03 Syncope

1. DEFINITION

- **Syncope** is a sudden, brief loss of consciousness and postural tone caused by transient global cerebral hypoperfusion and characterized by complete recovery.
- **Presyncope** is a feeling of impending sensory and postural changes without loss of consciousness.

2. RISK FACTORS

The following risk factors indicate possible serious causes of syncope:

- Family history of early cardiac death (<45 yr in age), unexplained deaths at a young age, history of structural heart disease, and previous syncopal episode indicating a possible cardiac cause
- Recent illness causing dehydration, shortness of breath, fever, rash, or blood loss indicating a serious illness as a cause of syncope

3. ETIOLOGY

3.1 Common Causes

- Vasovagal
- Breath-holding spells
- Hypoglycemia
- Orthostatic intolerance

3.2 Life-threatening Causes

- Cardiac:

1. *Electrical disturbance:* WPW, Long QT syndrome, Brugada syndrome, Polymorphic ventricular tachycardia, Bradycardia (complete heart block).
2. *Structural heart disease:* Hypertrophic obstructive cardiomyopathy, Aortic valve stenosis, Pulmonary hypertension.
3. *Myocardial Dysfunction:* Dilated cardiomyopathy, Ischemia, Myocarditis, Pericarditis, Postoperative cardiac repair.

- Non-Cardiac:
  - Hypoxia, Anaphylaxis, Heat Syncope, CO poisoning, Seizures.

4. APPROACH TO THE DIAGNOSIS OF PEDIATRIC SYNCOPE

Hx of shaking, incontinence, post-ictal state, prolonged LOC or neurological deficit ?	✓ →	Seizure Brain lesion
⊗ ↓		
Headache, vomiting, dizziness?	✓ →	Migraine
⊗ ↓		
Fluid or blood loss?	✓ →	Positive orthostatic changes
⊗ ↓		
Exertion-related syncope, chest pain, +ve family Hx (sudden death, arrhythmia or heart disease), congenital or acquired heart disease	✓ →	Abnormal cardiac exam or ECG? = Rhythm or Structural heart defect
⊗ ↓		
Hyperventilation prior to event?	✓ →	Panic attack, Breath-holding spells
⊗ ↓		
Medications, ingestion or environmental exposure?	✓ →	Medication or toxin-related causes, Heat Syncope
⊗ ↓		
Test blood sugar, urine pregnancy test in females and Hb level	✓ →	Hypoglycemia, Pregnancy, Anemia
⊗ ↓		
Dizziness, diaphoresis, nausea, lightheadedness, vision changes?		
✓ ↓	⊗ ↗	Vasovagal Syncope
Presence of audience, prolonged symptoms, no injuries, not posture dependant?	✓ →	Conversion disorder

5. IMPORTANT ECG FINDINGS

Long QT Syndrome	• QTc >450 msec; morphology of QT segment and T wave may vary in different genetic subtypes
Brugada Syndrome	• Elevated ST segments in precordial leads V1 and V2. Coving seen in Type 1 syndrome; right bundle branch block
Wolff-Parkinson-White Syndrome	• Classic triad of delta wave, shortened PR interval, and widened QRS complex. There is a slurring in upstroke of R wave. Secondary ST-segment–T-wave changes are directed opposite to the major delta wave and QRS complex changes
Hypertrophic Obstructive Cardiomyopathy	• Large amplitude QRS complexes and associated ST-segment and T-wave changes consistent with left ventricular hypertrophy. Deep, narrow Q waves in leads II, III, aVF, V5, and V6 are most characteristic and specific findings of HOCM. Left atrial enlargement is also seen
Bradycardia	• Second- and third-degree heart block

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Source: Fleisher & Ludwig's Textbook of Pediatric Emergency Medicine 8th Edition