Syncope

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Data Resource: UpToDate

Emergency evaluation of syncope in children and adolescents

Causes of syncope in children and adolescents

DEFINITION

- **DEFINITION**— Syncope is a sudden, brief loss of consciousness associated with loss of postural tone from which recovery is spontaneous.
- Approximately 15 percent of children experience a syncopal episode prior to the end of adolescence.

Cause

Primary cardiac electrical disturbances
Long QT syndrome*
Brugada syndrome*
Familial catecholaminergic polymorphic ventricular tachycardia*
Short QT syndrome*
Preexcitation syndromes (such as Wolff Parkinson White)*
Bradyarrhythmias (complete atrioventricular block, sinus node dysfunction)*
Structural cardiac abnormalities
Hypertrophic cardiomyopathy*
Coronary artery anomalies*
Arrhythmogenic right ventriclular dysplasia/cardiomyopathy*
Valvar aortic stenosis*
Dilated cardiomyopathy*
Pulmonary hypertension*
Acute myocarditis*
Congenital heart disease*
Heat illness*
Anaphylaxis*
Vasovagal (neurocardiogenic) syndrome, including situational syncope (eg, cough, micturation, hair combing, blood draw, intramuscular injection, or emotional stress)¶
Breath holding spell¶
Orthostatic hypotension due to volume depletion (hemorrhage, dehydration, pregnancy, anorexia nervosa)¶
Drug effects or toxic exposure (eg, clonidine, typical antipsychotic agents, carbon monoxide, ethanol intoxication)¶
Hypoglycemia*
Conditions that mimic syncope
Seizure
Migraine syndromes
Hysterical faint
Hyperventilation
Intentional strangulation (eg, the "choking game")
Narcolepsy

* Potentially life-threatening causes.
¶ Common causes.

Approach

- History
  - - Preceding events or precipitating factors
  - - Description of the event
  - - Past medical history
  - - Family history
- Physical examination
- Ancillary studies
  - - Electrocardiogram
  - - Laboratory tests
  - - Other studies

History

- **Preceding events or precipitating factors** :
  - **Exercise:** vasovagal syncope or cardiac conditions**,**
  - **Acute arousal or loud noise:** specific primary electrical disturbances: long QT syndrome
  - **Postural changes:** vasovagal syncope
  - **Pain or emotional stress** vasovagal syncope. Rarely, children with familial catecholaminergic polymorphic ventricular tachycardia

History

- **Description of the event**
  - Palpitations or chest pain: cardiac condition, vasovagal syncope
  - Loss of consciousness followed by abnormal motor activity(at the end of event): neurocardiac syncope, arrhythmia
  - Motor activity(at the beginning of the event): seizure
  - Symptoms recurred when they tried to sit up immediately after the initial syncopal event: orthostatic hypotension, vasovagal syncope
  - **Prodromal symptoms** that include dizziness, lightheadedness, sweating, nausea, weakness, and visual changes (blurred vision, tunnel vision, slow visual loss): vasovagal (neurocardiogenic) syncope

History

- **Past medical history** — congenital heart disease (corrected or uncorrected), acquired heart disease with residual cardiac dysfunction (eg, Kawasaki disease, rheumatic heart disease, or myocarditis) or arrhythmia
- **Previous syncopal events:** vasovagal, psychogenic cause, or (less commonly) a cardiac etiology.
- hypoglycemia (ie, diabetes mellitus)
- A menstrual history (pregnancy or anemia in the menstruating female)
- Access to medications or illicit drugs (substance abuse)

