An Approach to the Patient with Syncope

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Case presentation

• A 23 y.o. man presented with 2 episodes of syncope
  – One during exercise, one at rest
  – No preceding symptoms
  – No obvious trigger
  – No family Hx, usually healthy
Definition of Syncope

Syncope is a T-LOC due to transient global cerebral hypoperfusion characterized by
• rapid onset,
• short duration, and
• spontaneous complete recovery.
Differential Diagnosis of T-LOC

- Syncope
  - Reflex
  - Orthostatic
  - Cardiac
- Epilepsy
- Hypoglycemia
- Hypoxia
- Intoxication
- TIA (vertebrobasilar)
Syncope Classification - Reflex

**Reflex (neurally-mediated) syncope**

Vasovagal:
- mediated by emotional distress: fear, pain, instrumentation, blood phobia
- mediated by orthostatic stress

Situational:
- cough, sneeze
- gastrointestinal stimulation (swallow, defaecation, visceral pain)
- micturition (post-micturition)
- post-exercise
- post-prandial
- others (e.g., laught, brass instrument playing, weightlifting)

Carotid sinus syncope

Atypical forms (without apparent triggers and/or atypical presentation)
Syncope Classification- Orthostatic Hypotension

Syncope due to orthostatic hypotension

Primary autonomic failure:
- pure autonomic failure, multiple system atrophy, Parkinson’s disease with autonomic failure, Lewy body dementia

Secondary autonomic failure:
- diabetes, amyloidosis, uraemia, spinal cord injuries

Drug-induced orthostatic hypotension:
- alcohol, vasodilators, diuretics, phenotiazines, antidepressants

Volume depletion:
- haemorrhage, diarrhoea, vomiting, etc
Syncope Classification- Cardiac

- Arrhythmia
  - Bradycardia (SSS, AV block, PM malfunction)
  - Tachycardia
- Structural Heart disease
  - Coronary disease
  - Valvular heart disease
  - HOCM
  - Other (Myxoma, tamponade)
- Other
  - Pulmonary embolus, aortic dissection
Scope of the Problem

Age and Cumulative Distribution
Should the Patient be Admitted for Syncope Evaluation?

Why should a patient be admitted?

• Suspected underlying problem is associated with high risk of early mortality and/or injury

• Proposed treatment requires in-hospital care

• Affected individual is unable to care for himself or herself
Who should be Admitted?
Patients with “high risk” features warranting hospital stay

– Symptoms suggestive of acute myocardial ischemia or acute aortic dissection or
– signs of congestive heart failure,
– acute pulmonary embolism, or
– suspicion of other concerning SHD (e.g., valvular aortic stenosis, hypertrophic cardiomyopathy)
– Syncope during exercise or syncope causing motor vehicle accidents or severe injury
Who should be Admitted?
Patients with “high risk” features warranting hospital stay

– Family history of premature sudden death
– Concerning ECG abnormalities (e.g., pre-excitation, high-grade atrioventricular block, prolonged pauses [typically >3 to 5 s], ventricular tachycardia)
– Evidence of a channelopathy (i.e., long/short QT syndrome, Brugada syndrome)
Who should be Admitted?
Patients at “intermediate risk” possible hospital stay-

- First syncope at age >50 yrs
- SHD without active consequences of disease
- Suspected implanted cardiac device (pacemaker, defibrillator, prosthetic valve) malfunction
Who should not be Admitted?
Patients at “low risk”- outpatient evaluation

– Absence of evident SHD and a normal ECG
– History of recurrent syncope over many years
– Suspicion of “syncope mimic” (e.g., psychogenic pseudo-syncope)
Clinical Findings Suggesting a Cardiac Basis for Syncope

- Physical examination and/or echocardiographic evidence of severe structural heart disease
- Syncope during exertion or while in supine position
- Palpitations at the time of syncope
- History of heart failure
- Acute or prior acute myocardial infarction
- Evidence of left ventricular dysfunction
- Abnormal electrocardiogram findings
Abnormal electrocardiogram findings

- High-degree atrioventricular block
- Sustained severe sinus bradycardia (<40 beats/min) while awake, sinus pause ≥3 s duration
- Pre-excited QRS complexes (e.g., Wolff-Parkinson-White syndrome)
- Prolonged/short QT interval
- Brugada pattern
- Negative T waves in right precordial leads, suggestive of arrhythmogenic right ventricular dysplasia
- ST-segment or T-wave changes suggesting acute myocardial infarction/ischemia
Continuous ECG Monitoring

< Holter monitor

Event (loop) recorder >

< ILR-
Implantable loop recorder
Implantable Loop Recorder in the Evaluation of Syncope

- Diagnostic yield 52% vs. 20%

Krahn AD et al, circulation 2001
Implantable Loop Recorder in the Evaluation of Syncope

Krahn AD et al, circulation 2001
Specific Evaluation Procedures

• Carotid Sinus massage: in patient > 40 years
• Tilt table: to confirm a diagnosis of reflex syncope in patients in whom this diagnosis was suspected but not confirmed by initial evaluation
• Exercise test: for syncope on or shortly after exertion
Indications for Electrophysiologic Study

- Abnormal electrocardiogram suggesting conduction system cause
- Syncope during exertion or in supine position or with important structural heart disease
- Syncope with palpitations or angina-like chest pain
- Family history of sudden death
**ESC 2009 guidelines - Neurological evaluation**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class(^a)</th>
<th>Level</th>
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<tbody>
<tr>
<td>* Neurological evaluation is indicated in patients in whom T-LOC is suspected to be epilepsy</td>
<td>I</td>
<td>C</td>
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<tr>
<td>* Neurological evaluation is indicated when syncope is due to ANF in order to evaluate the underlying disease</td>
<td>I</td>
<td>C</td>
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<td>* EEG, ultrasound of neck arteries, and computed tomography or magnetic resonance imaging of the brain are not indicated, unless a non-syncopal cause of T-LOC is suspected</td>
<td>III</td>
<td>B</td>
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A 23 y.o. w/ syncope
A 23 y.o. w/ syncope

• Holter: 10 episodes of non-sustained monomorphic VT

• Patient sent to exercise test
A 45 y.o. w/ syncope during exercise
A 17 y.o. w/ Syncope on Exertion
During EP Study
A 30 y.o. found unresponsive in bed
Thank you