AGACNP-509GX

MIKE K

Case 1

Initial information

- Carl is a 72 y.o. male brought to ER after passing out at home.

Syncope

Life-threatening conditions requiring immediate treatment:

- 1. Cardiac syncope: arrhythmia, myocardial ischemia/ infarction, structural/ valvular abnormalities (eg, aortic stenosis), cardiac tamponade, and pacemaker malfunction
- 2. Blood loss from trauma, gastrointestinal bleeding, ruptured aortic aneurysm, ruptured spleen, in women— ruptured ovarian cyst, ruptured ectopic pregnancy
- 3. Pulmonary embolism (PE)
- 4. Subarachnoid hemorrhage (if the patient had severe headache and then syncope)
- 5. Seizure (technically not true syncope but should be considered)
- 6. Stroke (technically not true syncope but should be considered)

Common causes:

- Neurocardiogenic syncope (also known as vasovagal syncope or reflex syncope)
- 2. Orthostatic syncope from loss of intravascular volume or failure/ instability of the autonomic nervous system
- 3. Medications causing orthostasis or cardiotoxicity including diuretics, vasodilators, calcium channel blockers, β-blockers, γ-blockers, medications that affect the QTC (antipsychotics, antiemetics), muscle relaxants, tricyclic antidepressants
- 4. Neurologic: subarachnoid hemorrhage, transient ischemic attack, subclavian steal syndrome, complex migraine headache
- 5. Metabolic (hypoglycemia, hypoxemia)
- 6. Psychiatric (psychogenic pseudosyncope)
- 7. Rare causes: atrial myxoma, Takayasu arteritis, systemic mastocytosis, carcinoid

Neurocardiogenic syncope:

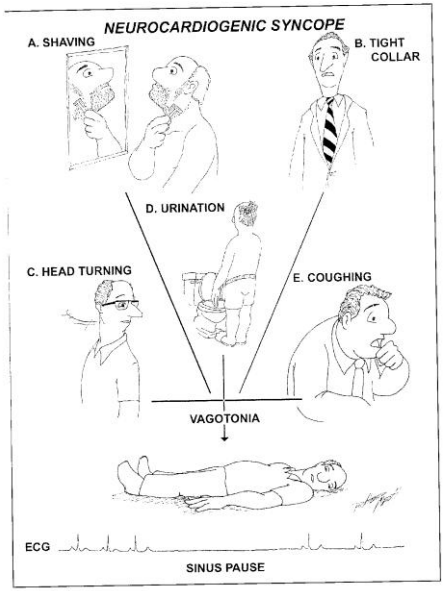

Figure 1-13

FIGURE 1-12

Clinical Clues To Syncope

Clue	Clinical significance
Prolonged standing, following pain or emotional upset, prodrome of warmth, nausea, sweating, weakness.	Neurocardiogenic (vasovagal) syncope (with hypotension and bradycardia).
Occurring during or immediately after urination, swallowing, defecation, cough.	Situational (neurally-mediated) syncope.
Sudden onset at rest, palpitations, previous history of heart failure.	Dilated cardiomyopathy with ventricular tachycardia.
Arising from supine or sitting to upright position.	Orthostatic hypotension, e.g., from over-medication with anti-hypertensives, volume depletion, acute blood loss. Autonomic dysfunction, e.g., diabetes mellitus, multiple system atrophy (Shy-Drager syndrome).
Exercise-induced, history of angina or MI.	CAD with ventricular arrhythmia (LV aneurysm)
Occurring during or shortly after exercise. Associated with exertional related chest pain and/or dyspnea.	Valvular aortic stenosis.
Exercise-induced, family history of syncope and/or sudden death. Occurring while bearing down (Valsalva maneuver).	Hypertrophic obstructive cardiomyopathy.
Exertional-related, young female with shortness of breath, chest pain, fatigue.	Primary pulmonary hypertension.
Young, anxious female with atypical chest pain, palpitations.	Mitral valve prolapse (neurocardiogenic, arrhythmic).
Occurring with shaving, tight collar, sudden head turning.	Hypersensitive carotid sinus (with bradycardia and/or hypotension).
Changing position, e.g., rolling over in bed.	Atrial myxoma (intermittent obstruction of heart valve).
After upper extremity exercise.	Subclavian steal syndrome (shunting of blood away from brain via vertebrobasilar system).

