SYNCOPE IN OLDER ADULTS

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Faculty/Presenter Disclosure

- **Faculty:** Lorraine Peitsch

- NO CONFLICT OF INTEREST TO DECLARE
Objectives

1. Identify risk factors for syncope in older adults
2. Be able to perform a complete initial evaluation of syncope
3. Know when to refer for cardiology evaluation
SYNCOPE  Greek: “to interrupt”

- Sudden, transient loss of consciousness causing postural collapse
- Due to transient global cerebral hypoperfusion
PREVALENCE

- 19 - 30% of healthy adults have at least one episode of syncope in their lifetime\textsuperscript{1,2}
- 3% of emergency visits\textsuperscript{3}; 1% of hospital admissions\textsuperscript{4}; 8-10% of GIM unit\textsuperscript{5} are syncope-related
Incidence Rates of Syncope According to Age and Sex.
Why is syncope more common in older adults?

RISK FACTORS:
- Changes in physiology
- Multi-morbidity
- Polypharmacy
- Dehydration
RF: Age-related Changes

1. Blood volume

2. Homeostasis

3. Anticholinergic sensitivity
### RF: Comorbid Conditions

<table>
<thead>
<tr>
<th>Past Medical History</th>
<th>Effect on Postural Hemodynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFrEF</td>
<td>Low Cardiac Output</td>
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<tr>
<td>HFpEF</td>
<td>Low Cardiac Output if ECV is down</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Impaired Cerebral Autoregulation</td>
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<tr>
<td>COPD</td>
<td>Low Oxygen Availability</td>
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<tr>
<td>Pulmonary HTN</td>
<td></td>
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<tr>
<td>Anemia</td>
<td></td>
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<tr>
<td>Diabetes</td>
<td>Autonomic Dysfunction</td>
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<tr>
<td>Parkinsonism</td>
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</table>
RF: Medications/Polypharmacy

Hemodynamic Effects:  ▼Cardiac Output

1. Blood Volume
   - diuretics, anti-hypertensives

2. Vasodilation
   - nitrates, CCB, opiates, anti-Parkinsonism, alpha-blockers (tamsulosin), anti-cholinergics (TCA’s, gravol, benadryl, hydroxyzine, oxybutynin)

3. Bradycardia
   - beta-blockers, cholinesterase inhibitors, digoxin

4. Tachycardia
   - anti-arrhythmics, digoxin

5. LV Contraction
   - alcohol, sedative/hypnotics
Initial Evaluation 3 Key Questions

1. Is it syncope?
   - Rule out seizure, stroke, TIA, hypoglycemia, acute illness

2. Is heart disease present or absent?
   - *Independent risk factor for cardiac cause of syncope*
   - Sensitivity 95%; Specificity 45%

3. Are there important features in the history and physical exam which suggest the cause?

Brocklehurst, 2017
History, Postural Vitals, EKG

- Leads to diagnosis in 1/3 of cases
- Further evaluation leads to diagnosis in another 1/3
- Remaining 1/3 are unexplained
History, Postural Vitals, EKG

Collateral is Essential but Difficult

Only done in 1/3 of cases

High Sensitivity Low Specificity
Initial Evaluation

- History and Physical and EKG
- Establish working diagnosis
- Reduce Risk Factors
- Re-assess
- Treat persistent Symptoms
Initial Evaluation

History:
- Circumstance, environment, position, time of day, trigger, time of last meal, prodrome, chest pain, shortness of breath, tongue-biting, incontinence, post episode fatigue

- Collateral: was there actually LOC?
  - pallor, cyanosis, prolonged jerking of limbs, head-turning, post-ictal confusion

- Previous episodes of syncope or falls
Etiology of Syncope

Decreasing Order of Frequency:

1. Neurally-mediated “Neurogenic” “Reflex”
2. Orthostatic Hypotension
3. Cardiac
   - Arrhythmia
   - Structural heart disease
1. NEURALLY-MEDIATED SYNCOPE

- VASOVAGAL
  - Stress
  - Prolonged Orthostasis
  - Warm Environment
  - Situational – cough, micturition, defecation
- POST-PRANDIAL HYPOTENSION
- CAROTID SINUS HYPERSENSITIVITY
**VASOVAGAL**

- Predisposition to vasovagal syncope starts early in life and lasts for decades (Brocklehurst, 2017)

  “Have you fainted before, in your younger years?”

