Cough Syncope Induced by Gastroesophageal Reflux

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ABSTRACT
Episodes of loss of consciousness occur in various situations. Although cough syncope has been recognized and described over a hundred years ago, this condition remains a fascinating and incompletely understood clinical entity. In the present case, syncope sometimes occurred during vigorous paroxysms of non-productive coughing that were due to gastroesophageal reflux disease.

KEY WORDS: Syncope; Cough; Gastroesophageal reflux.

Introduction
Charcot first described cough-induced syncope back in 1876.1) There are a number of different mechanisms reported as causes of cough syncope, such as elevated intrathoracic pressure, elevated cerebrospinal fluid pressure, and transient bradyarrhythmias.2-10) We report here on a patient who was found to have gastroesophageal reflux with frequent syncope, and this was due to a transient fall of blood pressure after vigorous paroxysms of coughing. The frequency and strength of the cough become reduced markedly, and the syncope disappeared completely after the administration of antacids.

Case
A 56 year-old man was referred for a cardiac consultation concerning intermittent syncope following vigorous coughing. The patient had experienced an intermittent cough while in the supine position for several months prior to his admission. The episodes of syncope occurred after his bouts of coughing. He had no remarkable past medical history. He did not smoke cigarettes or drink any alcohol at all. A routine laboratory examination, chest radiogram, 12 lead-electrocardiogram (ECG), echocardiographic examination of the heart and treadmill exercise test showed no abnormalities. Holter ambulatory ECG monitoring showed no brady- or tachyarrhythmic episodes even during the syncope, and an electroencephalogram and brain MRI showed no abnormal findings either. Due to the exacerbation of coughing in the supine position, he had to sleep in a semi-sitting position for the month prior to admission. Vigorous paroxysms of non-productive coughing were sometimes followed by syncope that lasted about two or three seconds. Arterial blood pressure monitoring was performed to examine the blood pressure during a very short episode of syncope. After a bout of coughing in the supine position the arterial blood pressure fell markedly from 140/84 to 50/30 mmHg. The patient complained severe giddiness for one or two seconds and then syncope occurred for a moment (Figure 1).

The cough and giddiness were not completely suppressed even with strong antitussives like codeine. An endoscopic evaluation of the upper GI system revealed the typical findings of reflux esophagitis, since mucosal...
redness and several longitudinal erosions covered with whitish patches were observed in the lower esophagus (Figure 2). After administration of the proton pump inhibitor, Omeprazole in a dose of 20 mg, the coughing was reduced markedly and the syncope no longer occurred. During a follow up period of two years, there were no episodes of syncope or severe coughing.

Discussion

Syncope that was caused by severe coughing spells was first described by Charcot\(^1\) in 1876. Although this has been recognized and described over a hundred years ago, cough syncope still remains a fascinating and incompletely understood clinical entity. This syndrome, occurring almost exclusively in the obese, stocky, muscular middle aged male smoker with chronic bronchitis or emphysema, is characterized by a vigorous paroxysm of non-productive coughing followed by three to five seconds by giddiness and sudden unconsciousness lasting several seconds. A preceding aura, the post-ictal state with incontinence and tongue biting, are well known to be absent in cough syncope.

Coughing in normal subjects and in patients with chronic bronchitis or emphysema causes increased intrathoracic pressures, from 50 to 150 mmHg, while coughing
in patients with cough syncope produces peak pressures of from 200 to 300 mmHg. This increased intrathoracic pressure is transmitted to the intra-abdominal and the intracranial spaces as well. Pressures of this magnitude may act in two ways to cause syncope. First, the cough acts physiologically like a strong Valsalva maneuver, causing decreased venous filling of the atria with a consequent decreased blood pressure and stroke volume leading to a decreased cerebral perfusion. Second, the increased intrathoracic, intraabdominal and intracranial pressures produce a "squeezing" of the venous and arterial blood out of the respective cavities, leading again to a decreased cerebral perfusion and hypoxia. Variable roles may be additively played by a vasovagal reflex, hyperventilation and neuronal depolarization. On the other hand, there have been some reports about cough syncope caused by transient bradycardia, like sinus arrest and complete atrioventricular block. 1-4) Variable roles may be additively played by a vasovagal reflex, hyperventilation and neuronal depolarization. On the other hand, there have been some reports about cough syncope caused by transient bradycardia, like sinus arrest and complete atrioventricular block. 1-4)

The respiratory complications of gastroesophageal reflux disease have been reported to include hoarseness, wheezing, bronchospasms, stridor, laryngitis, laryngospasm and a chronic cough. 5-8) A cough can be the patient’s principal presentation of the gastroesophageal reflux and in several prospective studies, it has accounted for 10–21% of cases with chronic cough. 9,10) However, syncope as a manifestation of a gastroesophageal reflux induced cough has rarely been described in the literature. 11) The patient outlined in this report was moderately obese, but he had no pulmonary pathology and did not smoke. Coughing in the supine position led us to the suspicion of the presence of gastroesophageal reflux disease. Further, an upper gastrointestinal endoscopic examination was performed and the findings revealed a typical pattern of reflux esophagitis. Proton pump inhibitor administration was started without doing an ambulatory 24-h pH recording. The frequency and strength of the cough was reduced markedly and the syncope disappeared completely after just a few days of the patient taking the medicine. The diagnosis of cough syncope can be made by taking a careful history and by excluding other causes of syncope. As in this case, syncope often resolves after the physician’s optimal management of the underlying cause of the cough.

REFERENCES