History

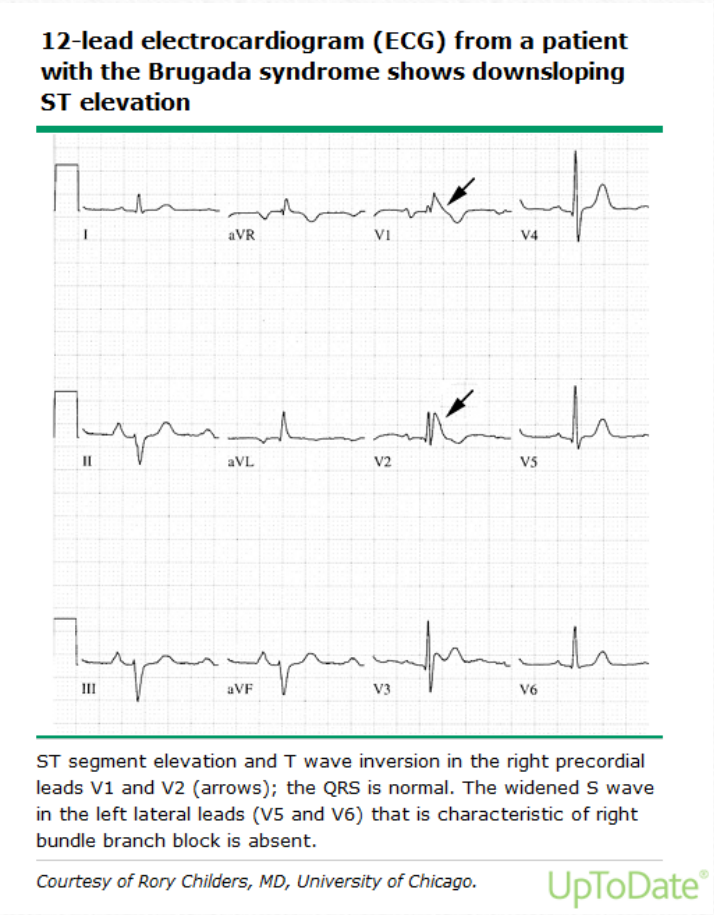
- **Family history** — first or second degree relatives of any of the following increases the concern for a cardiac etiology :
- Early cardiac death (<50 years of age)
- Sudden deaths including unexplained accidents involving a single motor vehicle or drowning
- Known arrhythmia (eg, long or short QT syndromes or Brugada syndrome)
- Familial cardiomyopathy

Physical examination

- BP, HR: sitting, then after standing for three minutes.
  - Abnormal values: decrease SBP 10 mmHg or increase HR> 20 bpm.
  - The presence of orthostatic hypotension does not rule out other causes of syncope, particularly long QT syndrome.
- Cardiac auscultation
- NE
- **Ancillary studies: ECG, Lab**

ECG

- Nonsinus rhythms
- Myocardial injury
- QTc
- Brugada syndrome
- Wolff-Parkinson-White syndrome
- Aarrhythmogenic right ventricular cardiomyopathy (ARVC)



