Syncope
MANAGEMENT OF SYNCOPE IN THE ACUTE CARE SETTING

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Disclosures

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OBJECTIVES

• Describe the assessment of syncope.
• Identify appropriate testing and lab studies.
• Discuss the management in the acute care setting.
• Patients will present to the hospital/Emergency Room with acute syncope. This session will review the assessment and management of syncope in the acute care setting.
The Patient

• John Doe (JD) is the 74 yo beloved patriarch with a history of DM, HTN, CAD w stent, at his grandson’s 1 year old birthday party.
• He is helping his adorable grandson blow out his candle when he passes out.
• There are 45 family members at the party, 15 of them accompany him to the ED.
What is our plan?

• First elucidate the chief complaint to be sure the ‘spell’ is syncope using the patient history and witness history.
• Syncope is a symptom, so determine type of syncope and cause of syncope.
• Then determine necessary evaluation strategy and treatment plan.
Syncope

Syncope is a symptom of hemodynamic dysfunction and not a disease.

The symptom is: An abrupt but transient loss of consciousness associated with absence of postural tone followed by a rapid and complete recovery without the need for intervention. A prodrome may be present.

The Triage RN flags JD as syncope in the EMR, takes his Vital signs and he gets an EKG and directs the patient and his now 20 family members to a bed.
ICD 10

Syncope and collapse - R55

Applicable To:

- Blackout
- Fainting
- Vasovagal attack
ICD 10

• **Syncope**: A transient loss of consciousness and postural tone caused by diminished blood flow to the brain.

• **Presyncope**: refers to the sensation of lightheadedness and loss of strength that precedes a syncopal event or accompanies an incomplete syncope. (from Adams et al., Principles of Neurology, 6th ed, pp367-9) Extremely weak; threatened with syncope.
What we are thinking

• Syncope is a loss of consciousness due to a reduction in blood pressure that is associated with an increase in vagal tone and peripheral vasodilation.

• What is the DDx for JD?
• Of 727 patients with syncope, the cause was:
  • vasovagal in 21%,
  • orthostatic hypotension in 9.4%,
  • cardiac causes in 9.5%,
  • seizures in 4.9%,
  • stroke or transient ischemic attack in 4.1%,
  • medication related in 6.8%,
  • other in 7.5%.
• Of importance, even with modern methods to assess cause, syncope was a result of an unknown cause in 36.6% (31% of men and 41% of women)
Find the true Syncope

Patients who complain of dizziness, light-headedness, passing out, and/or blacking out must be questioned carefully to determine whether a true syncope event has occurred.
Collapse, fainting, dizziness

• In one ED study of 121 patient that presented after a ‘collapse’, 19 were from cardiac arrest, 4 were dead, 1 was asleep, 15 of the 121 were finally diagnosed with syncope. -Olansky

• Syncope can mimic a seizure or metabolic derangement.
While they wait to see you, 
The patient’s daughter googles fainting

• “If you've ever fainted, you are not alone - at least one third of people faint sometime in their lives. Fainting is a temporary loss of consciousness. You lose muscle control at the same time, and may fall down. Most people recover quickly and completely. Fainting usually happens when your blood pressure drops suddenly, causing a decrease in blood flow to your brain. This is more common in older people. Some causes of fainting include
  – heat or dehydration
  – emotional distress
  – standing up too quickly
  – certain medicines
  – drop in blood sugar
  – heart problems

• fainting is usually nothing to worry about, but it can sometimes be a sign of a serious problem. If you faint, it's important to see your health care provider and find out why it happened.”

• She has decided and informed the other 22 family members that she thinks he has had a TIA or it is his heart again.
Types of Syncope

- Vasovagal
- Carotid sinus syncope
- Situational syncope
- Cardiac

-NINDS
Vasovagal

- The same as Neurocardiogenic syncope
- can be caused by, or provoked by, several inciting, often noxious, stimuli. The specific stimulus can be difficult to characterize, can be highly individualized, and can vary by physical and emotional state.
- Emotional stresses alone (danger, real or perceived, fear, or anxiety) are common triggers.
Carotid sinus syncope

- *Carotid sinus* syncope happens because of constriction of the carotid artery in the neck and can occur after turning the head, while shaving, or when wearing a tight collar.

