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(CASE REPORT)

Laughter-induced situational syncope: A rare and overlooked cause of transient loss of consciousness

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Abstract

Situational syncope is a subset of neurally mediated syncope triggered by specific physical activities or emotional responses. Among these, laughter-induced syncope is exceedingly rare and under recognized. We present the case of a 55-year-old male who experienced a transient loss of consciousness following a laughing episode at work place. Comprehensive cardiac and neurological evaluations were unremarkable, and the diagnosis was confirmed through tilt-table testing. This case emphasizes the importance of detailed clinical history and the utility of autonomic testing in diagnosing situational syncope.

Keywords: Situational syncope; Laughter syncope; Dizziness; Tilt-table test; Case report

1. Introduction

Syncope is defined as a brief, self-limiting loss of consciousness due to temporary global cerebral hypoperfusion. While vasovagal syncope and orthostatic hypotension are common causes, situational syncope constitutes a less frequently encountered but clinically significant subset. It occurs in response to specific triggers such as coughing, swallowing, urination, or defecation. Laughter-induced syncope, though extremely rare, follows a similar pathophysiological mechanism.

Given the dramatic yet brief nature of symptoms and the potential for physical injury, recognizing this condition is crucial. Failure to do so may result in unnecessary investigations or misdiagnosis as epilepsy or cardiac syncope. We report a case of laughter-induced syncope that was diagnosed via tilt-table testing and was managed conservatively.

2. Case Presentation

A 55-year-old male presented to our emergency department after experiencing a sudden episode of loss of consciousness while at work. He had been engaged in a light-hearted conversation with a friend and was seated when the incident occurred. Witnesses reported that during conversation he laughed suddenly, followed by and loss of consciousness for approximately 2–3 seconds, falling from his chair and striking the back of his head against a wall. He regained full consciousness quickly, without any confusion, convulsions, tongue biting, or urinary incontinence.

The patient reported a history of intermittent dizziness over the past 2–3 months, usually provoked by episodes of intense laughter, but this was his first episode of complete loss of conciousness. He denied any recent illness, chest pain,

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palpitations, visual disturbances, or recent changes in his medications. His past medical history included well-controlled hypertension and hypothyroidism, managed with ramipril and levothyroxine.

On examination, the patient had normal vital signs without any postural drop in blood pressure and was alert and oriented with a Glasgow Coma Scale (GCS) score of 15. No signs of head trauma, tongue bite, or neurological deficits were observed. Cardiovascular, respiratory, and neurological examinations were within normal limits.

Initial investigations, including an electrocardiogram (ECG), chest X-ray, computed tomography (CT) of the brain, serum electrolytes, and cardiac troponin levels, were all unremarkable. He was admitted for observation, and further evaluation included telemetry monitoring and transthoracic echocardiography, both of which were normal.

Given the history from witnesses and clear association between laughter and symptoms, a diagnosis of situational syncope was considered. A tilt-table test was performed and reproduced a vasovagal response with hypotension and bradycardia, confirming the diagnosis of laughter-induced syncope. The patient was counseled on trigger avoidance and discharged with an outpatient follow-up.

3. Discussion

Laughter-induced syncope is a rare and underreported form of syncope, classified under situational syncope, a subgroup of neurally mediated (reflex) syncope. It is believed to share a similar mechanism with other types of situational syncope, such as cough or micturition syncope. It occurs in response to specific triggers—most often physical or emotional in nature—that provoke transient cerebral hypoperfusion via autonomic dysregulation [1, 2]. Laughter-induced syncope, unlike more recognized triggers such as coughing, micturition, or defecation, is rarely reported and is often misdiagnosed or underdiagnosed due to its unusual stimulus and subtle clinical features [3].

