

### 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



### **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

15-DEC-1951 (63 yr) Male 68in 195lb Room: Loc:1000	Vent. rate PR interval QRS duration QTQTc P-R-T axes	102 BPM 86 ms 350/456 ms 12 33	ATRIAL FIBRILLATION WITH RA VENTRICULAR OR ABERRANTLY ABNORMAL ECG WHEN COMPARED WITH ECG OI NO SIGNIFICANT CHANGE WAS I	PID VENTRICULAR RESPONSE WITH PREMATURE CONDUCTED COMPLEXES F 9-DEC-2014 12-43, IOUND
Technician Test ind:	MMD			
			Referred by: MICHAEL LEE	Reading Provider: ANH BUL MD
hhadad	JVR			my van halt
Tuhuh		hh.	-Myry	my vs
				my volute
Two property				Labhanhachab
Muluhuh	-l-l-	mh		Indudandandanda



### Atrial fibrillation- Classification

Paroxysmal

- < 7 days</p> 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-	<ul> <li>prevention</li> </ul>	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)





15-DEC-1951 (62 yr) Male 68in 195lb Room: Loc:4402	Vent. rate PR interval QRS duration QT/QTc P-R-T axes	169 BPM ms 102 ms 278/466 ms -5 75	SUPRAVENTRICULAR NONSPECIFIC ST ABNO ABNORMAL ECG WHEN COMPARED WT SINUS RHYTHM HAS R VENT. RATE HAS INCR	TACHYCARDIA ORMALITY TH ECG OF 10-SEP-2014 15:19, (UNCONFIRMED) EFLACED ATRIAL FIBRILLATION EASED BY 58 BPM	
Technici Test ind	an: SSP				
			Referred by:	Reading Provider: CYDNEY STEWAR	T, MD
Πμιμ	Lillyr	hhh	MM	monthinght	Л
Thursday	hthe	hlih	LL MY	hhim h	Л
	YYY aVF	\$~}~\$~\$~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	hipphphphphhhhhhh	~
M MM	LUL	hhh	Mul	LANDANIA	
	11.1.1.	L.L.L.	1.1.1.1.1		~









## **PVC** – Premature Ventricular Contractions

- Dr. Stewart, my heart \_\_\_\_
- Fill in the blank
- SkipsFlip-flopsHiccups
- 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

15-JUL-1934 (82 yr) Male 73in 1950b Rosm: Loc:304 Technici Test ind	Vent. rate PR interval QRS duration QT/QTc P-R-T axes	71 BPM 156 ms 116 ms 424460 ms 70 72 -24	SINUS RHYTRM WITH FR OF BIGEMENY ST & T WAYE ARNORMAI PROLONGED OT ARNORMAL EČG WHEN COMPARED WITH PREMATIRE VENTRICL PREMATIRE VENTRICL PREMATIRE VENTRICL PREMATIRE ATRIAL CO ST NO LONGER ELEVATI T WAVE INVERSION NOW	EQUENT PREMATURE VENTRICI ITY, CONSIDER INFERIOR ISCHE ECG OF 28-AUG-2015 11:28, AR COMPLEXES ARE NOV PRES MPLEXES ARE NO LONGER PRES D IN INFERIOR LEADS EVIDENT IN INFERIOR LEADS	LLAR COMPLEXES IN A PATTERN EMIA ENT
COMMENTS	1		Referred by:	Reading Pr	ovider: MATOO SALUJA, M.D.
hope	aVR	-m	- y v	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-m-
	-A-A-aVL	j-			-hhr-
	aVF	Al			
Tymp-	m	$\neg \gamma \gamma$	m		-m-
	M	All	Ah		-lip-

### 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

5-DEC-1951 (63 yr) Jale Sin 1951b Room: .oc:1000	Vent. rate PR interval QRS duration QT/QTc P-R-T axes	102 BPM ms 86 ms 350.456 ms 12 33	ATRIAL FIBRILLATION WITH RAPID V VINTRICULAR OR ABERRANTLY CON ABNORMAL ECG WHEN COMPARED WITH ECG OF 29-D NO SIGNIFICANT CHANGE WAS FOUN	ENTRICULAR RESPONSE WITH PREMATURE DUCTED COMPLEXES EC-2014 12-43, D
Technicia Test ind:	a: MMD		Referred by: MICHAEL LEE	Reading Provider: ANH BUL MD
Jululul				mucht
"				sy vshill
]				W volumber
1 mm				hhimhimhichichichi
-	ndrah	mh	-h-h-h-h	Indrud-habert


### What to do next?

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





r	
	۰.



# 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







Add a Slide Title - 1

# Add a Slide Title - 2

Add a Slide Title - 3

|--|