In people with syncope⁶,

- Age of first faint is <25 in 60%
- Age of first faint is >65 in 10-15%
2. ORTHOSTATIC SYNCOPE

- Postural Drop of 20mmHg SBP or 10mmHg DBP or SBP nadir <90mmHg
- Pooling of 300-800ml of volume
- Most common in morning

**Culprit Causes:**
- Physiological Changes of Aging
- Bedrest, Deconditioning
- Medications
- Dehydration
- Primary Autonomic Dysfunction
- Secondary Autonomic Dysfunction
Mechanisms of compensation for gravitational effects of standing

**Autonomic**
- Carotid/aortic baroreceptors
  - renin release
  - sympathetic tone
  - peripheral vasoconstriction
  - heart rate

**Endocrine**
- Bedrest
- Meds:
  - ACE-I
  - ARB
  - Nitrates
  - CCB
  - Diuretics
  - Opiates
  - Anti-cholinergics

- ↑ angiotensin II
- ↑ aldosterone
- ↓ sodium retention
- ↓ renin-angiotensin
- ↓ atrial natriuretic factor
- ↑ peripheral vasoconstriction & ↑ heart rate

- Diabetes, thyroid, B12, HIV, ETOH, Amyloid PD, LBD, MSA Parkinson’s Plus
- Meds:
  - Anti-parkinsonism
  - Anti-psychotics

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3. CARDIAC SYNCOPE
  highest mortality cause

- Arrhythmias
  - aFib with RVR, VT, SVT, WPW
  - AV block, sick sinus syndrome
  - Long QT

- Structural Heart Disease
  - Aortic stenosis
  - Mitral stenosis
  - HCOM
  - Ischemia
Mixed – any combo

- Vasovagal + Orthostatic Hypotension
- Postprandial Hypotension + Carotid Sinus Hypersensitivity
- Underlying Cardiac Disease + Orthostatic Hypotension
- Underlying Cardiac Disease + Postprandial Hypotension
Initial Evaluation

Physical Exam

- Evidence of acute illness or exacerbation of chronic disease
- Postural vital signs
- Cardiac/Respiratory exam
- Peripheral Neuropathy (surrogate marker)
- Parkinsonism
Initial Evaluation

Investigations:

- Electrolytes, urea, Creatinine, CBC, glucose, A1C, TSH, B12, HIV
- EKG
  - If normal very unlikely cardiac syncope
  - If AVB, afib RVR, long QTc, refer to Cardiology or Emergency
  - If old ischemia, BBB, or LVH, and all RFs for OH removed, refer to Cardiology
Fig 1 Causes of syncope by age.

Steve W Parry, and Maw Pin Tan BMJ
2010;340:bmj.c880

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Syncope Evaluations in the Elderly

- Retrospective Review from 2002-2006 at Yale
- 2106 syncope admits, aged ≥65
- Admission or discharge diagnosis of syncope

Syncope Etiology:
- Unknown 47%
- Vasovagal 22%
- Orthostasis 13%
- Arrhythmia 12%
- Dehydration 8%
- Other cardiac causes 4%
- Situational 3%
- >1 Etiology 9%

Mendu ML, Arch Intern Med 2009
CHALLENGES in OLDER ADULTS

- Less often prodome
- More often amnesia for loss of consciousness
- More often unwitnessed
- More often post-ictal fatigue and sleepiness
- More often due to mixed etiology
- More often results in injury
- More often cardiac cause

