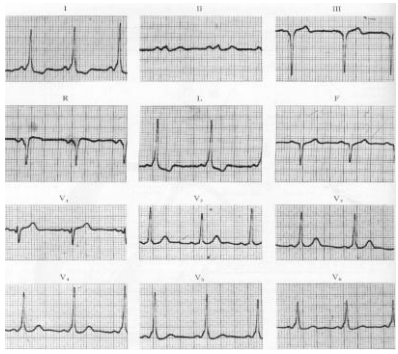
- Accessory pathway results from malformation of fibrous tissue that normally separates the atria and ventricles.
- Tissue provides a connection between atria and ventricles outside the conduction system (short-circuit).
- This tissue may provide a mechanism of AV reentry, thus the tendency to develop PSVT.

ECG Criteria of Wolf-Parkinson-White Syndrome

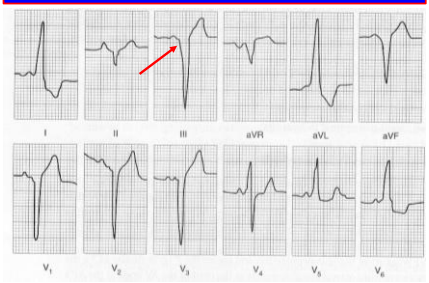
- PR interval < 0.12 sec.
- QRS complex > 0.10 seconds (20%)
- Delta wave (positive or negative)
- Secondary T-wave changes may be present
- Narrow complexes, no delta wave (80%)



Wolf-Parkinson-White Syndrome



Wolf-Parkinson-White Syndrome



Clinical Significance of Wolf-Parkinson-White Syndrome

- Atrial flutter (5%), atrial fibrillation (10-20%) and PSVT (40-80%) are the most frequently associated dysrhythmias
- Atrial fibrillation may be fatal because conduction over accessory pathway may result in ventricular rate of 200-300 bpm.
- Rapid ventricular rates may deteriorate into ventricular fibrillation.

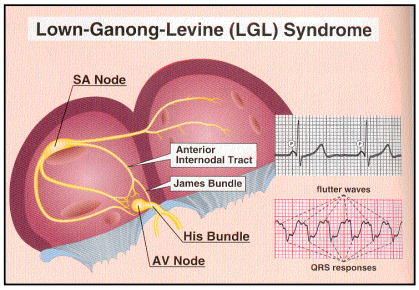
Treatment of Wolf-Parkinson-White Syndrome

- If unstable, cardioversion.
- Vagal maneuvers
- Pharmacologically
  - Adenosine (narrow complex only)
  - Beta blockers (narrow complex only, but usually ineffective)
  - Verapamil (narrow complex only)
  - Other calcium channel blockers (narrow complex only)
  - Pronestyl (best treatment for wide complex)
  - Amiodorone
  - Flecainide
  - Propafenone
  - Sotalal
  - Do NOT use
    - Digoxin
    - Diltiazem
- Radio ablation

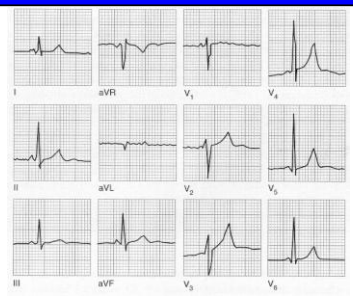
Long-Ganong-Levine Syndrome

- Accessory pathway bypasses the AV node, but conduction occurs via the usual ventricular conduction pathways.
- More common among women.
- Usually occurs between ages of 20 and 40.
- Shortened PR interval, but no delta wave.
- QRS is of normal width.

Long-Ganong-Levine Syndrome



Long-Ganong-Levine Syndrome



Long-Ganong-Levine Syndrome

- Treatment is same as for WPW.
- Usually responds better than WPW and does not require ablation therapy.