
Case Report

Hyperventilation-Induced Syncope: No Need to Panic

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ABSTRACT

Accurately diagnosing and treating adult patients presenting with recurrent syncope can be extremely problematic. We present the case of a patient who presented with recurrent syncope. We propose that many cases currently classified as idiopathic may in fact be due to orthostatic hypotension secondary to hyperventilation, or simply hyperventilation-induced syncope. The presence of undiagnosed psychiatric disorders should be considered in these patients.

INTRODUCTION

After identifiable neurologic, cardiologic and metabolic causes have been excluded, syncope of unknown cause accounts for as many as 47% of cases.^{1,2} Syncopal episodes can be life-threatening when they occur without warning during daily activities, such as driving, or operating equipment. The risk for injury is high with 54.1% of cases resulting in falls, and 44.3% of these sustaining an injury.³ Recurrent syncope may also cause psychosocial dysfunction because of its inherent unpredictable nature and subsequent effects on activities of daily living. When presented with such cases, it is important to be aware that psychiatric disorders, such as panic attacks, can also be a cause of, or a contributing factor to, unexplained recurrent syncope.

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REPORT OF A CASE

A male in his late twenties presented to the emergency department (ED) complaining of light-headedness, shortness of breath, weakness and chest tightness. He reported the sudden onset of symptoms during a business encounter. The patient denied any tobacco, alcohol, or substance use. He had a history of seasonal allergic rhinoconjunctivitis treated with loratidine. His history was also significant for dysthymic mood disorder and obsessive-compulsive personality traits treated previously with paroxetine. He had self-discontinued this medication for unknown reasons. On presentation, he was found to be hyperventilating. An electrocardiogram was unremarkable. The patient's paroxetine was restarted.

One week later he was seen in the ED complaining of epigastric and chest pain, and depressed mood. A repeat electrocardiogram (EKG) was normal. Gastritis was suspected and ranitidine hydrochloride was prescribed.

On a follow-up visit the patient complained of sedation, difficulty concentrating, and progressive arm and leg weakness that was worse with activity. He had fainted 4 or 5 times previously in the past year and one-half. Prior to loss of consciousness, he typically developed symptoms of nausea followed by dizziness and a "hot flash." He is often able to avoid fainting by sitting down and drinking. The patient also complained of several discrete episodes of chest tightness lasting 30 to 40 minutes, denied any symptoms related to depression, but admitted to stressful work conditions.

The patient was placed on a 30-day cardiac event monitor. On two occasions, normal sinus rhythm was recorded with rest symptoms, which included chest tightness, light-headedness, nausea and palpitations. Creatinine kinase and aldolase, echocardiogram, stress test, electronystagmogram, esophogram, and pH probe were all negative. Initial tilt table testing was negative. There was reproduction of the patient's symptoms of light-headedness and orthostasis during the hyperventilation-provocation test. The patient experienced near-syncope during this hyperventilation-provocation testing, confirming the diagnosis of hyperventilation-induced syncope. The patient was encouraged to consume a high salt diet with meals, remain well hydrated, and to breathe slowly when aware of an episode of light-headedness.

COMMENT

Recurrent syncope of unknown cause is not a rare entity.⁴ Recognizing the cause of recurrent syncope is challenging. The symptoms are nonspecific and may be mistaken for a number of cardiac, neurological and psychiatric disorders (particularly anxiety and panic disorders). The relationship between syncope and psychiatric disorders has not been extensively studied. In one group of patients with recurrent unexplained syncope, 81% had psychiatric disorders ranging from depression, panic attacks, generalized anxiety to somatization disorder. These patients seldom accept psychiatric evaluation and treatment.⁵ While it remains vital to exclude

other underlying neurologic, cardiologic, metabolic and autonomic factors, it is also recommended that psychiatric disorders (especially panic disorder) be considered in the evaluation of syncope.

Panic attacks and hyperventilation are not synonymous. Hyperventilation rarely accompanies panic, and when it does, it is more likely to be a consequence than a cause of the panic.⁶ There is disagreement in the literature regarding the concept of a discrete hyperventilation syndrome.⁷ Debate also exists over the validity of the hyperventilation-provocation test. As the name implies, the patient is asked to hyperventilate in an attempt to elicit typical presyncopal symptoms, while serial blood pressure measurements are taken. Many experts feel that it is useful because it provokes typical somatic and psychological symptoms, and it identifies the breathing instability that is characteristic of patients with hyperventilation syndrome and anxiety disorders.⁸ The use of breathing therapy or breathing retraining in the treatment of hyperventilation syndrome and panic disorders remains controversial as well.^{6,9} However, this proved to be valuable in the care of this particular patient.

The patient showed no evidence of arrhythmia on extensive electrophysiological examination. It is worthwhile to note that a major problem with the use of ambulatory electrocardiographic (Holter [Zymed Medical Laboratories, Inc., Camarillo, CA]) monitoring in the diagnosis of syncope-associated arrhythmias is that symptomatic correlation with arrhythmias is rarely found (only 4% of patients), even with extended duration of monitoring.¹ In this case, with a King-of-Hearts monitor (Instromedix, San Diego, CA) two separate incidents of a normal sinus rhythm were correlated with symptoms of chest tightness and presyncope. Repeated tilt table testing did not induce any presyncopal or syncopal episodes in this patient, so typical vasovagal syncope was excluded.

The patient had multiple evaluations prior to confirmation of the diagnosis of hyperventilation-induced syncope. The recurrent syncope in this case could not readily be attributed to any other clinically identifiable cause. After extensive evaluation, the impression of hyperventilation-induced syncope was confirmed by the hyperventilation-provocation test. The patient was treated with a combination of antidepressants, antianxiety medications, counseling for relaxation and a high salt diet, with complete clinical recovery without further episodes of syncope or presyncope.

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