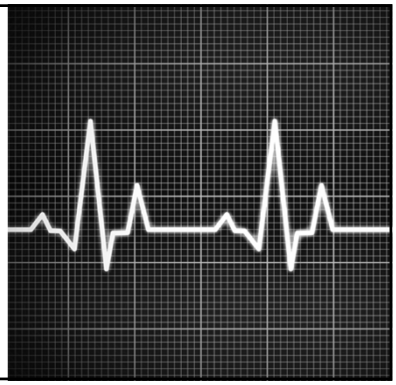
Dysrhythmias

CYDNEY STEWART MD, FACC

NOVEMBER 3, 2017

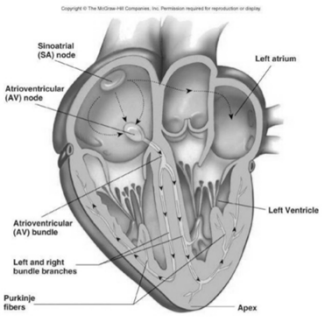


Disclosures

- None

3 reasons to evaluate and treat dysrhythmias

- Eliminate symptoms and improve hemodynamics
- Prevent imminent death/hemodynamic compromise
- Reduce risks other than the direct effects of the abnormal rhythm
  - e.g. reduce stroke risk in afib



Atrial

AV node

Ventricular

Classification of Rhythm Abnormalities

- Supraventricular
  - Atrial origin
    - Atrial fibrillation
    - Atrial flutter
    - Atrial tachycardia
    - PACs
  - AV junction
    - AV nodal, AV reentrant tachycardias
- Ventricular
  - Ventricular tachycardia (sustained and non sustained)
  - PVCs

Emphasis today on the most common

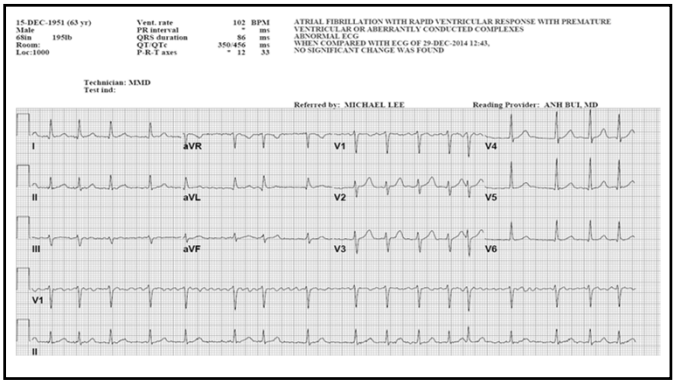
- **Atrial fibrillation**
- **Supraventricular tachycardia (SVT)**
- PVCs

Atrial fibrillation

- Most common rhythm problem
  - Estimated 33.5 million people with afib worldwide (2010)
- Over 20% chance of developing afib by age 80
- More prevalent in men
- Hypertension and coronary disease commonly underlying

Atrial fibrillation- definition

- The RR interval has no repetitive pattern
  - ie “irregularly irregular”
- No distinct P waves
- The rate can be slow, normal or fast
- It can be symptomatic or asymptomatic



Atrial fibrillation- Classification

- Paroxysmal
  - < 7 days
  - Self terminating
- Persistent
  - > 7days
  - Requires intervention to terminate
- Permanent
  - Refractory to cardioversion
- We no longer use terms acute or chronic

Atrial fibrillation

- Poses 3 problems
- Hemodynamic
  - Reduced cardiac output
- Thrombus formation left atrial appendage
  - Increased stroke risk
- Possible independent risk factor for mortality

Atrial fibrillation possible causes

- Hypertension
- Coronary artery disease
- Valvular heart disease (stenosis or regurgitation)
- Cardiomyopathy
- Hyperthyroidism
- Alcohol
- Obstructive Sleep Apnea
- Genetic

Atrial fibrillation- work up

- ECG
- Echo
  - Evaluate LA size, valves, systolic function
- Labs
  - Thyroid function
  - Renal function
  - Electrolytes
- Consider for selected patients
  - Treadmill stress test
  - Holter monitor
  - Electrophysiology evaluation

Afib Treatment

- Rate control
- Rhythm control
- Prevention of thromboembolism

Afib treatment– rate control

- Goals for rate
  - At rest 60 to 80 bpm
  - With exercise 90 to 115 bpm
- Drugs
  - Beta blockers (atenolol, metoprolol, bisoprolol, carvedilol)
  - Calcium channel blockers (diltiazem, verapamil)
  - Digoxin
    - Careful in age > 65 years
    - Careful in patients with CKD
- Why it matters
  - Prevention of tachycardia induced cardiomyopathy
  - Improved symptoms

Afib treatment– rhythm control

- Restoration of sinus rhythm
  - DC electrical cardioversion
  - Pharmacologic
- Maintenance of sinus rhythm
  - Drugs
    - Class I drugs flecainide, propafenone
    - Class III drugs amiodarone, dofetilide, Sotalol
  - Ablation

