

Case Study

40 YEAR OLD MALE WITH SYNCOPE

This case study aims to

- Help understand the various causes of syncope
- Help differentiate syncope from vertigo, seizures and TIA
- Discuss the approach to a patient presenting with syncope

Case

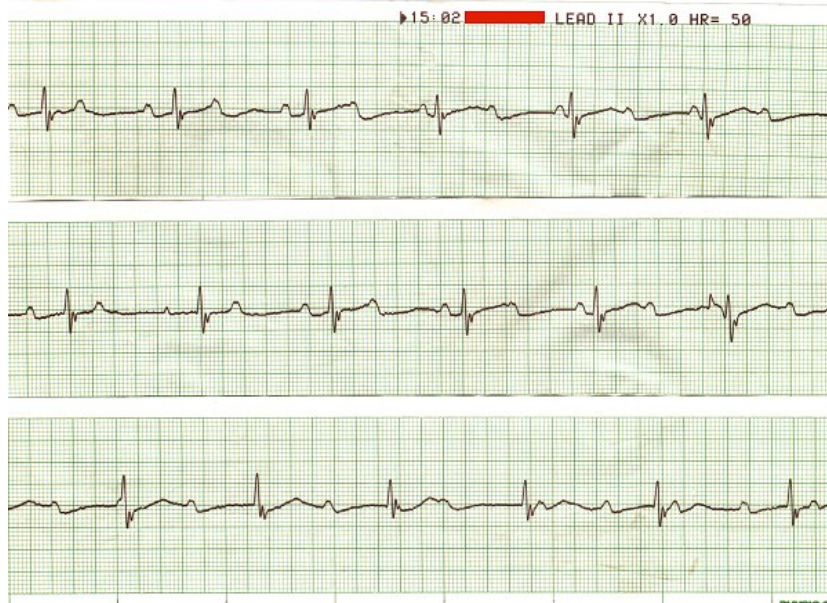
40-year-old male has come to his family physician for complaints of 2 episodes of transient loss of consciousness lasting for a few seconds. These spells were associated with increased sweating. There was no report of seizure activity. He denied recent illness, chest pain, palpitations, head trauma, or seizure activity. He was physically active. There was no family history of heart disease or sudden cardiac death. He took no medications.

Physical examination revealed a normal-appearing male with a medium build. The pulse rate was 50/min, irregular. The blood pressure was 110/70 mm Hg/

Heart sounds were normal, specifically no murmurs were auscultated.

Neurological examination was normal.

The 12-lead electrocardiogram is given below:



1. Based on the history, clinical examination and ECG, what is the diagnosis?

Patient has episodes of syncope, in the ECG; P waves show no relation to the QRS complexes. The ventricles are depolarised by a ventricular escape rhythm suggestive of complete heart block.

2. What are the common causes of syncope?

Syncope is the sudden and transient loss of consciousness and postural tone attributable to inadequate cerebral blood flow, specifically to the brainstem's reticular activating system. The causes of syncope are:

1. Non-cardiac causes

Neurologic	Vertebrobasilar TIAs Subclavian Steal Syndrome
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	Normal Pressure Hydrocephalus Seizure Disorder
Metabolic	Hypoxia Hyperventilation Hypoglycemia
Vasomotor	Orthostatic Hypotension Vasovagal Syncope

2. Cardiac causes

Structural	Dysrhythmia	
	Bradycardia	Tachycardia
Aortic stenosis	Sick sinus syndrome	Ventricular tachycardia (VT)
Hypertrophic cardiomyopathy	Atrioventricular (AV) block	Ventricular fibrillation
Pulmonary embolus	Drug-induced	Torsade de pointes VT
Pulmonary hypertension		Supraventricular tachycardia
Acute myocardial infarction		Atrial fibrillation/flutter
Tamponade		
Aortic dissection		

3. Clinically, how would you differentiate between the various causes of syncope?

- Postural orthostatic syncope is an autonomic neuropathy that results in orthostatic intolerance from insufficient peripheral vasoconstriction while standing. Patients with postural orthostatic tachycardia typically present with symptoms of orthostasis and palpitations
- Syncope from stress or psychological disorder (conversion disorder with psychosomatic response) is generally a diagnosis of exclusion.
- Neurocardiogenic syncope is frequently accompanied by a prodrome of nausea, diaphoresis, and lightheadedness
- Tachyarrhythmias may present as palpitations

3. How will you differentiate between syncope and seizures, vertigo?

- Vertigo is a sensation of movement of the patient and/or the surroundings; vertigo is usually caused by a neurologic or ENT problem. Most commonly, the abnormality is in the inner ear.
- Seizure: Partial complex seizures may cause loss of consciousness without marked motor activity. Grand mal seizures are characterized by tonic-clonic motor activity. On the other hand, syncope can be accompanied by tonic posturing due to brainstem hypoxia. Syncope is rarely accompanied by incontinence or a prolonged period of confusion following the event (i.e., postictal confusion).

4. What are the investigations to be done in a patient with syncope?

Step 1: A thorough history and physical examination.

The history and physical examination give vital clues in diagnosing nearly all causes of syncope.

Step 2: Directed tests or studies

After the history and physical examination:

- If neurological cause is suspected, a brain scan or EEG, or in some cases, angiography to confirm the diagnosis.
- If vasodepressor syncope is suspected, a **tilt table study** may be useful in confirming the diagnosis.
- If cardiac cause is suspected, a non-invasive cardiac workup is done immediately. In most cases, this work-up will consist of an echocardiogram, Holter monitoring.

Step 3: If the cause of syncope remains unknown after Step 2

- If underlying heart disease was discovered in Step 2, patient is referred for a full cardiac evaluation
- If no underlying heart disease is apparent after Step 2, Holter monitoring, tilt table testing, and possibly stress testing if not performed during Step 2. May be considered.

Case contd.

Patient underwent implantation of permanent pacemaker and had an uneventful recovery

Take home points

- Syncope is the sudden and transient loss of consciousness and postural tone attributable to inadequate cerebral blood flow
- Syncope can be due to cardiac, neurological, metabolic and vasomotor causes
- The history and physical examination give vital clues in diagnosing nearly all causes of syncope.
- Based on history and clinical examination, further tests are done to confirm the diagnosis

References

1. American College of Emergency Physicians. Clinical policy: Critical issues in the evaluation and management of adult patients presenting to the emergency department with syncope. *Ann Emerg Med.* 2007; 49:431-444.
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3. Stickberger SA, Benson W, Biaggioni I, et al. AHA/ACCF scientific statement on the evaluation of syncope. *J Am Coll Cardiol.* 2006;12:473-484