EKG Conference
Review for IM boards

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May 24, 2006
Case #1

- Patient presents with syncope
- Does this EKG warrant a pacemaker?
3rd degree heart block
Pacemaker indicated!
1st degree AVB
LBBB
No pacer indicated
2nd degree type 1 (Wenkebach) AV block
RBBB
LAFB
No pacer
Atrial flutter with variable conduction
Left anterior fascicular block
Right bundle branch block
No pacer
Atrial tachycardia with 2:1 conduction
No pacer
3rd degree AV block
Pacemaker indicated!
MAT – Multifocal Atrial Tachycardia
LVH
No pacer
Sinus rhythm
2nd degree type 1 AVB (Wenkebach)
No pacer
Atrial fibrillation, lateral ST-T depression
No pacer
Sinus rhythm, 2:1 AV block, RBBB
Probably pacer
Sinus Rhythm
3:2 AV block (2nd degree, Wenkebach)
PVC
LVH
No pacer
Summary of Heart Blocks

- 1<sup>st</sup> degree AVB – PR>200ms – no pacemaker
- 2<sup>nd</sup> degree AVB
  - Mobitz 1 (Wenkebach) – no pacemaker
  - Mobitz 2 – pacemaker
- 3<sup>rd</sup> degree AVB – pacemaker
- Bundle branch blocks do not get a pacemaker
  - Isolated RBBB, LBBB, LAFB, LPFB
  - “Bifascicular” and “Trifascicular” blocks
Chest pain syndromes

• Patient presents with chest pain
  – For reference, pt had a ‘normal’ EKG 3 weeks ago
• Does this EKG show
  A. Diagnosis of ST elevation MI – rush to cath lab
  B. Diagnosis of unstable angina/NSTEMI – admit for cath within 48 hours
  C. Etiology of chest pain other than ACS
  D. No specific findings for chest pain – admit/observe patient
Sinus rhythm
3:1 AV block
Acute inferior injury
? Anteroseptal Q's with injury
STEMI – cath lab
Right Sided EKG

>=1mm ST Elevation in V4 = RV infarction
100% mid RCA
patent LAD, Cx
Next EKG

Anterolateral injury pattern
STEMI – cath lab
Posterior injury (STEMI) Vs Anterior ischemia
Favors urgent cath lab
90% RCA, 90% Cx
Old inferior infarct
No specific findings
Admit/observe
Old anterior infarct
No specific findings
Admit/observe
Old inferior infarct
Anterolateral ST depression
NSTEMI/UA – admit for cath in next 48h
Left Bundle Branch Block
New (or presumed New) LBBB with chest pain is STEMI!
STEMI – urgent to cath lab
Right Bundle branch block with secondary t wave inversions
Right Axis deviation
S1, Q3, T3 pattern
Suspicious for pulmonary embolism
Sinus bradycardia
RBBB with secondary ST-T changes
LAFB
LVH
1mm ST elevation in V3 only
No diagnostic findings of ACS
Admit/observe
PR depression in lead II
Pericarditis
Summary of Chest Pain EKG’s

• STEMI
  – ST elevation of 1mm or more in 2 or more anatomical leads
    • “convex pattern
  – R in lead V1 with flat ST depression V1-V3 = posterior infarction
  – New left bundle branch block with chest pain

• NSTEMI/UA
  – ST depression
  – T wave inversions
  – T wave flattening

• Pericarditis – diffuse ST elevation with PR depression (esp in lead II)

• Pulmonary embolism – suspect with RBBB and Right Axis
Other high yield EKG’s
35 yo Asymptomatic female
What is your next step in workup? (Boards perspective)

A. Electrophysiologic (EP) study +/- ablation
B. Cardiac catheterization
C. Holter monitor
D. Tilt Table
E. Nothing/reassurance
17 year old with palpitations

Atrial Fibrillation
WPW – wide complex, irregular tachycardia
Treatment??

Procainamide
49 yo with DM, HTN, ESRD/HD with 2 hours nausea

Hyperkalemia (K+ 9.0)
Polymorphic VT
Torsades de Pointes