Back to Carl

- Vital signs:
- BP 108/70
- HR 66
- RR 18, O2 sats 97%
- Meds
- ASA 81
- Lisinopril 40 mg qD
- Metoprolol XL 50 mg qD
- HCTZ 25 mg q D - NEW

- PMH
- HTN, recently seen by PCP for BP 148/90
- DM-2, diet controlled
- Nephrolithiasis
- H/o heart murmur, followed by cardiologist

Heart murmur

TTE 6 months ago

- Moderate AS
- LVEF 65%
- LVH

Pertinent positives:

- 3/6 Harsh, late peaking crescendo-descrescendo systolic murmur, best heard at RUSB, radiates to carotids
- Mild AS
- Recent onset of orthopnea
- Mild dyspnea on exertion
- Recently started diuretics

Synthesis

- 72 y.o. male with a known h/o AS, recent TTE 6 months ago, presented with a witnessed syncopal episode preceded by lightheadedness after starting a new diuretic
- What's next?

Labs and imaging

- Na 133
- BUN 28
- Cr 1.2
- CBG 115
- WBC 6,000
- Hb 14
- Hct 43
- Platelets 198,000
- Troponins negative x 3
- BNP negative
- CHX WNL
- Head CT (?)
- Repeat TTE (?) AVA 0.8 cm2

Prognosis and management

- Severe AS 30-50% survival after 2 years
- D/c HCTZ
- Refer to cardiology
- Aortic Valve Replacement
  - Mechanical
  - Bioprosthetic
- Transcatheter aortic valve replacement (TAVR)

OREGON HEALTH & SCIENCE UNIVERSITY

Patient enters ED as Trauma Activation

Patient had LOC that resulted in injury?

NO → Use different protocol

YES

LOC was transient with return to baseline?

NO → Consider other serious medical/traumatic causes for altered LOC

YES

Initial Syncope work-up:
Head CT, EKG, BMP, Mg++, CBC, HCG, UA panel, initiate telemetry

Abn. results → Review PMH for similar episodes, provoking factors, mediations, Family history of sudden cardiac death.

High risk criteria: CHESS

- **C**HF, **H**ct <30, Abnormal **E**KG (non sinus; conduction delays, new changes, even 1st degree av block, morphological changes to QRS or ST segment, Q's, QT);
- **S**BP < 90 mm Hg, **S**OB, **S**tructural Heart Disease;
- Age > 64;

NO

Neuro-cardiogenic (Vaso-vagal) syncope?

History is consistent and age < 65 → Patient requires NO further in-patient syncope workup

Complete Syncope Workup to include:

Cardiac work-up:

- EKG, TTE, 24-48 hrs telemetry;
- Consider cardiology consult for abnormal results;
- Electrophysiology study per recs of Cardiology;

Neurology work-up:

- Carotid duplex/neck CTA
- EEG (+/-) based on history;
- Consider Neurology/NSG consult;

References

- Chizner, M.A. (2004) *Clinical cardiology made ridiculously simple*. Miami: MEdMaster, Inc.
- Morag, R. (2010, March, 30) Syncope. *Emergency Medicine*. Retrieved May 20, 2010 from http://emadicine.medscape.com/article/811669-overview
- Morag, R., Brenner, B. E., (2010, May, 25) Syncope: differential diagnoses and workup. *Emergency Medicine*. Retrieved June, 3, 2010 from http://emedicine.medscape.com/article/811669-diagnosis
- Morrison, J. E., Wisher, D. H., Ramos, L (1999) Syncope-related trauma: rationale and yield of diagnostic studies. *The Journal of Trauma: Injury, infection, and critical care*. 46(4), 707-710
- Olshansky, B. (2011, May, 18). Evaluation of syncope in adults. *UpToDate*. Retrieved November 8, 2011 from http://www.uptodate.com/contents/evaluation-of-syncope-in-adults
- Quinn, J., McDermott, D., Stiell, I., Kohn, M., Wells, G. (2006) Prospective validation of the San Francisco Syncope Rule to predict patients with serious outcome. *Annals of Emergency Medicine*. 47 (5), 448-454.