Disclosures

None
Syncope

“Death is just prolonged syncope…”

J. Willis Hurst MD 1920-2011
Causes of Syncope

- Cardiac
  - Arrhythmic
    - Aortic stenosis
  - Non-arrhythmic
    - Orthostasis
  - Non-cardiac
    - Drugs
Arrhythmia that cause Syncope

- Sinus arrest with long pauses
- Asystole following conversion from AF
- High degree AV block
- Hypotensive ventricular tachycardia
- Ventricular fibrillation
- SVT with hypotension
Three Questions in Syncope

1. Is there any structural heart disease
2. Is there any structural heart disease
3. Is there any structural heart disease
Diagnostic Exercises for Syncope

History & physical exam
ECG
Echocardiogram w Doppler
Holter
Tilt table testing
Event recorder
EP study
Insertable loop recorder
Neurologic evaluation
Psychiatric evaluation
The ECG in Evaluating Syncope

Identifies:

- Q-waves from previous MI or ST changes associated with ischemia
- Hypertrophic cardiomyopathy
- Bundle branch or bifascicular block
- Prolonged (short) QTc, Brugada pattern
The Long QT Syndrome

28yo woman survives sudden cardiac death
31yo Man with Syncope: ARVD
12yo Boy with Near Syncope: HCM
Echocardiogram in Syncope

Assessment of left ventricular size and function
  Segmental wall abnormalities and thinning
  Diffusely dilated and dysfunctional LV
  Hypertrophic cardiomyopathy with or without LV outflow obstruction
Aortic stenosis, valvular or sub-valvular
LV inflow obstruction: Mitral stenosis or myxoma
Right ventricular abnormalities: ARVD
Holter Monitor in Syncope

What is the probability that your patient will experience syncope or near syncope during the 24hr recording?

Does nocturnal bradycardia (HR 35-40) constitute a diagnostic finding?
The 24hr Holter in Syncope Work-up

Gibson, et al., retrospectively analyzed 7,364 patients undergoing 24-hour Holter during 5-year period.

Of these, 21% had been referred because of syncope.

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Yield: < 2% had syncope during an arrhythmia

30 day Event Recorder in Syncope

*Asterisk denotes event marker

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Tilt Table Test for Syncope

Used to test for neurally-mediated, neuro-cardiogenic, vasodepressor, cardio-inhibitory syncope

Measure heart rate and blood pressure in supine & 80° head-up tilt positions

Pharmacologic challenge (NTG or Isoproterenol)
Bezold-Jarisch Reflex

EP Evaluation in Syncope

Structural Heart Disease present:
  Conduction system disease: AV block
  MI scar: Ventricular Tachycardia
  Cardiomyopathy: VF or VT
  Ion-channel abnormalities

No obvious structural heart disease: ??????
Intra-His Conduction Delay
Induction of VT
Neurologic Tests in Syncope

Carotid ultrasound and Doppler?
  RAS: Dual circulation

Brain MRI?

EEG foe epileptic focus?

Sleep disorder testing?
Suggested Algorithm for Diagnosing Syncope

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Unexplained Syncope

Branch 1
Organic Heart Disease

ECG and treadmill test

+ Holter

ECG and treadmill test

NSR w/ symptoms
Stop workup for arrhythmia

Recurrent
Tilt test, psych evaluation

First episode
Stop workup

Arrhythmia w/ symptoms
Treat

Non-diagnostic
Consider EP studies

+ Frequent
Loop monitor, tilt test, psych eval

Infrequent
Stop workup

First episode
Tilt test, psych eval

Suggested Algorithm for Diagnosing Syncope

Unexplained Syncope

Branch 2
Age ≥ 60 yrs

Carotid massage*

ECG and treadmill test

Organic Heart Disease +

Holter

Organic Heart Disease −

Branch 3
No suspected heart disease

Frequent
Loop monitor, tilt test, psych eval

Infrequent
Tilt test, psych eval

First episode
Stop workup

* Performed in office setting only in the absence of bruits, a history of ventricular tachycardia, recent stroke, or recent myocardial infarction.

Diagnostic Exercises for Syncope

History & physical exam
- ECG
- Echocardiogram w Doppler

Holter
- Tilt table testing
- Event recorder
- EP study
- Insertable loop recorder

Neurologic evaluation
Psychiatric evaluation
Practical Workup for Syncope

Take a careful history looking for:

Demographics: Age, family history
Vagal symptoms-situational syncope
History of MI, valve disease, CHF
Seizure, syncope, other rare birds

Two tests: ECG and Echocardiogram