Syncope

"A Symptom not a Diagnosis"

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Objectives

- **Define**
- **Review Impact**
- **Review Initial evaluations**
- **Risk Stratification**
- **Review Categories of syncope**
- **Review Work-up & Additional Studies**

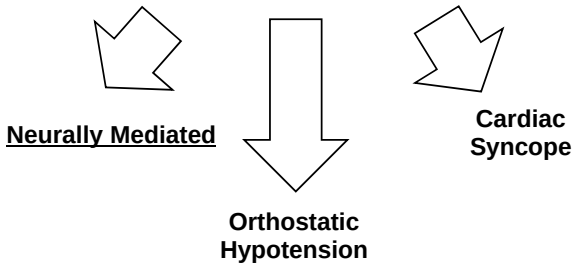
Syncope

"A symptom that presents with an abrupt, transient, complete loss of consciousness, associated with inability to maintain postural tone with rapid and spontaneous recovery." [1]

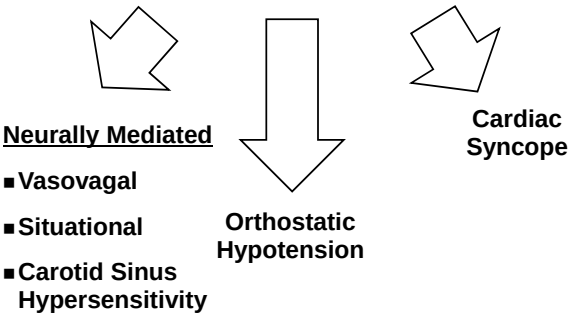
Impact

- **40% will experience syncope in his/her lifetime [2]**
- **5% of hospital admissions [3]**
- **1% of emergency room visits per year [3]**

Syncope



Syncope

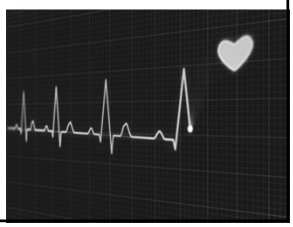


A Patient presents with Syncope. Now what?

Take a good history!

- "5 P's"
  - Precipitants
  - Prodrome
  - Palpitations
  - Position
  - Post-event Phenomena
- Appearance
- Abnormal Movements
- Eyes open or closed
- Mental State
- Incontinence/Tongue Biting
- Chronic medical issues
- Family history of SCD
- Ingestions/Medications

Diagnostic Workup



Quick Review

- **Standard Diagnostic Work-up for Syncope**
  - **Comprehensive history**
    - **Review of medications**
  - **Detailed physical examination**
    - **Including Cardiac & Neurology examination**
  - **Orthostatic blood pressure measurements**
  - **ECG**

Syncope

Neurally Mediated

- **Vasovagal**
- **Situational**
- **Carotid Sinus Hypersensitivity**

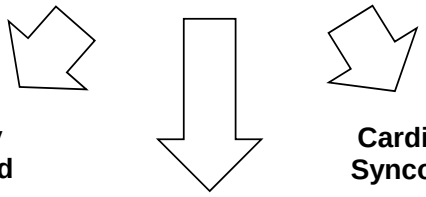
Orthostatic Hypotension

Cardiac Syncope

Neurally Mediated: Vasovagal

- **Occurs in warm or crowded conditions**
- **Emotional Distress, Pain, or Fear**
- **Prodrome: Lightheadedness, blurred vision, dizziness**
- **Occurs after exertion**
- **Brief Disorientation following event**
- **History of Recurrent Syncope**
- **No history of Heart Disease**

Syncope



Neurally Mediated

- **Vasovagal**
- **Situational**
- **Carotid Sinus Hypersensitivity**

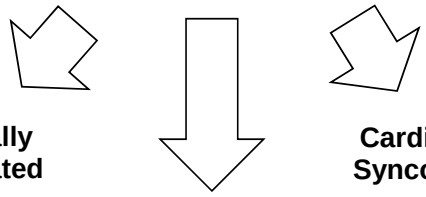
Orthostatic Hypotension

Cardiac Syncope

Neurally Mediated: Situational

- **Occur during:**
  - **Coughing**
  - **Urinating**
  - **Defecating**
  - **Laughing**
  - **After a heavy meal**