The proposed mechanism involves increased intrathoracic pressure caused by forceful laughter, which mimics a Valsalva maneuver. This pressure reduces venous return to the heart, leading to decreased cardiac output and compensatory autonomic changes—namely, vasodilation and bradycardia. In predisposed individuals, this cascade can result in transient loss of consciousness [4]. This mechanism is akin to cough syncope and was first formally described in the context of laughter by Shepherd in 1963, though only a handful of cases have since been documented [5].

The diagnosis of laughter-induced syncope is challenging and often missed due to its rarity and the benign nature of symptoms. Moreover, laughter-induced syncope may sometimes be misclassified as a seizure or cardiogenic syncope, particularly in the absence of a witnessed episode. The absence of post-ictal confusion, tonic-clonic movements, tongue bite, or incontinence in event history is essential in differentiating it from seizure activity.

A meticulous history focusing on the trigger and context of the event is often the most informative diagnostic tool. In our case, the consistent link between laughter and dizziness, and the lack of structural or arrhythmic abnormalities on investigations, guided the suspicion of situational syncope. Tilt-table testing remains a useful diagnostic tool to reproduce symptoms and confirm a neurally mediated response in unclear cases.

Our patient's recurrent dizziness with laughter and a witnessed syncopal episode during a laughing fit are highly consistent with previously reported cases. Sheikh et al. (2007) reported a similar case involving a healthy adult male who experienced recurrent episodes of syncope exclusively during laughing fits, with normal cardiovascular and neurological workup [3]. Another report by Lunardi et al. (2012) described a 46-year-old female with a similar presentation confirmed through tilt-table testing, again highlighting the diagnostic value of autonomic function testing in such atypical presentations [6].

Importantly, our patient's workup—including ECG, Holter, echocardiogram, CT brain, and troponin—was unremarkable, ruling out more common causes such as arrhythmias, ischemia, or structural brain lesions. This aligns with the literature, where laughter-induced syncope is typically a diagnosis of exclusion, made after ruling out life-threatening etiologies and confirming a reproducible reflex response [7].

Tilt-table testing plays a crucial diagnostic role when history suggests neurally mediated syncope but initial investigations are inconclusive. It allows for the recreation of syncope in a controlled environment and can elucidate vasodepressor or cardioinhibitory responses. In our patient, this test successfully reproduced a hypotensive-bradycardic response, confirming the diagnosis.

Management of laughter-induced syncope is generally conservative, as this condition is largely benign. Education regarding avoidance of triggers and reassurance are the mainstays of treatment. Most patients respond well to education on trigger avoidance and reassurance. Pharmacologic therapy (e.g., fludrocortisone, beta blockers, midodrine) is rarely required and typically reserved for frequent or refractory episodes or episodes associated with injury. In extreme cases with documented asystole or injury-prone recurrent episodes, pacemaker implantation may be considered, although no such cases have been reported specifically for laughter-induced syncope [2, 4, 7].

For healthcare providers, awareness of this rare entity is vital to prevent misdiagnosis and to avoid unnecessary and costly investigations. Clinicians must maintain a high index of suspicion in cases of transient loss of consciousness with emotional or physical triggers. Misdiagnosing such cases as seizure or cardiogenic syncope can lead to unnecessary testing and patient anxiety. A careful clinical history remains the most valuable diagnostic tool.

In conclusion, laughter-induced syncope is an unusual form of situational syncope that warrants recognition, especially in patients with recurrent, unexplained syncopal episodes in the absence of cardiac or neurologic pathology. Our case reinforces the need for awareness and highlights the value of tilt testing in confirming the diagnosis.

4. Conclusion

Laughter-induced syncope, though very uncommon, should be considered in patients presenting with transient loss of consciousness, especially when witnessed, in the context of emotional or situational triggers. A thorough clinical evaluation and detailed history-taking along with tilt-table testing, is key to an accurate diagnosis. Management mainly focuses on patient education and avoidance of trigger. Recognition of this entity is essential to ensure patient safety and important to prevent inappropriate investigations and interventions.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflicts of interest regarding the publication of this article.

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Statement of informed consent

Informed consent was obtained from the patient for publication

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