Project: Ghana Emergency Medicine Collaborative

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- I. Definition: Sudden temporary loss of consciousness associated with loss of postural tone, with spontaneous recovery
- II. Etiology
 - Vasovagal ("vasodepressor syncope") : "simple faint". Probably the Α. commonest cause of syncope in younger patients. Usually follows a triggering emotional event and is associated with characteristic prodrome (typically weakness, sweating, nausea; may also have yawning, belching, dimming of vision). Usual precipitating events: painful stimulus, emotional stress, surgical instrumentation, sight of blood; often associated with hunger, overcrowding, or fatigue. Cannot occur when patient is horizontal ; uncommon (but possible) when sitting. After prodrome, patient develops LOC, hypotension, and bradycardia. Can have seizures and even hypoxic CNS damage if restricted from becoming supine. Rapid recovery of signs and symptoms when recumbent. No specific treatment except avoiding the triggering events. May have seizure activity secondarily if prevented from becoming recumbent. 4

- B. Situational : determine this category by close association with specific history event.
 - 1. Micturition syncope : usually occurs in young to middle-aged man, immediately following voiding, without premonitory sx, especially at night. Predisposing factors : excessive alcohol consumption, recent viral infection, fatigue, reduced food intake. Some cases may really be due to orthostatic hypotension. Prognosis : good. Rx : sit down to void.
 - 2. Defecation syncope : may be due to valsalva-like effect causing decreased venous return. Prognosis : good. Rx : avoid straining at stool, consider stool softeners.

- B. Situational : (cont.)
 - 3. Posttussive : occurs after severe or prolonged coughing spell. Most common in males with COPD. No good Rx although antitussive meds may be useful in some.
 - 4. Postdeglutition : uncommon. May be related to
 ↑ gut blood flow and resultant ↓ venous return.
 - Post deglutition syncope may benefit from Rx with Reglan or anticholinergic agents.

- B. Situational : (cont.)
 - 5. Postprandial : more common in elderly patients with cardiac disease. Probably related to increased gut blood flow postprandially and resultant decreased cerebral blood flow due to limited cardiac reserve.
 - Rx : smaller meals, adequate fluid with meals, avoid standing soon after meals.

- C. Carotid sinus syncope : caused by "hyper-sensitivity" of carotid sinus (or carotid body) to external pressure resulting in ↑ vagal tone with bradycardia and / or hypotension. Commoner in elderly men. May be caused by sudden head turning, shaving, or firm shirt collar pressing on neck when bending over. Dx : by CSM reproducing sx or bradycardia or hypotension.
 - Rx: avoid sudden head turning or pressure on neck. Frequent severe recurrent sx might need carotid sinus denervation on one side.

- D. Postural syncope (basically due to decreased venous return)
 - Volume depletion : Dx : by hx of intravascular volume loss (internal or external bleeding, profuse or extended vomiting or diarrhea, or just poor PO intake in elderly patients). May occur in elderly patients on diuretics without obvious sx. Signs : poor skin turgor, pallor, "sunken" eyes or fontanelle, ± hypotension ; usually show orthostatic (lying >sitting or standing) BP ↓ more than 20 mmHg and pulse ↑ more than 20 BPM.
 - Rx : IV fluids or blood transfusion, correct the underlying problem.

- D. Postural syncope (cont.)
 - 2. Autonomic insufficiency : can occur in diabetics or with other peripheral neuropathies, or as Shy-Drager syndrome (primary autonomic insufficiency, due to degeneration of the lateral horn cells and basal ganglions).
 - Rx : support stockings, maintain fluid status, avoid sudden postural shifts, flourinated steroids PO, ephedrine PO.

- D. Postural syncope (cont.)
 - 3. Drug-induced : most commonly from prazosin (Minipres) and nitrates. Can also occur from hydralazine, alphamethyldopa, phenothiazines, tricyclics, ganglionic blocking agents ; possibly also from calcium channel blockers.

- E. Uncommon Miscellaneous
 - 1. Takayasu's aortitis : due to ↓ flow in carotid & vertebral arteries
 - 2. Subclavian steal syndrome : high grade stenosis proximal to origin of vertebral artery ; symptoms occur with arm exercise
 - 3. Glossopharyngeal neuralgia : pain with swallowing may induce syncope
 - 4. Systemic mastocytosis : usually have hives and other "allergic" manifestations ; Rx by H1 and H2 blockers and salicylates

- E. Uncommon Miscellaneous (cont.)
 - 5. Hysteria
 - 6. Hyperventilation : most cases may really be vasovagal. May be due to \downarrow cerebral blood flow from \downarrow arterial PCO₂. Rx by rebreathing expired air, and / or benzodiazepines or hydroxyzine
 - 7. Basilar artery transient ischemic attacks ; very rare to have syncope alone with this (nearly always have associated diplopia, vertigo, dysarthria, hemiparesis, or other sx of brainstem ischemia).

