Syncope

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Disclosures

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DEFINITION

1. Transient loss of consciousness
2. Inability to maintain postural tone
3. Rapid and spontaneous recovery
4. Absence of clinical features of another cause
DEMographics

- 37% in USA will faint once
- By age 60, 42% Women and 32% Men
- Most that have will have by age 40
- 1 year recurrence rate is 25-32%
- Vasovagal in most common cause of passing out

Demographics: Syncope by Age

![Graph showing the percentage of patients experiencing syncope by age, divided into two categories: Vasovagal syncope (443) and Other syncope (88).]
Syncope- frequency by age

- NEJM 2002; 347: 878-885
## Diagnosis

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurally-mediated</td>
<td>24%</td>
</tr>
<tr>
<td>Vasovagal</td>
<td>18%</td>
</tr>
<tr>
<td>Situational</td>
<td>5%</td>
</tr>
<tr>
<td>Carotid Hypersensitivity</td>
<td>1%</td>
</tr>
<tr>
<td>Cardiac</td>
<td>18%</td>
</tr>
<tr>
<td>Arrhythmia</td>
<td>14%</td>
</tr>
<tr>
<td>Outflow obstruction/AMI</td>
<td>4%</td>
</tr>
<tr>
<td>Orthostatic/Medications</td>
<td>11%</td>
</tr>
<tr>
<td>Neurologic (seizure)</td>
<td>10%</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>2%</td>
</tr>
<tr>
<td>Unknown</td>
<td>35%</td>
</tr>
</tbody>
</table>

Sources:
- Ann Int Med 1997; 126: 989-96
- NEJM 2000; 343: 1856-62
Survival based on cause - Framingham

![Graph showing survival based on cause with different categories: No syncope, Vasovagal and other causes, Unknown cause, Neurologic cause, Cardiac cause.](image-url)
Initial Evaluation

- Is loss of consciousness syncope or not?
- Is heart disease present or absent?
- Are there important clinical features in the history that suggest the diagnosis?
History & Physical

- History & Physical
  - Carotid sinus massage (esp for older pts)
  - Orthostatic BP measurement
  - ECG, ECHO
  - Cardiac auscultation
  - Assessment of injuries
Carotid Sinus Massage

- Right carotid artery massaged for 5-10 sec
- If no response repeat on Left
- Pause >3 sec or fall of SBP >50mmHg considered abnormal and defines hypersensitivity
- Treatment is pacemaker
Orthostatic Hypotension

- Most accurate after ~5 minutes laying supine
- Measurements of BP at 1 & 3 min
  - Defined as fall in SBP >20mmHg
  - fall in DBP >10mmHg
  - SBP <90mmHg

Vasovagal Syncope
Diagnostic modalities

**Table 1. Indications for Tilt-Table Testing.**

*Definite indications*
Unexplained recurrent syncope or a single episode in the absence of organic heart disease either associated with injury or in settings that pose a high risk of injury
Unexplained recurrent syncope or a single episode in the presence of organic heart disease after cardiac causes of syncope have been excluded
A case in which the cause of syncope has been determined but the predisposition to neurocardiogenic syncope may alter the treatment used

*Possible indications*
Differentiation of convulsive syncope from epilepsy
Assessment of recurrent, unexplained falls
Evaluation of recurrent, unexplained near-syncope and light-headedness
Evaluation of recurrent syncope in the setting of autonomic failure or peripheral neuropathies
Evaluation of postexertional syncope when an episode cannot be reproduced by exercise testing

Tilt Table Responses

- Vasovagal
- Dysautonomic

-Vasovagal

- POTS

-Dysautonomic

Heart Rate
Blood Pressure
How good are Tilt Table Tests?

- Evaluate a test by: 1. Sensitivity
- 2. Specificity
- 3. Reproducibility

- No Gold Standard – need gold standard to determine sensitivity and specificity.
• SENSITIVITY
  • Patients with classic vasovagal syncope symptoms → 75% had reproducible syncope during tilt

• SPECIFICITY
  • Very difficult to determine
  • 20-40% incidence of syncope of lifetime → 60-80% should be negative.
  • Over a lifetime, conditions can change

Reproduciblity

Good test –> should get same result everytime

Tilt is about 70-80% reproducible

Clinical evaluation most useful.

Order Tilt when clinical diagnosis is not clear.

Tilt should not be the sole diagnostic modality. Results combined with other tests.

Positive or Negative result does not definitively rule in or rule out vasovagal syncope.
Treatment of Neurally-Mediated Syncope

- Patient/family education
  - Avoidance of triggers

- Recognition of premonitory symptoms
  - Lifestyle changes
  - Increased fluid/salt intake
  - Careful postural changes
Vasovagal Syncope: Nonpharmacologic Treatments

- First line treatment
- Counsel to arise slowly and wait a few seconds before standing
  - Especially on first arising in the morning
  - Perform isometric exercises before arising
- Avoidance of hot showers or excessive heat
Vasovagal Syncope: Nonpharmacologic Treatments

• Support leotard prevents venous pooling thereby enhancing venous return

• Available in:
  • 15-20mmHg
  • 20-30mmHg
  • 30-40mmHg
Vasovagal Syncope – Nonpharmacologic Treatments

- Tilt training:
  - Patient stands at 70° against wall twice a day, initially for as long as tolerated
  - Duration of standing is increased slowly until 30 minutes 1-2 times per day is achieved
  - Effective if performed consistently

Vasovagal Syncope – Nonpharmacologic Treatments
Pharmacologic Treatment of Vasovagal Syncope

Beta Blockers & Vasovagal Syncope

Beta Blockers & Vasovagal Syncope

Midodrine & Vasovagal Syncope
Orthostatic Hypotension
Medical Management

- **Midodrine**
  - Alpha-1 agonist
  - Increases peripheral vasoconstriction
  - First drug approved by FDA for treatment of orthostatic hypotension
  - Usual dosage 10mg tid (every 4 hours)
  - Effect usually lasts 2-4 hours following dose

*JAMA. 1997 Apr 2;277(13):1046-51.*
Cardiac Work-Up

- Echo
- ECG
- Monitoring
- EP study
Echo Findings

- HOCM
- Aortic Stenosis
ABNORMAL ECG
- Brugada Syndrome
ABNORMAL ECG
- WPW Syndrome
Holter & Event Monitoring

- EP study and Implantable Loop Recorder
- Holter Monitor Event Monitor

• Loop Recorder battery can last up to 3 years

• Can capture syncopal episode that conventional monitoring missed.

FIGURE 3. Time course of recurrent symptoms in 106 patients with symptoms during prolonged monitoring. The steep initial portion of the curve suggests that 50% of the events occurred within 2 months and 90% within 10 months.
Implantable Loop Recorder

- Indicated when work up negative, including EP study

- Symptoms are concerning for cardiac syncope
Implantable Loop Recorder

-Predicting the Outcome of Patients with Unexplained Syncope Undergoing Prolonged Monitoring. PACE 2002; 25:37–41.
PACEMAKERS for Treatment of Syncope

Thank You