Syncope



Neurally Mediated

- **Vasovagal**
- **Situational**
- **Carotid Sinus Hypersensitivity**

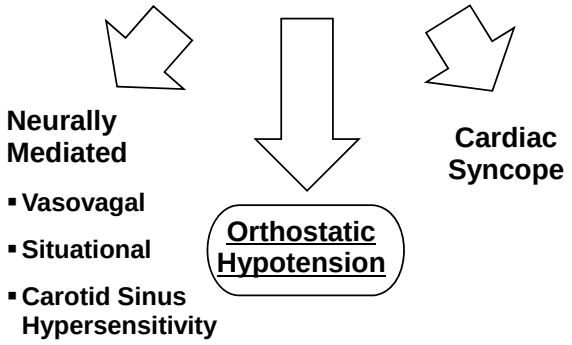
Orthostatic Hypotension

Cardiac Syncope

Neurally Mediated: Carotid Hypersensitivity

- **Occur with:**
  - **Head movements**
  - **During Shaving**
  - **A Tight Collar**

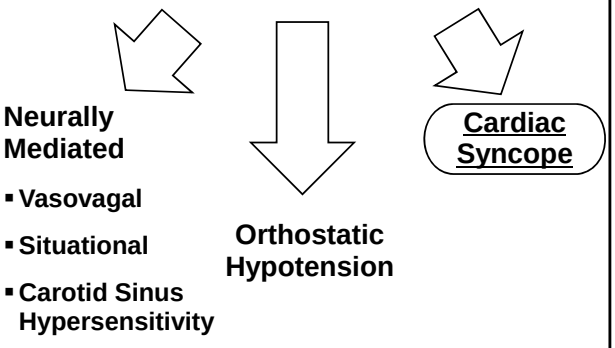
Syncope



Orthostatic Hypotension

- Change in posture or standing after prolonged sitting
- History of diabetes, alcohol use, Parkinson's
- History of new or adjusted medication/anti-hypertensive
- Recent history of volume loss

Syncope



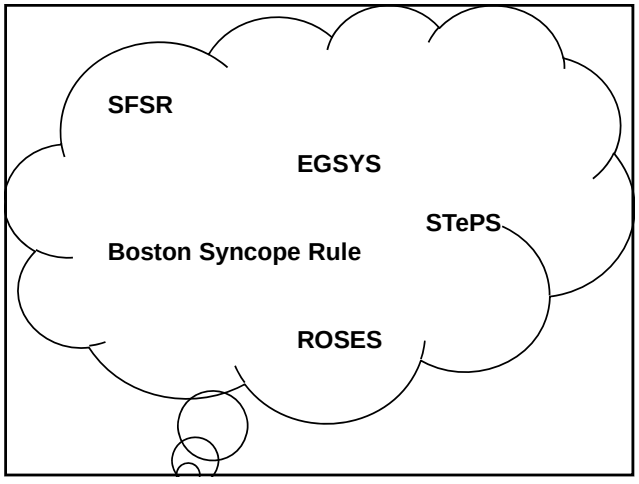
Cardiac Syncope

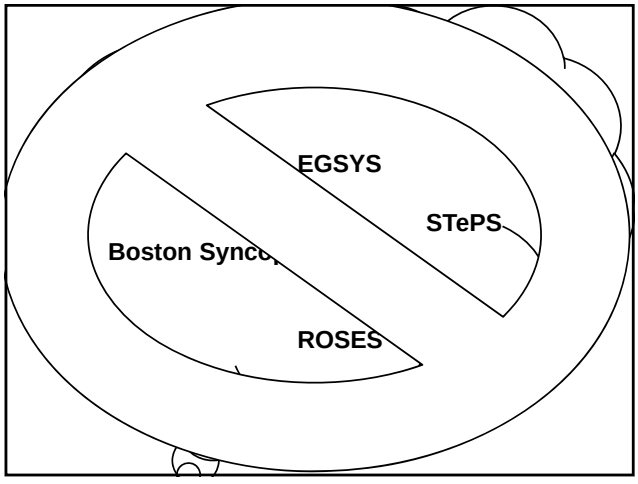
- Occurs during exercise
- Occurs when Supine
- Accompanied or followed by chest pain
- Palpitations or no prodrome
- History of heart disease
- Family history of Sudden Cardiac Death
- Abnormal EKG

Back to the Case

- **20 year old Male Student Athlete**
- **Syncope during football practice**
- **Was pushing a 300 lb weighted sled when he syncopized**
- **Had tunnel vision and nausea prior to event**
- **Orthostatic vitals are negative**
- **EKG is without abnormalities**

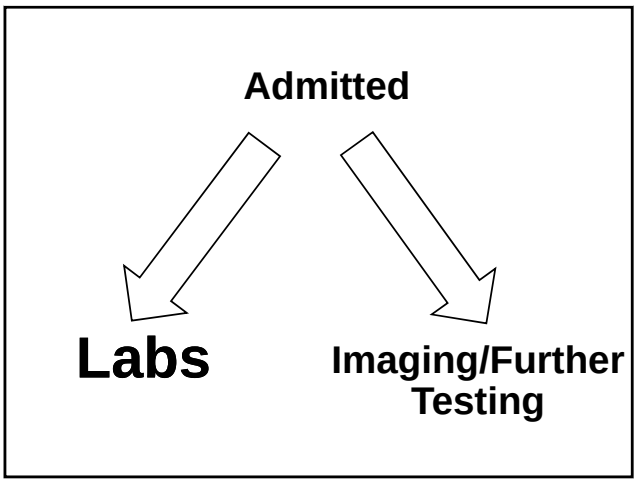
Triage – Now What?





