

# Syncope: Case Studies



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## KEYWORDS

- Syncope • Vasovagal • Orthostatic hypotension • Cardiogenic syncope
- Autonomic dysfunction • Dysautonomia

## KEY POINTS

- Syncope is a sudden transient loss of consciousness and is a common medical problem often evaluated by medical practitioners.
- Vasovagal syncope is a form of neurally mediated reflex syncope and is diagnosed by history of a specific trigger and a positive response on tilt-table testing.
- Carotid sinus hypersensitivity has cardioinhibitor and vasodepressor subtypes, and the former is often treated with cardiac pacing.
- Autonomic neuropathies can be caused by a variety of conditions, including diabetes, hereditary, toxic/metabolic, infectious, autoimmune, and paraneoplastic disorders.
- Neurodegenerative disorders, such as Parkinson disease, multisystem atrophy, and pure autonomic failure, are an important cause of orthostatic hypotension, which in severe cases can lead to syncope.

## INTRODUCTION

Syncope, or the sudden loss of consciousness, is a common presenting symptom for evaluation by general practitioners, cardiologists, and neurologists. Syncope is not a unique diagnosis but rather a common manifestation of several disorders of diverse mechanisms. Ultimately, loss of consciousness results from insufficient cerebral perfusion pressure. It is differentiated from other causes of altered consciousness, such as seizures, metabolic disturbances, and psychiatric events. Syncope typically occurs when patients are upright and can be preceded by presyncope, a constellation of warning symptoms. These warning symptoms include a general sense of feeling unwell, the sensation of dizziness or light-headedness, nausea, and weakness. Patients may feel detached from their surroundings and immediately before losing consciousness can experience a graying of vision or muffling of sounds. To others, they may appear as pale, diaphoretic, or tachypneic. Loss of consciousness is typically

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accompanied by generalized loss of tone and collapse to the ground. The episodes are brief, lasting seconds to a few minutes. With severe cerebral hypoperfusion, brief convulsions in the limbs may be observed. In general, the blood pressure (BP) and heart rate quickly recover when the patient is in the supine position, and consciousness and awareness rapidly return. Patients will generally recall the events leading up to the episode, but may have a short period of fatigue or disorientation.

Syncope is a common medical problem and has a lifetime prevalence of about 42% with an annual incidence of 6%.<sup>1</sup> Its frequency varies based on age group, but ranges from 15% to 39%.<sup>2,3</sup> It is an important cause of falls and trauma, especially in the elderly population.

In this article, the evaluation and management of the most common causes of syncope are discussed, including neurally mediated syncope, cardiogenic syncope, orthostatic hypotension (OH), and autonomic dysfunction with orthostatic intolerance.

## REFLEX SYNCOPE

Reflex syncope is the most common type of syncope. There is often a clear precipitant, and major subtypes include neurally mediated, vasovagal, situational, carotid sinus hypersensitivity, and atypical forms. Of these subtypes, vasovagal syncope (VVS) is the most prevalent. The diagnosis is based on a history of associated triggers and typical symptoms; residual findings after the event are typically absent. However, the diagnosis is supported by the exclusion of other causes of syncope and by a characteristic response to upright tilt-table testing, discussed in more detail later.

### Case 1

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*A 19-year-old previously healthy woman was referred to you for evaluation after her second episode of loss of consciousness. The first event occurred 6 months prior when she went to brush her teeth shortly after waking in the morning and lost consciousness in the bathroom. She hit her head on the bathtub during the fall but quickly recovered to baseline. She recalled feeling “woozy” and sweaty immediately before passing out. The second episode occurred last week when she was standing on a very slow line in the cafeteria. She began to feel light-headed, and her friends noticed that she appeared pale. She fell to the ground and was unconscious for less than 1 minute and woke up to a group of people crouching around her. This time she was taken to the Emergency Department where basic laboratory tests and electrocardiogram (ECG) were normal. She had a supine BP of 106/70 mm Hg, heart rate of 69, and a standing BP of 99/68 mm Hg, heart rate of 79. Her neurologic examination was normal. She received intravenous fluids and was discharged with outpatient follow-up. You referred her for tilt-table testing, which showed abrupt bradycardia following a significant hypotensive response after 18 minutes at 70° upright position (Fig. 1A). She was started on sodium chloride tablets and counseled on lifestyle modifications with no recurring episodes over the next year.*

## VASOVAGAL SYNCOPE

Case 1 illustrates VVS, which is a form of neurally mediated syncope and is the most common cause of transient loss of consciousness.<sup>1</sup> Typical VVS is transient loss of consciousness triggered by emotional distress (fear, pain, disgust) or orthostatic stress (prolonged standing). There are prodromal symptoms due to activation of the autonomic nervous system, and these can include nausea, vomiting, diaphoresis, pallor, feeling cold or warm, palpitations, salivation, and rarely, urinary incontinence. Transient hypoperfusion to the brain and retina can also cause dizziness and visual

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