- NINDS
Situational syncope

- *Situational* syncope is specifically triggered - happens during urination, defecation, coughing, or as a result of gastrointestinal stimulation.

- NINDS
Cardiac

“Those who suffer from frequent and severe fainting often die suddenly.”
Hippocrates Aphorisms 2.41    1000 B.C.

Cardiac syncope is a symptom of heart disease or abnormalities that create an uneven heart rate or rhythm that temporarily affect blood volume and its distribution in the body.
-NINDS
What to rule out first

• Hemodynamic collapse from critical aortic stenosis, ventricular tachycardia, AV block, dissecting aortic aneurysm or pulmonary embolus.

• In younger patients think prolonged QT, Hypertrophic cardiomyopathy, right ventricular dysplasia, Brugada syndrome, congenital Aortic stenosis
Syncope as a side effect

Certain classes of drugs are associated with an increased risk of syncope:

- diuretics,
- calcium antagonists,
- ACE inhibitors,
- nitrates,
- antipsychotics,
- antihistamines,
- narcotics, and alcohol.
- levodopa,
- Dopamine agonists which are used for PD and RLS.
A Neurologic symptom

Syncope isn’t normally a primary sign of neurological disorders but can be associated with:

- Parkinson’s disease,
- postural orthostatic tachycardia syndrome (POTS),
- diabetic and other types of neuropathy that involve dysautonomia.

NINDS
Diagnosis

The most important factor in diagnosing syncope is the careful history for the typical prodrome, signs and symptoms.
The history for JD

For the first 10 minutes you hear about the party, who was at the party, all about JDs last admission for his stent 2 years ago and how they DID NOT like the SNF he went to for recovery but they love his Cardiologist. Also, he may be upset because someone who was supposed to come didn’t show up for the party.

Then his 19 yo granddaughter who is studying to become an LNA pipes up and assures everyone that she saw the whole thing and Grampa had a seizure. Every question you try to ask is followed by, how do you know he didn’t have a TIA?
Taking the History

Regardless of the cause, patients with syncope present in a similar fashion.

• At the start of an episode, an individual feels a sense of uneasiness, progressing to unsteadiness, facial pallor, and perspiration; the vision can become darkened concentrically.

• During this time, nausea and vomiting can occur.

• Sighing can occur (an attempt to catch one's breath) because the person can have a feeling of shortness of breath.

• All these symptoms occur in the presyncope stage and usually last for less than 1 minute before loss of consciousness occurs.
Taking the history

• In cases of cardiac or carotid sinus syncope, the loss of consciousness can be rapid with little prodrome.

• If the individual assumes a supine position during the presyncopal stage, syncope is often avoided because cerebral perfusion is restored. However, an attempt to rise too quickly may lead to another presyncopal episode.
Convulsive syncope

If unconsciousness lasts for more than 15-20 seconds, simple body and extremity jerks can be seen. This condition is termed convulsive syncope.

– It should not be confused with seizures.
– Unlike those associated with a seizure, the jerking motions are single and erratic, nonrhythmic.
Odd presentations

• Prolonged syncope: Aortic stenosis, seizure, neurologic or metabolic cause
• Slow recovery: Seizure, drug, ethanol intoxication, hypoglycemia, sepsis
• Injury: Arrhythmia, cardiac cause, neurocardiogenic
• Confusion Stroke, transient ischemic attack, intoxication, hypoglycemia
• Prolonged weakness: neurocardiogenic syncope
• Skin color: Pallor – neurocardiogenic;
  blue – cardiac;
  red – carbon monoxide
• Exercise-related: Ventricular or supraventricular tachycardia, hypotension/bradycardia. HOCM.
Your exam: Signs of syncope

- The degree of altered consciousness varies from a static, dazed feeling to complete unconsciousness.
- **During** the syncopal period, the patient's systolic BP can be expected to be less than 60-80 mm Hg, and the patient's pulse may be thready. When he gets to the ED- normal again.
- Sphincteral tone is typically maintained.
- Tongue biting of the type often noted with a generalized convulsion does not occur.
- Once the patient is in the **supine position**, brain oxygenation is restored, and the patient regains consciousness. Otherwise myoclonus may occur.
- The patient can usually recall the presyncopal symptoms that are critical to the diagnosis.
Injury

• Falling may cause injury if the individual cannot protect himself. This is of particular concern in the elderly in whom the incidence of falls is already high.

