Evaluation of Syncope in the Athlete:
Seeing the Common & Looking for the Dangerous

Christopher Pickett, MD
Associate Professor of Medicine
University of Connecticut Health Center
Co-Director of Electrophysiology
Clinical Director of Cardiology

CCSU Sports Medicine Symposium
March 14, 2017

Disclosures / Conflicts:
• No financial interests in this material.
• No off-label discussion of medications.
• The opinions expressed in the slides are mine.
• Participants must use discretion when using the information contained in this presentation.

CCSU Sports Medicine Symposium
March 14, 2017

Syncope

Definitions
• From the Greek meaning “to cut short” or to “interrupt”
• Abrupt and Transient loss of consciousness
• Abrupt and Transient loss of postural tone
• Onset is relatively rapid: no more than 10-20 second of promontory symptoms
• Recovery is reversible, usually rapid, and complete.
• Underlying mechanism is transient global cerebral hypo-perfusion.
• Pre-syncope: lightheadedness, dizziness, or weakness that almost results in the loss of consciousness.
Syncope

How many seconds of cerebral hypo-perfusion will result in syncope in most normal adults?

• 3 seconds
• 6 seconds
• 8 seconds
• 10 seconds
• 12 seconds

Syncope: The Conundrum

Common
• Lifetime incidence is 40-50%
• 1% of all ED Visits
• 1-6% of all hospitalizations

Potentially Dangerous
• Syncope can be a warning sign for Sudden Cardiac Arrest (SCA)
• SCA accounts for ~ 15% of all deaths in the US
• Examples: Reggie Lewis and Hank Gathers both had syncopal episodes prior to having SCA
Syncope

History: Timing

• What were they doing when they lost consciousness?

• Unrelated to Exercise
• Exertional Syncope
• Post-Exertional Syncope

Syncope

History: Unrelated to Exercise

• Most common, approx. 85%, usually vasovagal or orthostatic hypotension
• Often postural (sitting to standing or prolonged standing) and occurs in setting of dehydration.
• Triggers include emotional stress, severe pain especially visceral, as well as coughing, micturating, straining bowel movements.
• Characterized by feelings of warmth, nausea or “washed out”
• Symptoms can be recurrent and prolonged
• Prognosis is benign

Syncope

History: Post Exertional

• Occurs immediately after exercise, especially with no warm down
• Sudden decrease in venous return when leg muscles stop contracting, vasodilated state, acute increase in myocardial contractility resulting in activation of cardiac depressor reflex and paradoxical bradycardia.
• Dehydration can be a contributing factor.
• Generally benign and much less concerning than syncope with exercise.
Syncope

**History: Exertional**
- Least common, 1-2%
- Raises concern for structural heart disease
- Differential Diagnosis: Hypertrophic Cardiomyopathy (HCM), Dilated Cardiomyopathy (DCM), Channelopathies e.g. Long QT syndrome, Brugada Syndrome, myocarditis, anomalous coronary arteries, Wolff-Parkinson-White Syndrome (WPW)
- Commotio Cordis: sternal trauma resulting in sudden death
- Heat Stroke or Hyponatremia

**History: Other Factors**
- Prodrome:
  - Assess for palpitations or chest pain.
  - Absence of any prior symptoms is suggestive of arrhythmia.
  - Shaking: usually due to myoclonic jerking from hypoxia, seizure is rare.
  - Bowel / Bladder Incontinence: Does not suggest seizure.
  - History of Recurrence: > 4 yrs of episodes suggests benign prognosis.
  - Family History: Assess for SCA, arrhythmias, cardiomyopathy

**Postdrome:**
- “That was weird, but I feel fine now” is concerning for arrhythmia.
- Prolonged fatigue, yawning, pallor, nausea, and being able to hear voices but having difficulty moving are reassuring signs
- Hyperthermia / Hyponatremia
  - Setting of prolonged exertion in hot weather
  - Persistent confusion and delirium
  - Core temp > 40C
Syncope

Physical Exam:
- General: fatigue vs. delirium
- Vital Signs:
  - Orthostatic Blood Pressure
  - Ongoing symptoms with normal vitals seen in VVS/OH
  - Core Temp >40°C suggests heat stroke
- Skin: pallor, diaphoresis
- Cardiac: murmurs, enlargement of PMI
- Carotid Sinus Massage (most useful > 35 yrs old)

Syncope

Testing:
- Who to remove from activity and refer for further testing:
  - Any syncope with exertion.
  - Non-exertional or post-exertinal syncope without typical features.

Syncope

Testing: Second Tier
- ECG: Long QT syndrome, Brugada Syndrome, WPW, HCM
- Echocardiogram: HCM, ARVC, DCM, valvular disease
- Exercise Stress Testing: Ventricular Tachycardia, SVT
- Long-Term Telemetry: correlates symptoms with ECG
Syncope

Testing: Third Tier

- Cardiac MRI: myocarditis, infiltrative processes
- CT Angiogram: non-invasive assessment for anomalous CA
- Coronary Angiogram
- EP Study: limited utility unless associated palpitations, abnormal ECG i.e. WPW, or structural heart disease
- Tilt-Table Testing: no role in exertional syncope, controversial in other settings due to poor sensitivity / specificity.
- Genetic Testing

References:


