

Presentation of transient loss of consciousness

Definition of transient loss of consciousness

- Transient loss of consciousness: sudden onset, complete loss of consciousness of brief duration with relatively rapid recovery; distinct from persistent loss of consciousness or coma in its causes, assessment and management
- Blackout: synonymous with transient loss of consciousness
- Faint: synonymous with transient loss of consciousness
- Syncope: transient loss of consciousness due to global cerebral hypoperfusion caused by hypotension secondary to a fall in cardiac output (CO) and/or systemic vascular resistance (SVR)
- Seizure: episode of abnormal electrical activity in the brain
- Convulsion: rapid, repetitive muscle contraction, which may be a feature of seizures
- Collapse: implies patient lost consciousness and fell over
- Mechanical fall: implies patient fell over but there was no preceding loss of consciousness eg due to slipping or tripping; a term disliked by geriatricians because it implies there is no medical problem and discourages people from investigating the cause of the fall; the assessment of falls will be covered elsewhere

Differential diagnosis of transient loss of consciousness

- Syncopal
 - Reflex/neural
 - Vasovagal syncope
 - Carotid sinus hypersensitivity
 - Situational syncope
 - Micturition, defaecation or cough syncope
 - Orthostatic hypotension
 - Primary autonomic failure
 - Advancing age
 - Parkinson's disease
 - Lewy body dementia
 - Multi-system atrophy
 - Secondary autonomic failure
 - Diabetes mellitus
 - Drugs
 - Anti-hypertensives
 - Diuretics
 - Alcohol
 - Hypovolaemia
 - Vomiting
 - Diarrhoea
 - Diuresis
 - Haemorrhage
 - Cardiac
 - Structural
 - Myocardial infarction
 - Valvular heart disease
 - Cardiomyopathy
 - Arrhythmias
 - Bradyarrhythmias
 - Tachyarrhythmias

- Non-syncopal
 - Seizure
 - Epileptic
 - Non-epileptic
 - Hypoglycaemia
 - Head injury
 - Narcolepsy
 - Stroke (very unlikely as a cause of LOC is no positive neurology on examination)

Pathophysiology of transient loss of consciousness

- Reflex syncope
 - Secondary to an increase in vagal tone and parasympathetic outflow; this may be triggered by pain, emotional stress or prolonged standing eg vasovagal syncope, or specific circumstances that increase intra-abdominal pressure eg micturition and defaecation
- Orthostatic hypotension
 - A fall in blood pressure (BP) on standing; this occurs because blood pools in the legs under gravity, reducing venous return, preload, end diastolic volume (EDV), myocardial stretch, stroke volume (SV) and CO via the Frank Starling mechanism
 - Normally this is compensated for by a sympathetic-mediated increase in heart rate (HR) and SVR but certain conditions such as advancing age and diabetes lead to an autonomic neuropathy which renders this compensation less effective; other conditions such as hypovolaemia mean that preload is still inadequate despite attempted compensation
- Some conditions listed above may cause transient or persistent loss of consciousness; whether hypoglycaemia and head injury cause transient or persistent loss of consciousness will depend on their speed of recognition and treatment, and severity, respectively

History in transient loss of consciousness

- Circumstances
 - Clear history of what happened before, during and after.
- Witnessed/unwitnessed
 - Get a collateral history if possible
- Features suggestive of syncope
 - Prodromal symptoms
 - Lightheadedness
 - Feeling of 'impending doom'
 - Sweating and clamminess
 - Pallor
 - Lasts seconds
 - May twitch but no tonic-clonic convulsions
 - Rapid recovery with no confusion (though can feel washed out after)
- Features suggestive of seizure
 - History of seizures
 - No warning
 - Can have a prodromal aura (frequently smell or taste in temporal lobe seizures)
 - Convulsions (tonic-clonic)
 - Tongue biting
 - Urinary and/or faecal incontinence
 - Slow recovery with confusion (post-ictal phase)
 - May be a precipitating event (such as flashing lights in approximately 5%)
- Fall

- Injuries; if head injury sustained consider the following
 - Did they lose consciousness, fall and sustain a head injury, or sustain a head injury then lose consciousness? The latter implies the loss of consciousness was secondary to the head injury and not spontaneous
 - Amnesia
 - Vomiting
 - Seizure
 - Weakness
 - Numbness
 - Cerebral spinal fluid (CSF) otorrhoea
 - Warfarin
- Precipitants
 - Pain
 - Emotional stress
 - Straining
 - Exertion
 - Standing up
 - Intercurrent illness
- Past medical history
- Family history
 - Sudden cardiac death (SCD)
- Medication review
- Dehydration
- Bleeding

Examination in transient loss of consciousness

- Cardiovascular
 - Signs of dehydration
 - Pulse rate and rhythm
 - Bradyarrhythmias
 - Tachyarrhythmias
 - Lying and standing blood pressure: orthostatic hypotension is defined quantitatively as a fall in systolic BP (SBP) of ≥ 20 mmHg or diastolic BP (DBP) of ≥ 10 mmHg on standing
 - Apex beat: thrusting in hypertrophic obstructive cardiomyopathy (HOCM)
 - Cardiac murmurs: ejection systolic murmur (ESM) or aortic stenosis (AS)
- Neurological
 - Check for full neurological recovery following a seizure
 - If head injury sustained, assess for
 - Glasgow coma scale (GCS)
 - Pupils: size and reactivity
 - Ophthalmoplegia
 - Focal neurological signs
 - Open/depressed skull fracture
 - Panda eyes
 - Battle's sign
 - Haemotympanum
- Secondary survey
 - Tongue biting
 - Urinary and/or faecal incontinence
 - Wounds
 - Musculoskeletal survey

