CrackCast Episode 15 – Syncope

Episode overview:

1) What are 12 critical causes of syncope
2) List common medications that can cause syncope
3) Describe the San Francisco Syncope Rule
4) What are red flags that require admission in syncope?

Rosen's in Perspective:

Syncope is defined as a sudden, transient, loss of consciousness with loss of postural tone accompanied by a rapid return to baseline.

- prevalence: 1 in 5 in life-time
- wide range of life threatening to totally benign causes
- patients with known CAD who have a syncope from any cause have highest mortality
- risk factors: known cerebral vascular disease/HTN/cardiac medications
- increase mortality associated with age, CHF, CAD
- no mortality from vasovagal, orthostatic, or medication induced syncope unless patient suffers trauma/injury

Pathophysiology:

Bilateral hemispheric dysfunction or Reticular Activating System (RAS) dysfunction

- majority from acute hypo-perfusion
- can be local (cerebral vasoconstriction (SAH) or systemic hypovolemia (diarrhea))

Pre-syncope and syncope are the same entity! On a spectrum from pre-syncope, syncope, to coma.

1) What are 12 critical causes of syncope

When cerebral perfusion pressure drops more than 35% the patient may have syncope

DIMS:
Drugs/toxins
Ischemia/Cardiac
Metabolic
Structural/Neuro

Critical causes of syncope:

- MI
- arrhythmia
- thoracic aortic dissection
- critical Aortic Stenosis
- HOCM
- pericardial tampondade
- abdominal aortic aneurysm
- PE
- subarachnoid bleed
- toxin mediated
- severe hypovolemic shock
- ruptured ectopic pregnancy

Other causes of syncope:

Box 15-1 Causes of Syncope

Focal Hypoperfusion of CNS Structures
- Cerebrovascular disease
- Hyperventilation
- Subclavian steal
- Subarachnoid hemorrhage
- Basilar artery migraine
- Cerebral syncope

Systemic Hypoperfusion Resulting in CNS Dysfunction
- Outflow obstruction
  - Mitral, aortic, or pulmonic stenosis
  - Hypertrophic cardiomyopathy
  - Atrial myxoma
  - Pulmonary embolism
  - Pulmonary hypertension
  - Cardiac tamponade
  - Congenital heart disease
- Reduced cardiac output
  - Tachycardia
    - Supraventricular tachycardia
    - Ventricular tachycardia
    - Ventricular fibrillation
    - Wolff-Parkinson-White syndrome
    - Torsades de pointes
  - Bradycardia
    - Sinus node disease
    - Second-degree and third-degree AV block
    - Prolonged QT syndrome
    - Brugada's syndrome
    - Pacemaker malfunction
    - Implanted cardioverter-defibrillator malfunction
  - Other cardiovascular disease
    - Aortic dissection
    - Myocardial infarction
    - Cardiomyopathy
- Vasomotor—neurally mediated (reflex vasodepressor)
  - Neurocardiogenic (vasovagal)
  - Emotion
  - Pain
  - Situational
- Carotid sinus sensitivity
  - Necktie syncope
  - Shaving syncope
- Miscellaneous reflex
  - Tussive, sneeze
  - Exercise, postexercise
  - Gastrointestinal—swallowing, vomiting, defecation
  - Postmicturition
  - Elevated intrathoracic pressure (weightlifting)
- Other causes of hypoperfusion
  - Orthostatic hypotension—volume depletion
  - Anemia
  - Drug-induced

CNS Dysfunction with Normal Cerebral Perfusion
- Hypoglycemia
- Hypoxemia—asphyxiation
- Seizure
- Narcolepsy
- Psychogenic
  - Anxiety disorder
  - Conversion disorder
  - Somatization disorder
  - Panic disorder
  - Breath-holding spells
- Toxic
  - Drugs
  - Carbon monoxide
  - Other agents
  - Undetermined causes

AV, atrioventricular; CNS, central nervous system.

Box 15-1. Causes of syncope. Rosen's 8th Edition. Chapter 15 - page 136.

2) List common medications that can cause syncope

Cardiac meds – can cause hypotension
QT prolonging medications – can lead to transient Torsade de Pointe
Digitalis
Insulin/oral hypoglycemic agents
Recreational Drugs

Box 15-2 Medications That May Induce Syncope

Cardiovascular agents
Beta-blockers
Vasodilators (beta-blockers, calcium channel blockers, nitrates, hydralazine, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, phenothiazines, phosphodiesterase inhibitors)
Diuretics
Central antihypertensives (clonidine, methyldopa)
Other antihypertensives (guanethidine)
QT-prolonging agents (amiodarone, disopyramide, flecainide, procainamide, quinidine, sotalol)
Other antidysrhythmics
Psychoactive agents
Anticonvulsants (carbamazepine, phenytoin)
Antiparkinsonian agents
Central nervous system depressants (barbiturates, benzodiazepines)
Monoamine oxidase inhibitors
Antidepressants
Narcotic analgesics
Sedating and nonsedating antihistamines
Cholinesterase inhibitors (donepezil, tacrine, galantamine)
Drugs with other mechanisms
Drugs of abuse (cannabis, cocaine, alcohol, heroin)
Digitalis
Insulin and oral hypoglycemics
Neuropathic agents (vincristine)
Nonsteroidal anti-inflammatory drugs
Bromocriptine

Box 15-2. Rosen's 8th edition. Chapter 15 - page 137.

3) Describe the San Francisco Syncope Rule

5 points:

1. History CHF
2. Hematocrit <30%
3. Abnormal ECG
4. SOB on history
5. SBP <90 at triage

4) What are red flags that require admission in syncope?

Absolute:

1) chest pain
2) unexplained SOB
3) a hx of significant CHF or valvular disease
4) patient with ECG evidence of ventricular dysrhythmias, ischemia, significantly prolonged QT intervals, or new BBB

Relative red flags (consider admission):

5) age > 45
6) pre-existing cardiovascular or congenital heart disease
7) family history of sudden death (Brugada)
8) serious comorbidities such as diabetes
9) exertional syncope (HOCM, critical AS)