• Syncope leading to injury often reflects the ability of the patient to react rather than the underlying cause.
Your work up

• Vital signs and fingerstick BS
• EKG
• Lab work

Then what?

Use of diagnostic testing

• Several tests should be considered: ECG, tilt table test, echocardiogram, electrophysiologic test, treadmill test, or a monitor.
• The more tests, the more abnormalities will be found.
• Some clinicians use a “routine” battery of tests that are useless, expensive, and misleading. It is not clear how some tests and approaches (such as use of carotid Doppler testing, EEG, MRI scans, CT scans, neurology consultations) emerged.
• All patients should have an ECG. An ECG is simple, inexpensive, risk free, and may provide helpful information in 5–10% of patients. –Olshanksy 2005
Do we order an Echo for JD?

- An echocardiogram may be appropriate to evaluate ventricular function and valvular heart disease but,
- if the ECG is normal, there is no cardiac history, and there are no abnormalities found on physical examination, this does not need to be obtained urgently.
- Younger patients, without a history of heart disease and with a normal physical examination, will be unlikely to benefit from an echocardiogram. Patients with suspected neurocardiogenic syncope do not need an echocardiogram. - Olshansky 2005
The science behind the symptoms
EYE - RIGHT OPHTHALMIC ARTERY

Supratrochlear
Dorsal nasal
Supra-orbital
Anterior ciliary
Zygomatico-facial/temporal
Lacrimal
Central artery of retina
Internal carotid
Optic nerve passing through optic canal & tendinous ring with ophthalmic artery

VIEWED FROM ABOVE
Central artery of the retina

- The Ophth. Art is first branch off the internal carotid.
- The central artery of the retina is the first branch to arise from the ophthalmic artery.
- Once it reaches the eyeball, it splits into inferior and superior branches.
- When it reaches the retina those branch into a total of 4 end branches of the central artery of the retina.
- BUT there is an anastomosis with the posterior ciliary arteries called the Circle of Zinn.
Why tunnel vision

• The circle of Zinn = small vascular branches anastomosing together in the sclera around the head of the optic nerve.
Why sweating, pallor and nausea?

Vagal tone is increased in the skin and gut.
Lifestyle impact for JD

• Fear of recurrence
• Up to 76% of patients will change ADLs
• 64% will restrict their driving
• 39% will change their employment
• 73% become anxious or depressed especially if the cause is not found and treated.
Treatment-what to tell the family

• Immediate treatment:
  check first to see if their airway is open and they are breathing. They should remain lying down for at least 10-15 minutes, preferably in a cool and quiet space.
• If this isn’t possible, have them sit forward and lower their head below their shoulders and between their knees.
• Ice or cold water in a cup is refreshing.

From NINDS page
If you've ever fainted, you are not alone

• at least one third of people faint sometime in their lives.

• Fainting is a temporary loss of consciousness. You lose muscle control at the same time, and may fall down. Most people recover quickly and completely.
• Forty to eighty-five percent of those who come for evaluation of syncope will not have a recurrence. (not including those who don’t come for evaluation.)

• Isolated episodes are common: 90% will have only one episode in 2 years.
Criteria for hospitalization

Malignant arrhythmia or cardiovascular cause suspected
New neurologic abnormality present
Severe injury present
Multiple frequent episodes
Severe orthostatic hypotension
Uncontrolled “malignant” vasovagal syncope
Elderly patient
Treatment plans not possible as an outpatient

-Olshansky 2005
Treating Chronic Syncope

For individuals who have problems with chronic fainting spells, therapy should focus on recognizing the triggers and learning techniques to keep from fainting.

At the appearance of warning signs such as lightheadedness, nausea, or cold and clammy skin, counter-pressure maneuvers that involve gripping fingers into a fist, tensing the arms, and crossing the legs or squeezing the thighs together can be used to ward off a fainting spell.
What happened to JD?

- He stood up quickly and was mimicking taking a deep breath and blowing it out slowly for his precious grandson, when he had a coughing fit, he felt himself get light headed, sat back in a chair and lost consciousness. His limbs shook, first right side, then all of them 2 or 3 times. Finally, he woke up after a few minutes to many many stricken faces and a crying baby and asked what happened?

- What is your diagnosis?
References

- NINDS website: Syncope