

Tussive syncope: case report

Tusigena sinkopa: prikaz slučaja

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Summary

Tussive syncope, or cough syncope, is most often found in middle-aged, moderately obese men, who smoke or have stopped smoking. The reason why the male gender and obesity are predisposing factors for cough syncope is unknown. The majority of patients also suffer from chronic cough, episodes of severe cough, and clinical evidence of obstructive pulmonary disease. There are several proposed mechanisms. The first is that when a person coughs, intrathoracic pressure rises and obstructs venous outflow, which results in an acute decrease of cardiac output and blood pressure. As a result, the cerebral flow also decreases, which finally causes loss of consciousness. A second possible mechanism is the decrease of cerebral perfusion, as a consequence of increased pressure of the cerebrospinal liquor. Besides these mechanisms, tussive syncope is also found in patients with hypersensitive carotid sinus syndrome, gastroesophageal reflux, etc. Tussive syncope is considered as one of the situational syncopes, which take place after certain processes: e.g. defecation, micturition, swallowing and coughing. We will present the diagnostic guidelines through the case of a 45 year-old patient with tussive syncope, treated at the Split University Hospital Department for Pulmonary Diseases.

Key words: tussive syncope, guidelines

Sažetak

Tusigena sinkopa ili osjećaj prijeteće nesvjestice za vrijeme kašljanja, najčešće se javlja kod sredovječnih, umjereno pretilih muškaraca koji puše ili su bivši pušači. Razlozi zbog kojih muški spol i pretilost utječu na sklonost tusigenoj sinkopi nisu poznati. Većina pacijenata također pati od suhog kašlja, epizoda teškog kašlja, a prisutni su i znaci opstruktivske plućne bolesti. Postoji niz mogućih mehanizama. Prvi mehanizam objašnjava da, kada osoba kašlje, dolazi do porasta intratorakalnog tlaka, koji ima za posljedicu akutni pad otjecanja venske krvi i krvnoga tlaka. Posljedično, dolazi do usporavanja moždanog krvotoka, što u konačnici dovodi do gubitka svijesti. Drugi mogući mehanizam podrazumijeva slabljenje moždane perfuzije, kao posljedice rasta tlaka likvora. Uz ove procese, sinkopu nalazimo i kod pacijenata sa sindromom hipersenzitivnog karotidnog sinusa, gastroezofagealne refluksne bolesti, itd. Tusigena sinkopa spada u skupinu situacijskih sinkopa koje se manifestiraju nakon određenih događaja: npr. defekacije, mikcije, gutanja ili kašljanja. Ovdje prikazujemo dijagnostičke smjernice na slučaju 45-godišnjeg pacijenta koji pati od tusigene sinkope i liječi se u Klinici za plućne bolesti Kliničke bolnice Split.

Ključne riječi: tusigena sinkopa, smjernice

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Introduction

Syncope is defined as sudden and short loss of consciousness with spontaneous complete recovery.¹⁻⁷ Cough syncope was initially described by Kapoor in 1876, naming it laryngeal vertigo.⁶ The new guidelines for the management of syncope classified cough syncope as a situational syncope.⁴ The situational syncopes occur after defecation, micturition, swallowing and coughing.⁷ According to a study with 7814 participants, other rare causes of syncope (cough syncope being one of them), make up to 47 cases of syncope per thousand inhabitants per year.⁷ We are reporting a case of tussive syncope in a 45 year-old man, treated at the Split University Hospital Department for Pulmonary Diseases.

Case Report

A 45-year-old male seeks medical attention because of frequent cough paroxysms, which result in loss of consciousness. These episodes would occur up to 20 times during the day, seriously influencing the patient's daily routine. The patient was previously diagnosed with hyperlipidemia and gastroesophageal reflux. The alteration of triglyceride values had been more than 2.5 mmol/l, cholesterol 7.5 mmol/l along with decreased values of HDL-cholesterol but increased values of LDL-cholesterol.⁸ Gastroesophageal reflux has been diagnosed 3 years ago. The diagnose has been identified endoscopically. The changes have been found by gastroesophagoscopy and according to Los Angeles classification they match with A stage.⁹ During the physical examination, the patient's body mass index was measured to be 33.83 (height 177 cm, weight 106 kg).

Chronic obstructive pulmonary disease defined by clinical symptoms and spirometry.¹⁰ Patient was ex-smoker with smoker score of 30 pack/year. He had a chronic productive cough and progressive dyspnea for at least 3 months of the year in 8 successive years. Spirometric test has been conducted on a masterLab device following the taking of anamnestic data and a clinical examination. Spirometry should be performed before and after four puffs of a short-acting beta2-agonist bronchodilator. The bronchoobstruction was irreversible. The severity of mild obstructive lung disease has been determined according GOLD guidelines.¹¹

MRI and CT of the brain were performed to exclude other possible neurological causes of cough syncope (e.g. brain tumour, etc.). The CT of the thorax

and brochoscopy did not reveal any pathological change.

An intervertebral disc disease C4/C5, 5/6, was also diagnosed, with osteophytes narrowing the intervertebral space C4/C5. These changes probably caused stenosis in the proximal part of the arteria basillaris.

After a detailed diagnostic procedure, involving pulmonary, neurological and cardiological evaluation, a cough provocation test was performed, followed by invasive blood pressure monitoring. The test revealed normal EKG characteristics, with a fall in blood pressure measured to be 35 mmHg during intensive cough.

This case of cough syncope was interpreted as a result of a number of contributing conditions diagnosed in this patient. Male gender, obesity, initial obstructive lung disease, reduction in the basillary circulation, gastroesophageal reflux and hypotension all contributed to the development of the cough syncope.

Discussion

Syncope is a loss of consciousness due to transient global cerebral hypoperfusion characterized by rapid onset short duration, and spontaneous complete recovery. Cough syncope is classified as situational syncope. Situational syncope traditionally refers to reflex syncope (neurally-mediated) associated with some specific circumstances (micturition, cough, defecation, swallowing).⁴ An atypical form is used to describe those situations in which reflex syncope occurs with uncertain apparently absent triggers.

Tussive syncope, or cough syncope, is most often found in middle-aged, mildly obese men, who smoke or have stopped smoking.⁴⁻⁶ The reason why male gender and obesity are risk factors for tussive syncope is unknown.⁵ A vast majority of persons affected with cough syncope suffer from chronic cough, episodes of severe cough, and some evidence of chronic obstructive pulmonary disease.⁶ Recurrent syncope has serious effects on the quality of life. It is comparable with chronic illnesses. In our case episodes of syncope occurred up to 20 times during the day. That reduced mobility, self-caring and caused discomfort. A number of episodes of syncope seemed to be associated with a poorer quality of life.

The main mechanism in tussive syncope is a decrease of systemic blood pressure, which leads to a decrease in global cerebral perfusion. A sudden cessation of cerebral blood flow for as short as 6-8 has been shown to be sufficient to cause complete

loss of consciousness.⁴ Intrathoracic pressure increases during cough and obstructs the venous outflow, which leads to an acute decrease of heart output and blood pressure.^{4,6} As a consequence of the above mechanisms, the decrease of cerebral perfusion results in loss of consciousness. Another suggested mechanism is a decrease of cerebral perfusion due to an increase of pressure of the cerebrospinal liquor, as a result of increased cerebrovascular resistance.^{5,7} Apart from these mechanisms, cough syncope is found in patients with hypersensitive carotid sinus and gastroesophageal reflux.¹⁵ Due to the sudden development of central hypoperfusion, there are no prodromal symptoms.¹³ The key of a reliable diagnosis of cough syncope is in adequate diagnostic procedure. The new guidelines recommended diagnostic criteria. The initial evaluation consists of physical examination, careful history, orthostatic blood pressure and electrocardiogram. During the interview with the patient, special attention should be given to the following: pre-existing conditions (emphysema, chronic obstructive pulmonary disease, gastroesophageal reflux, etc.); description of the cough (frequency, duration, intensity, is it a productive cough, characteristics of the excretion); information about the syncope (frequency, duration, position in which the patient was when he/she lost consciousness, had the patient taken any drugs before the syncope, etc.); information about the patient's habits (smoking, alcohol abuse). The body mass index is a very important diagnostic element in physical examination. The two main symptoms – chronic cough and syncope must be explored since they don't necessarily have the same aetiology.

Based on these findings, additional examinations may be performed. One of the additional examinations is monitoring of blood pressure in syncope attack. In our clinical case of cough syncope, invasive blood pressure monitoring detected a fall in blood pressure to 35 mmHg during intensive cough. A sudden fall in systemic blood pressure with a cessation of cerebral blood flow has been shown to be sufficient to cause complete syncope.

The general principles of syncope treatment are to prolong survival, limit physical injuries, and prevent recurrences. The priority of these goals are dependent on the case of syncope. Investigations of the cause and mechanism of syncope are performed at the same time and lead to different treatments or absence of treatment.⁴ In our patient the most important is eliminated cause of cough (treated chronic obstructive lung disease, reduction diet, etc).

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