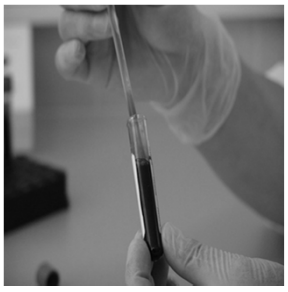
Admit or Not?

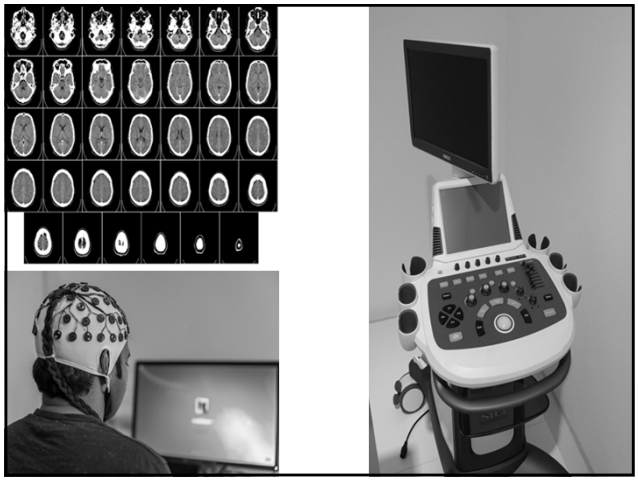
- Cardiac Arrhythmic Conditions
  - Sustained or symptomatic VT
  - Conduction system disease
  - Pauses not due to neurally mediated syncope
  - ICD/PPM malfunctions
- Cardiac/Vascular non-arrhythmic conditions
  - Ischemia
  - Severe AS
  - Cardiac Tamponade
- Non-cardiac conditions
  - PE
  - Aortic Dissection

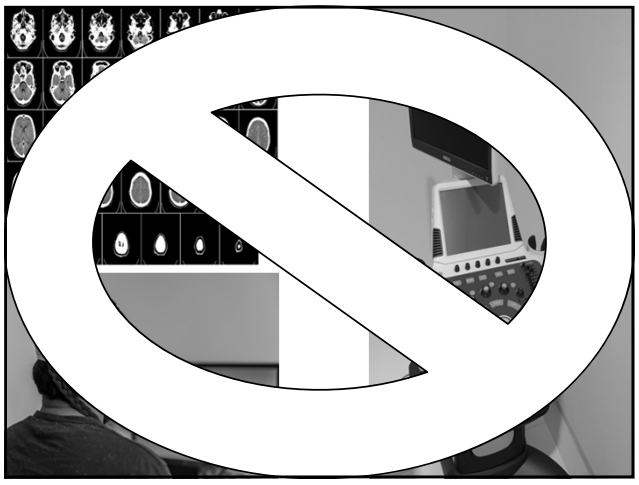


Labs

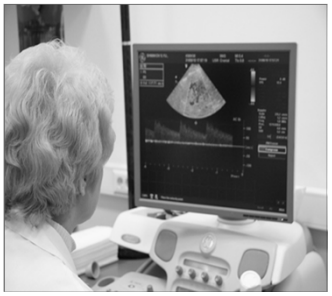
- Do Not routinely order comprehensive bloodwork
- Do order targeted blood work
- Unclear if patients with possible cardiac syncope benefit from:
  - BNP
  - Troponin







Echo



- Do Not routinely order cardiac imaging
- Do order Echo if suspecting
  - Valvular disease
  - HCM
  - LV Dysfunction