Initial investigation of transient loss of consciousness

- 12 lead electrocardiogram (ECG)
- Capillary blood glucose
- Urinary pregnancy test for women of child-bearing age
- CT head if first fit, or head injury with red flags

Further investigation of transient loss of consciousness

- Directed by suspected underlying cause e.g. routine bloods, urinalysis and chest radiograph (CXR) if urinary tract infection (UTI) or lower respiratory tract infection (LRTI) suspected, echocardiogram (echo) if AS or HOCM suspected
- Radiographs as indicated to exclude fractures or dislocations from any injuries sustained

Management of transient loss of consciousness

- Patients have usually regained consciousness by the time they are assessed but if you do encounter an unconscious patient, check they have a pulse; if they do not, manage as a cardiac arrest; if they do, assess from an ABCDE perspective; if the patient is fitting, manage as status epilepticus
- If patients are alert and not acutely unwell, assess as described above
- Identify and treat any hypoglycaemia
- Diagnose and manage any intercurrent illness that may have precipitated the transient loss of consciousness
- Assess for red flags and refer for urgent specialist cardiovascular assessment within 24 hours if any present
 - Exertional loss of consciousness
 - New or unexplained dyspnoea
 - Age 65 or older without prodromal symptoms
 - Family history of SCD in people aged under 40 years
 - Heart failure
 - Heart murmur
 - Conduction abnormality
 - Long (> approximately 470 ms) or short (<350 ms) QT interval: measured from the beginning of the QRS complex to the end of the T wave
 - Brugada syndrome: hereditary sodium channelopathy resulting in downsloping ST elevation in V1-3
 - ST segment or T wave abnormalities
 - Inappropriate persistent bradycardia
 - Left or right ventricular hypertrophy
- If no red flags are present and the diagnosis is thought to be vasovagal or situational syncope, reassure, counsel and discharge patient; no driving restrictions necessary
- If no red flags are present and the diagnosis is thought to be orthostatic hypotension, consider the likely cause, review their medication and manage appropriately
 - Advise on good hydration, sitting on side of bed before standing (not going from lying directly to standing), wiggling toes before standing up, use of TEDs if necessary
- In patients with suspected syncope but not obviously vasovagal syncope, situational syncope or orthostatic hypotension, refer for specialist cardiovascular assessment; this should take place within 24 hours if any red flags are present
 - Advise patients not to drive while waiting for assessment and that they are responsible for reporting to the DVLA
- In patients with a suspected seizure, consider discharge following full neurological recovery and treatment of any reversible cause identified

- If this was their first fit and/or was precipitated by a head injury, obtain a CT head; arrange follow up at the first fit clinic within two weeks; advise patients not to drive while waiting for assessment and that they are responsible for reporting to the DVLA

Common questions concerning transient loss of consciousness

- Define the terms syncope and seizure
 - Syncope: transient loss of consciousness due to global cerebral hypoperfusion caused by hypotension secondary to a fall in cardiac output (CO) or systemic vascular resistance (SVR)
 - Seizure: episode of abnormal electrical activity in the brain
- List three main causes of syncope
 - Reflex/neural
 - Orthostatic hypotension
 - Cardiac
- List four causes of non-syncopal transient loss of consciousness
 - Seizure
 - Hypoglycaemia
 - Head injury
 - Narcolepsy
- What features are suggestive of syncope?
 - Prodromal symptoms
 - Lightheadedness
 - Feeling of 'impending doom'
 - Sweating and clamminess
 - Pallor
 - Last seconds
 - May twitch but no convulsions
 - Rapid recovery on lying
- What features are suggestive of a seizure?
 - Prodromal symptoms
 - Aura
 - No warning
 - Last minutes
 - Tongue biting
 - Convulsions
 - Urinary and/or faecal incontinence
 - Slow recovery with confusion (post-ictal phase)
- What features would you assess on cardiovascular examination?
 - Signs of dehydration
 - Pulse rate and rhythm
 - Lying and standing blood pressure
 - Apex beat
 - Cardiac murmurs
- What red flags would necessitate urgent specialist cardiovascular assessment within 24 hours?
 - Exertional loss of consciousness
 - New or unexplained dyspnoea
 - Age 65 or older without prodromal symptoms
 - Family history of SCD in people aged under 40 years
 - Heart failure
 - Heart murmur
 - Conduction abnormality

- Long (>450 ms) or short (<350 ms) QT interval: measured from the beginning of the QRS complex to the end of the T wave
- Brugada syndrome: hereditary sodium channelopathy resulting in downsloping ST elevation in V1-3
- ST segment or T wave abnormalities
- Inappropriate persistent bradycardia
- Left or right ventricular hypertrophy
- What follow up would you arrange for a patient with suspected epilepsy?
 - First fit clinic
- What advice about driving would you give to patients awaiting specialist cardiovascular assessment or first fit clinic?
 - Do not drive whilst awaiting assessment
 - It is their responsibility to inform the DVLA