

Syncope in children

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Background

Definition: a sudden, brief loss of consciousness with loss of postural tone, from which recovery is spontaneous

- Common: 15% of children will experience syncope by the end of adolescence
- **A definite cause may not always be identified.**
 - Most are autonomic or “circulatory” in nature – vasovagal, breath-holding spells in younger children (typically in 6-24 month olds), orthostatic hypotension.
 ! Consider causes of orthostatic syncope: hypovolaemia, menorrhagia, pregnancy, anaemia, anorexia (electrolyte abnormalities/re-feeding syndrome), medications
 - Some are neurological, mimicking syncope – e.g. seizures, migraine, narcolepsy, panic attacks
 - Very few are caused by serious or life-threatening conditions – e.g. cardiac brady / tachyarrhythmias, long QT syndrome, inherited cardiac disease (e.g. Brugada syndrome), structural heart disease (e.g. aortic stenosis, HOCM), hypoglycaemia, anaphylaxis, toxins.

Red flags: frequent episodes, related to exercise, presence of cardiac symptoms, family history of sudden deaths, sensorineural deafness, cardiomyopathy and documented dysrhythmias

Assessment

A detailed history of the event is pivotal to the final diagnosis and management plan

Typical features in the history based on cause:

	Before the event (Ask the <i>patient</i>)	During the event (Ask the <i>witness</i>)	After the event (Ask the <i>patient</i>)
Vasovagal syncope	Commonly follows sudden change in position or prolonged standing. May be precipitated by pain or emotional distress. Often dizziness, weakness, pallor, sweatiness, visual disturbance or nausea. Palpitations can occasionally occur.	Brief loss of consciousness (usually seconds) May have brief anoxic reflex jerks (towards end of the episode if lasting more than a few seconds).	May feel tired or unwell, but should not be confused or agitated. May report return of symptoms when attempting to move again after event.

Cardiac	Lack of prodrome, chest pain or palpitations. (NB: long QT syndrome can be triggered by fright, anger or loud noises) Syncope during exercise. (Syncope after exercise more likely to be vasovagal).	Typically brief loss of consciousness (few seconds)	May feel tired or unwell, but should be alert and orientated.
Neurological	Usually none but may have aura. Sudden or severe headache.	Prolonged loss of consciousness (more than a few seconds) Prolonged, rhythmic movements from the start of the event. Incontinence / tongue biting	Prolonged, marked confusion or period of recovery (20-30 mins or more) May have abnormal focal neurology

Other features from the history:

Past medical history

- ! Ask about congenital cardiac disease (corrected or uncorrected), acquired heart disease (e.g. 2nd to Kawasaki disease) or arrhythmia (cf. 'sinus arrhythmia' which is a normal phenomenon)
- ! Previous history of syncopal events suggests vasovagal syncope, or less commonly, cardiac aetiology.
- ! Previous history of "near syncope"

Family history – explore risk of sudden cardiac death in 1st or 2nd degree relatives, ask about:

- ! Early cardiac or unexplained death (<50 years),
- ! Known arrhythmia (long QT or Brugada) syndromes or cardiomyopathy

A family history of vasovagal syncope (present in 90% of children), in the absence of red flags, is reassuring and would support the likelihood of vasovagal syncope in the child.

Examination and investigation

1. Physical examination:

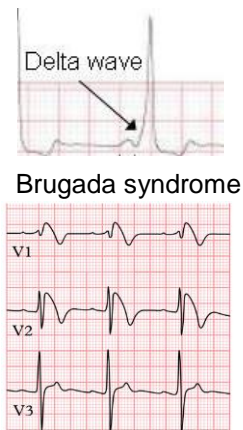
- Full cardiac examination, looking in particular for murmurs and evidence of heart failure. (Outflow murmurs, decreasing in intensity on valsalva manoeuvre, may indicate HOCM.)
- Brief age-appropriate neurological examination
- Look for evidence of injury sustained as a result of the syncopal episode

2. Observations:

- Lying and standing BP and HR – abnormal if HR increases by 20 bpm when standing from sitting, or systolic BP decreases by 10mmHg (suggesting a circulatory cause / orthostatic hypotension).
- Upper vs. lower limb blood pressure – a gradient of >20mmHg is suggestive of coarctation

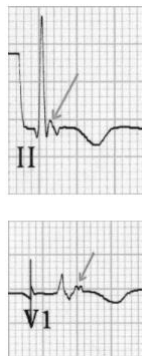
3. ECG:

- Should be performed in all patients presenting with syncope (See Paediatric ECG interpretation guideline).
- A normal ECG is reassuring but does not always exclude a cardiac cause.



Look for (see paediatric ECG guide on BSUH Microguide):

- Non-sinus rhythms, excessive bradycardia, AV block, prolonged QTc
- Brugada syndrome – pseudo RBBB, ST elevation in V1-3
- WPW syndrome – delta waves.
- Arrhythmogenic right ventricular cardiomyopathy (ARVC) – epsilon waves
- Ventricular hypertrophy & strain patterns – suggestive of heart failure



4. Consider blood sugar level if patient seen shortly after event +/- symptoms of hypoglycaemia
5. Pregnancy test for all female teenagers
6. Consider bloods e.g. FBC, U&E, TFT **only in cases where a specific cause, such as anaemia / electrolyte disturbance / thyroid dysfunction, is suspected.**
7. Consider urine toxicology in patients with prolonged decreased consciousness or confusion.

Management

The majority of children with a syncopal event, who have completely recovered, and for which there are no red flags in the history, family history, examination or ECG, can be safely discharged with reassurance and safety netting.

Otherwise, management will depend on the suspected cause:

- ! Findings suggestive of seizure: See Afebrile Seizure guideline on BSUH microguide
- ! Persistent abnormal neurological findings or confusion – Discuss with CED senior: admission for observation +/- cranial imaging.

- ! Red-flag features suggestive of a cardiac cause (from history *or* examination *or* ECG):
 - Discuss with CED senior +/- Cardiology Registrar at Evelina Children's Hospital (you may call to discuss before completing online referral form).
 - Consider admission for observation and further investigations. May require admission to HDU if continuous cardiac monitoring is needed.
 - If unstable, treat as per APLS and call for help early.

When to refer to out-patients at the Alex:

- If advised by Evelina Cardiology. NB we are unable to do tilt table tests at the Alex
- Hypoglycaemic episodes suspected – see hypoglycaemia guideline. Refer to Dr Dunia Ismail

For all other children who require follow up, advise review with their GP for referral to the Alex OP.

Discharge advice / safety netting:

- A normal cardiac examination and normal ECG can almost always reliably rule out a cardiac cause of syncope
- Ensure adequate oral fluid and salt intake, avoid caffeine, and make some behavioural changes (don't stand up too quickly from seated position, keep knees slightly bent when standing for long periods, move your toes frequently if you are standing / sitting for some time).
- Drink 2 liters a day if less than 10 years and 2.5 liters a day if above 10 years of age; and salt supplements up to 5g (1 teaspoon) a day
- Seek medical advice if chest pain, palpitations or significant SOB develop, if symptoms recur with no obvious trigger, last longer than a few seconds or if confused for longer than 20 minutes after the episode.

References:

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