Afib treatment—prevention of thromboembolism

- Assess risk of stroke
  - Mitral stenosis and HOCM
    - Need anticoagulation regardless of other risks
  - All others use CHA2DS2-VASc
    - ie “non-valvular” atrial fibrillation

Afib treatment– prevention of thromboembolism

- CHA2DS2-VASc scoring
  - 1 CHF
  - 1 Hypertension
  - 2 Age > 75
  - 1 Diabetes
  - 2 Stroke or TIA
  - 1 Vascular disease (cad, carotid, atherosclerosis aorta)
  - 1 Age >65 < 75
  - 1 Sex female

Afib treatment– prevention of thromboembolism

- CHA2DS2-VASc 0 no anticoagulation needed
- CHA2DS2-VASc 1 nothing, aspirin, full anticoagulation
- CHA2DS2-VASc >2 full anticoagulation

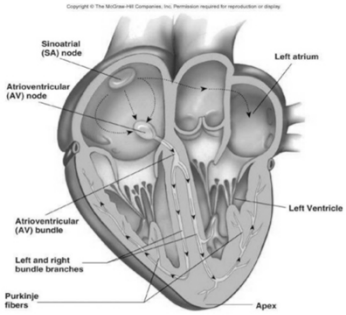
Afib treatment—prevention of thromboembolism

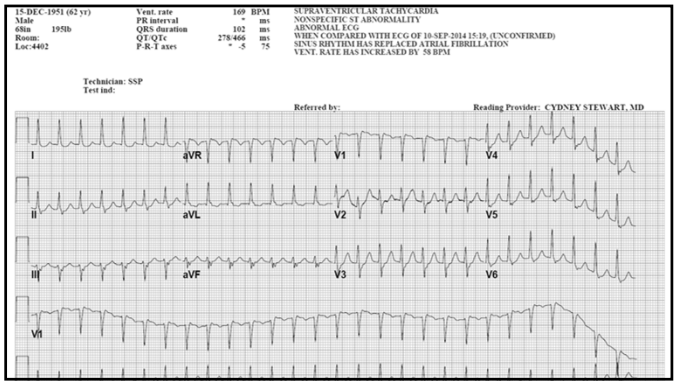
- Choice of Anticoagulant drugs
  - Warfarin
    - Advantages (time tested, reversible)
    - Disadvantages (blood tests, diet restrictions)
  - TSOAs (Target Specific Oral Anticoagulant)
    - Dabigatran (Pradaxa)
    - Rivaroxaban (Xarelto)
    - Apixaban (Eliquis)
    - Edoxaban (Savaysa, Lixiana)

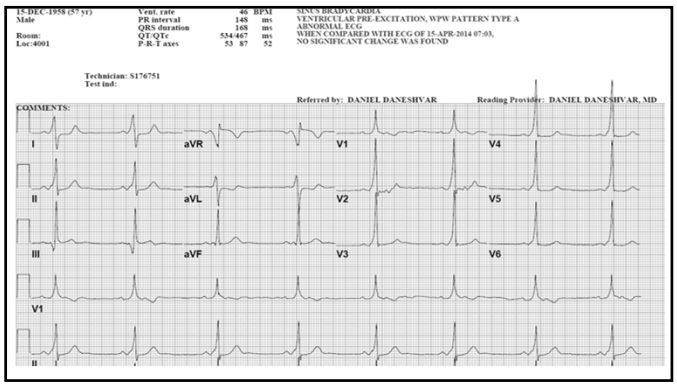
SVT supraventricular tachycardia

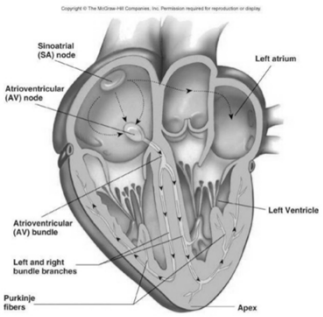
- AVNRT
  - Most common of all PSVTs (90%)
  - Present at any age
  - Female more than male
  - Involves a re-entry circuit
- Accessory pathway
  - WPW (Wolff-Parkinson-White)

Conducting System of Heart









SVT treatments

Get the 12 lead ECG

Acute setting
adenosine

Chronic setting
Catheter ablation
medications

PVC –Premature Ventricular Contractions

- Dr. Stewart, my heart _____
- Fill in the blank
  - Skips
  - Flip-flops
  - Hiccups
  - Stops
  - Beats in my throat