- E. Uncommon Miscellaneous (cont.)
 - 8. Hypoxemia : usually not sudden enough to cause true syncope. May however be a more common cause in the elderly than currently thought due to their small "reserve" level of cerebral blood flow over what is needed to supply the brain (3.5 ml O_2 /100 g brain tissue / min). Superimposed pneumonia, anemia, CHF, etc., may drop the cerebral O_2 supply < 3.5 ml O_2 / 100 g/min so that syncope results.

- E. Uncommon Miscellaneous (cont.)
 - 9. Hypoglycemia : doesn' t usually cause true syncope because resolution is either very slow or not spontaneous without Rx, but certainly can cause sudden LOC.
 - 10. Seizure disorder : again does not cause true syncope (because resolution is slow), but if unwitnessed, can present in similar fashion to true syncope. Requires EEG for Dx confirmation.

- F. Cardiac causes of syncope : can cause syncope when patient lying down. Account for 20 to 30 % of cases in the elderly.
 - 1. Stokes-Adams attacks : asystolic episodes > 3 second duration
 - 2. Other bradyarrhythmias : sick sinus syndrome, heart blocks, (Mobitz II, CHB) effects of drugs such as beta-blockers or Class Ia antiarrhythmics (quinidine, procainamide, disopyramide). Rx with permanent pacemaker.

- F. Cardiac causes of syncope (cont.) :
 - 3. Supraventricular tachycardias : PAT, WPW. Rx with drugs, overdrive pacing, or surgical ablation of abnormal focus or bypass tract.
 - 4. Ventricular arrhythmias : most common cardiac cause but can be hard to prove. Rx by drugs, surgical ablation of foci, ± CABG if ventricular ischemia causative ; AID (automatic implantable defibrillator) if refractory to drug regimens. May require special electrophysiologic studies for Dx.

- F. Cardiac causes of syncope (cont.)
 - 5. "Obstructive" problems :
 - a) Aortic stenosis : perhaps most common of these. Survival average only 1 to 3 years after development of syncope. Rx by valve replacement
 - b) Hypertrophic cardiomyopathy : Rx : beta blockers
 - c) Mitral valve prolapse : associated dysrhythmias may be the real cause of associated syncope

- F. Cardiac causes of syncope (cont.)
 - d) Acute MI : often "silent" in elderly patient (may not have any chest pain)
 - e) Pulmonary hypertension : no good Rx
 - f) Pericardial tamponade : usually have Beck's triad. Dx by echocardiography
 - g) Atrial myxoma : very rare ; Dx by echo
 - h) Prosthetic valve malfunction : may reflect clot on valve

III. Frequency of the types of syncope in younger patients

Vasovagal :	10 to 40%	
Situational :	10%	
Postural :	10 to 25%	
Miscellaneous :	10 to 25%	
Unknown :	40 to 60%	(even after extensive workup)

NOTE: Rare to identify specific cause if not done on first visit.

IV. Evaluation scheme for syncope :

A. In ED : History : R/O seizures, TIA's, drug effects. **Orthostatic VS : R/O postural.** Check patients for trauma from the fall from the syncope. Pulse ox or ABG's : R/O hypoxemia. ChemStrip: R/O hypoglycemia. Check standard blood glucose on all patients. CBC / lytes / BUN : R/O anemia, dehydration. EKG : R/O MI, dysrhythmias. **Consider CSM if above all normal and suspect** carotid sinus syncope (must have cardiac monitor in place and resuscitation equipment ready). Consider EEG, head CT.

IV. Evaluation scheme for syncope (cont.)

- B. Admit patient if any suspicion for MI, PE, SVT, VT/VF, cardiac tamponade, other cardiac valve problems. Consider echocardiogram to R/O AS, tamponade, hypertrophic cardiomyopathy. Consider V/Q scan or chest CT to R/O PE. Keep patient on monitor if suspect arrhythmias.
- C. Admit or observe patient if postural syncope likely until specific Rx can correct the primary problem.

- **IV.** Evaluation scheme for syncope (cont.)
 - D. May usually discharge patient from ED if etiology clearly vasovagal or situational. May still need outpatient Holter monitor or EEG for further confirmation.
 - E. Secondary workup tests to consider :

CT scan, aortic / cerebral angiography, electrophysiologic testing (PES, or programmed electrical stimulation, in cath lab)