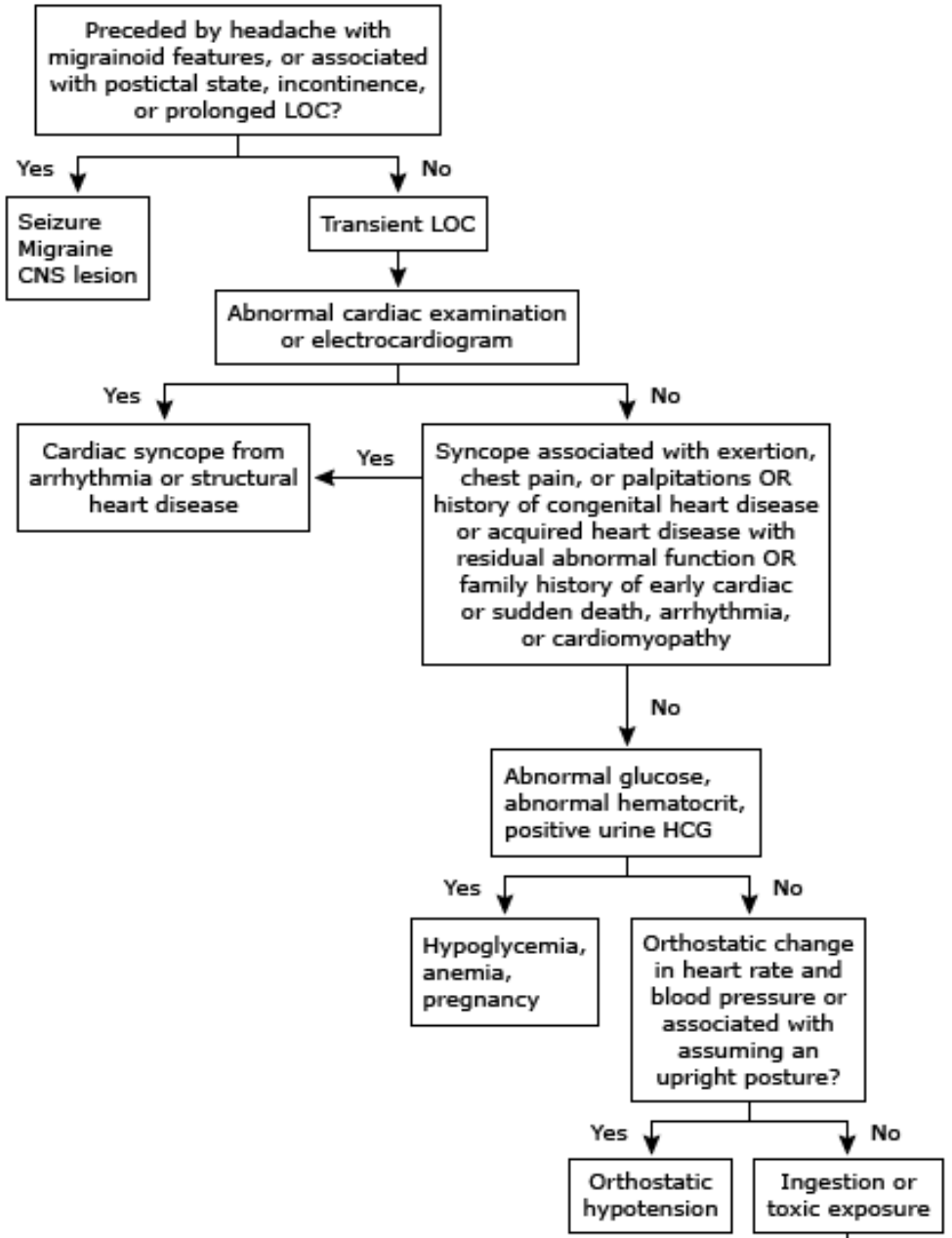
LAB

- Rapid blood glucose
- Hematocrit
- Urine pregnancy tests
- Urine toxicology screens

Other studies (OPD)

- **Cardiac studies:** Echocardiography, ~~Ambulatory ECG monitoring~~, Exercise ECG or stress testing(long QT, catecholaminergic polymorphic ventricular tachycardia), Tilt table testing(recurrent syncope or atypical syncope with otherwise negative cardiac evaluation)
- **Neuroimaging: if focal sign or trauma**
- **Electroencephalogram (EEG)**

Emergent evaluation of syncope in children and adolescents



TREATMENT

- vasovagal (neurocardiogenic) syncope
  - Increase oral intake of water to approximately 30 to 50 mL/kg per day
  - Add salty snacks (eg, pretzels, pickles, or crackers)
  - Avoid caffeinated beverages
  - Perform techniques to prevent venous pooling, including keeping knees slightly bent when standing for a long time, isometric contraction of extremity muscles, toe raises, folding of the arms, and crossing of the legs

Conclusion

- History: prodrome, event, FHx, PHx, drug
- PE(heart sound), NE
- Lab: CBC, electrolytes, glucose, drug level, (cardiac enzyme)
- EEG
- Treatments: Fluid, Sodium, posture, Low-caffeine

Thank you!