BUT, neurally-mediated is still most common cause.
Further Evaluation

- Ambulatory BP monitoring if history consistent with Orthostatic or PP Hypotension but cannot capture in the office
- Post-Prandial BP monitoring
- ECHO if physical exam concerning for AS, MS or HF
- Cardiology referral if concerning arrhythmia or structural disease
Further Evaluation

Cardiology referral if:

1. Symptoms consistent with Orthostatic Hypotension but no drop on exam and all risk factors removed (Tilt Table)

2. Strongly suspect Carotid Sinus Hypersensitivity (Carotid Sinus Massage on Tilt Table)

2. AS or MS

3. AV block, afib RVR, long QTc

4. CHF, LBBB, RBBB or bifascicular block if symptoms ongoing despite removal of RF
Management

■ Vasovagal – avoid triggers

■ Postprandial Hypotension – small, frequent meals; avoid large CHO loads

■ Orthostatic Hypotension:
  - Deprescribe
  - Maintain hydration
  - Abdominal binder
  - HOB 30°
  - Fludrocortisone, midodrine
Conclusion

- Consider Neurogenic Syncope
- Once a fainter, always a fainter
- Normal cardiac physical exam and normal EKG excludes cardiac cause of syncope
- In those with a history of cardiac disease, neurogenic syncope is still more common than cardiac syncope
- Refer to Day Hospital if non-cardiac syncope and multiple falls risks
Thank you!
Appendices
Cardiology Work-up

- ECHO
- Holter monitor
- Implantable Loop monitor
- Ambulatory blood pressure monitoring
- Tilt table testing
- Stress testing
- Electrophysiologic study
Calgary Syncope Symptom Score

<table>
<thead>
<tr>
<th>Question</th>
<th>Points</th>
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<tbody>
<tr>
<td>Is there a history of bifascicular block, asystole, SVT, or diabetes?</td>
<td>-5</td>
</tr>
<tr>
<td>Blue during faint?</td>
<td>-4</td>
</tr>
<tr>
<td>First episode when age 35 or older?</td>
<td>-3</td>
</tr>
<tr>
<td>Do you remember anything while unconscious?</td>
<td>-2</td>
</tr>
<tr>
<td>Lightheaded spells or fainting with prolonged sitting or standing?</td>
<td>+1</td>
</tr>
<tr>
<td>Diaphoresis or warm feeling prior to faint?</td>
<td>+2</td>
</tr>
<tr>
<td>Lightheaded spells or fainting with pain or in medical settings?</td>
<td>+3</td>
</tr>
</tbody>
</table>

Vasovagal syncope if the total point score is ≥ -2
Excludes patients with known cardiomyopathy or myocardial infarction

Sheldon R, Eur Heart J 2006
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<th>Major Risk Factors, any 1</th>
<th>Urgent Cardiology Assessment</th>
</tr>
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| Abnormal EKG             | Any bradyarrhythmia, tachyarrhythmia, or conduction disease  
                           | New ischemia or old infarct |
| History of CVD           | Ischemic, arrhythmic, obstructive, valvular |
| Hypotension              | Systolic BP<90 mm Hg         |
| Heart Failure            | Either past history or current state |
| Minor Risk Factors, 1 or more | Consider Cardiology Referral |
| Age > 60                 |                             |
| Dyspnea                  |                             |
| Anemia                   |                             |
| Hypertension             |                             |
| Cerebrovascular Disease  |                             |
| Famhx of early sudden death |                             |
| Syncope while supine, during exercise, with no prodrome | |
Guidelines

- ACC/AHA/HRS (American College of Cardiology/American Heart Association/Heart Rhythm Society), 2017. Pacing as a Treatment for Reflex-Mediated (Vasovagal, Situational, or Carotid Sinus Hypersensitivity) Syncope.
- ESC (European Society of Cardiology), 2018. Guidelines for the diagnosis and management of syncope.
- NICE (National Institute for Health and Care Excellence, UK), 2014. Transient loss of consciousness (“blackouts”) in over 16s.
References