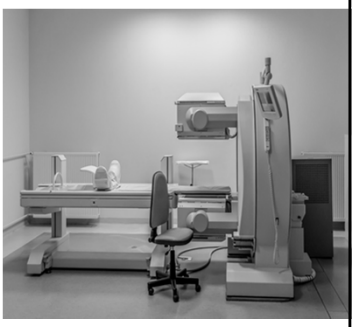
Other Imaging Modalities

CT

- Pulmonary Embolism

MRI

- Arrhythmogenic Right ventricular Cardiomyopathy
- Sarcoidosis



Stress Testing

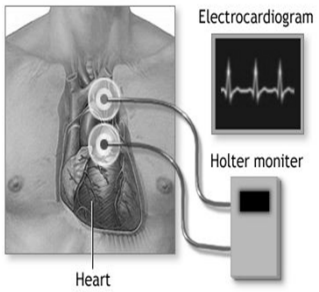
- If concern for ischemia
- Use Caution or seek Consultative services prior to stress for:
  - Structural lesions
  - Anomalous coronary arteries with pulmonary hypertension
  - Channelopathies
  - VT

Cardiac Monitoring

- **Admitted + Suspected Cardiac Syncope = Continuous Cardiac monitor**
- **Outpatient Cardiac Monitors - Multiple types**
  - **Holter**
  - **Event Monitor**
  - **External Loop Recorder**
  - **Patch**
  - **Mobile Cardiac Outpatient Telemetry**
  - **ICM**

Holter Monitor

- **24-72 hours of continuous recording**
- **Requires patient diary**
- **For patients with frequent symptoms**



Event Monitor

- **2-6 weeks of use**
- **Patient Triggered**
- **Can transmit via analog phone line or Wi-Fi**
- **Not suited for patients with sudden incapacitation**

External Loop Recorder

- **2-6 weeks of use**
- **Patient activated or Auto-triggered**
- **Records prior to, during, and after being triggered**

Patch Recorders

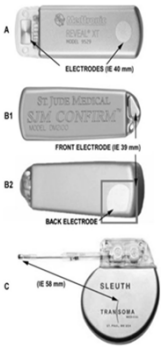
- 7-14 days of use
- Patient activated or auto-triggered
- Leadless & water-resistant
- Only records 1 lead

Mobile Cardiac Outpatient Telemetry

- 30 days of use
- Auto-transmits data to central monitoring station
- Provides real-time feedback loop with healthcare
- Great for patient with sudden incapacitation

Implantable Cardiac Monitoring

- 2-3 years of use
- Trigged by Patient/Family
- Automatically detect significant arrhythmias
- Best for recurrent, but infrequent, unexplained syncope



EP Study

- Do Not perform in patients with normal EKG & normal cardiac structure/function
- Do perform in patients with syncope & suspected arrhythmic etiology

Tilt-Table Testing

- Grade 2A recommendation when initial workup is non-diagnostic to:
  - Diagnose Vasovagal syncope
  - Diagnose Delayed Orthostatic Hypotension
  - Differentiate Convulsive Movements from Epilepsy
  - Establish a Diagnosis of Pseudo-syncope
- Not recommended to predict medical response to treatment

Treatment - Vasovagal

- Education
  - Regarding Diagnosis
  - Avoidance of Triggers
- Increase Salt and Fluid intake
- Medications
  - Midodrine
  - Fludrocortisone
  - SSRI
  - Beta-Blocker

Treatment - Situational

- Education
  - Regarding Diagnosis
  - Avoidance of Triggers
- Increase Salt and Fluid intake

Treatment – Carotid Sinus Hypersensitivity

- Limited Non-invasive Treatment Options
- Consider Permanent Cardiac Pacing

Treatment – Orthostatic Hypotension

- Education
  - Regarding Diagnosis
- Increase Salt and Fluid intake
- Perform physical counter-pressure measures
- Compression Garments
- Medications
  - Midodrine
  - Fludrocortisone
  - Droxidopa
  - Pyridostigmine
  - Octeotride

Treatment – Cardiac Syncope

- Education
  - Regarding Diagnosis
- Treat the underlying cause

Do's and Don't

- Do every time:
  - H&P, Postural Blood Pressure, EKG
- Try to avoid:
  - EEG, Cardiac Enzymes, Head CT, Carotid US
- Other testing as indicated based on findings
  - Try to avoid the shot gun approach

Echocardiogram

- **Do order if suspecting :**
  - **valvular disease, HCM, LV dysfunction**
- **Try to avoid:**
  - **Routine ordering without suspicion of cardiac syncope**

Advanced Cardiac Testing

- **Do order:**
  - **Stress Test or LHC if suspecting ischemia**
  - **Prolonged Cardiac monitoring if suspecting arrhythmia**
  - **EP study if suspecting arrhythmia**
  - **Tilt Table Test for diagnostic dilemma or if it will affect treatment**
- **Try to avoid:**
  - **Stress Testing if no worry for ischemia**
  - **EP study in patients with normal EKG & normal cardiac function/structure**
  - **Tilt Table tests to predict medical response to treatment**

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