PVCs workup

- Get the history
- Exam
- ECG

PVCs get the history

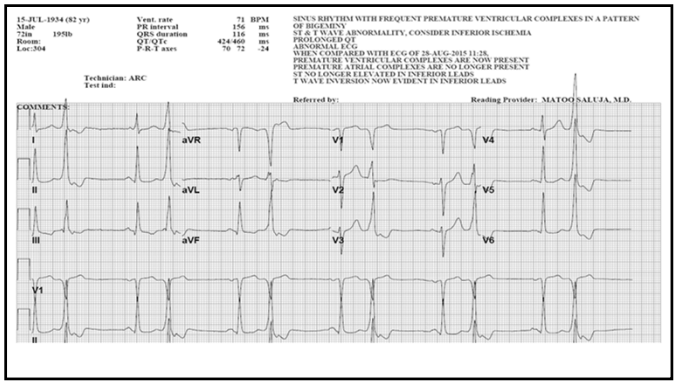
- How long have they been going on
- Any significant life events (medical or emotional)
- Any prior cardiac history (MI, valve issue)
- Meds and supplements (diet pills, illicit drugs)
- When do they occur (time of day, with exercise)
- Any chest pain or shortness of breath with them
- Any syncope
- Family history of unexplained death

PVCs workup with Red Flags

- History
  - Syncope
  - Prior cardiac history
  - Occurring with exercise
  - Family history
- Exam
  - Murmurs
  - CHF
- ECG
  - Long QT
  - Q waves suggesting old MI
  - Brugada pattern or Epsilon waves

PVCs Treatment

- With red flags
  - Refer to Cardiology
- No red flags
  - No symptom reassurance
  - Mild symptoms beta blocker therapy
- Not sure if symptoms from PVCs then get a monitor

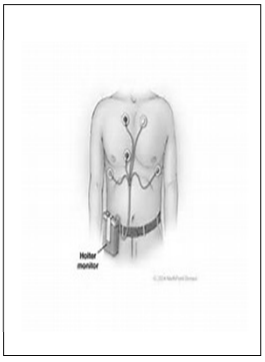


4 types of outpatient monitoring systems

- Holter monitor
  - Continuous ECG recording for 24-48 hours
- Event monitor (2 to 4 weeks)
  - Patient activated recorder
  - Continuous recording
- Implantable loop recorder

- Holter monitor

  - 24 to 48 hours
  - patients with frequent symptoms
  - to correlate symptoms to ECG



Event monitors

Typically for 2 to 4 weeks

- For patients with less frequent symptoms
- To evaluate for occult afib in a stroke workup
- To evaluate for afib burden after afib ablation

Implantable Loop Recorder (ILR)

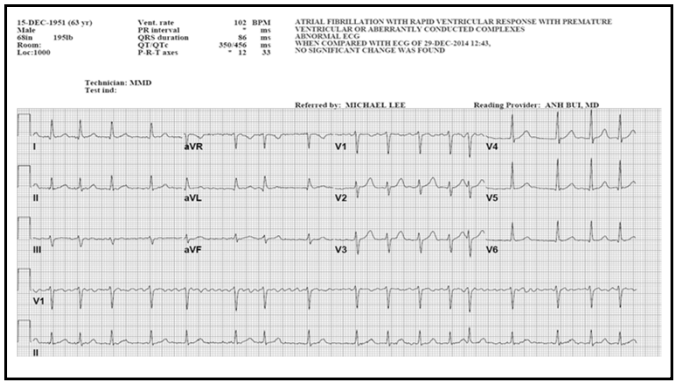
Minor surgical procedure

Battery lasts up to 2 years

Usually implanted for a syncope work up

Case Study

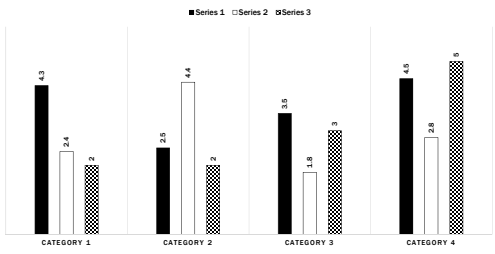
- Mr. Gonzales is a 72 year old male with no known cardiac history.
- PMHx: hypertension and diabetes
- CC: “tired”, more short of breath with walking
- Exam:
  - 150/70, 82
  - No distress
- ECG



What to do next?

- Work up for possible etiologies
- Start treatment
  - Rate control
  - Rhythm
- Anticoagulation

Title and Content Layout with Chart



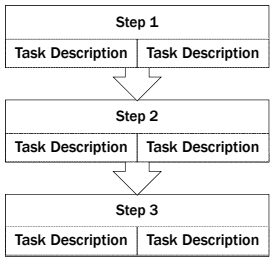
Two Content Layout with Table

- First bullet point here
- Second bullet point here
- Third bullet point here

Class	Group A	Group B
Class 1	82	95
Class 2	76	88
Class 3	84	90

Two Content Layout with SmartArt

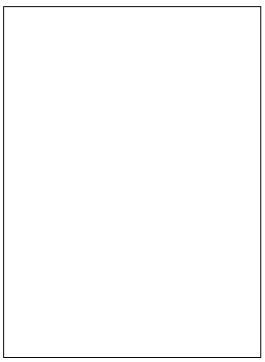
- First bullet point here
- Second bullet point here
- Third bullet point here



Add a Slide Title - 1

Add a Slide Title - 2

Add a Slide Title - 3



Add a Slide Title - 5