

Carotid Sinus Syncope in an Elderly Patient With Unexplained Syncope

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ABSTRACT

Carotid sinus syndrome is the most commonly reported cause of falls and syncope in elderly adults. However, it has been rarely reported in Koreans, and the reason of this ethnic difference is unknown. We report here on an Korean unusual case of carotid sinus syncope and this was induced by carotid sinus massage. (**Korean Circ J 2008;38:561-563**)

KEY WORDS: Carotid sinus syncope; Massage.

Introduction

Carotid sinus syncope (CSS) is induced by stimulation of the carotid sinus, and its clinical symptoms include dizziness, headache and the loss of consciousness.¹⁻³⁾ CSS is the most commonly reported cause of falls and syncope in the elderly.⁴⁻⁸⁾ However, the disease is known to occur very rarely among Asians, although the reason for this is not clear. Therefore, there is controversy about performing carotid sinus massage (CSM) for making the diagnosis of CSS in patients with history of syncope because of the low sensitivity of this technique and the risk of complications after CSM. However, in the presently reported case, CSS was demonstrated after performing CSM.

Case

A 61-year-old man presented for medical evaluation after having experienced multiple episodes of falls during the previous several months. The patient has no personal history of neurological disease. The physical examination was normal, including the neurological examination. Brain CT and Carotid Doppler sonography revealed no abnormality. There were no abnormal find-

ings on the simple chest X-ray and 12 lead ECG. The patient was taking no medication except finasteride for alopecia. The man's initial blood pressure (BP) was 105/78 mmHg and the pulse rate was 72/min. The BP in the upright position was 101/63 mmHg and the pulse rate was 67/min. Therefore, we could rule out orthostatic hypotension. On the head up tilt test (HUT), the right-sided supine CSM (duration of 30 seconds) was followed by left-sided CSM after an interval of 3 minute. After both-sided supine CSM, there was no significant change of BP, pulse rate and symptoms. The right- and left-sided CSMs were then repeated in the upright position. He showed sinus pause (6 seconds) with syncope after the right-sided CSM (5 seconds) in the upright position (Fig. 1). Based on the results of these tests, the patient was diagnosed with the cardioinhibitory type of CSS and he was prescribed theophylline 130 mg bid instead of inserting a pacemaker. The patient has not experienced anymore episodes of fall or syncope after he started taking the prescribed theophylline.

Discussion

CSS after performing CSM makes up 6-14% of all cases of syncope, and the prevalence of CSS is reported to be up to 40% of all the adults aged 80 or over.⁹⁻¹¹⁾ In contrast, in Korea, the rate of CSS after CSM is very low.¹²⁾¹³⁾ The reason for this low prevalence rate has not been clearly explained, but one possible reason is the involvement of genetic, racial and ethnic differences.¹⁴⁾ Other possible explanation for these differences might be related to the test methods. As this present case sug-

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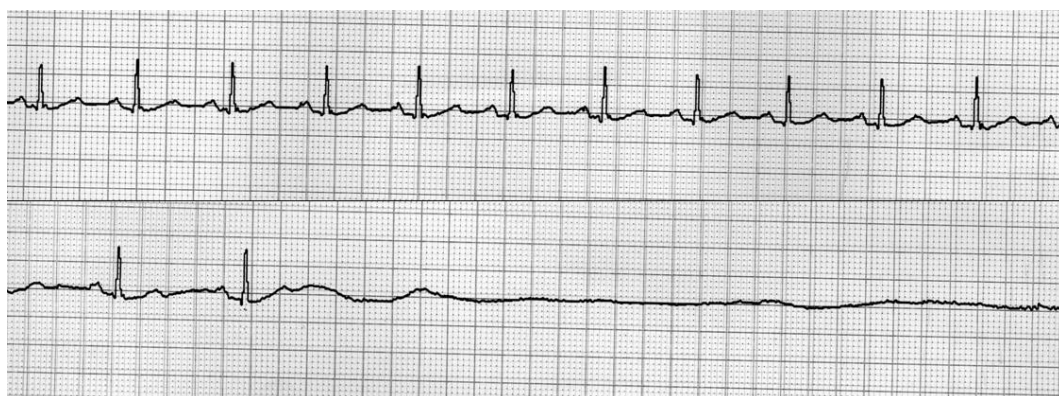


Fig. 1. Continuous rhythm: Right-sided CSM in the upright position produced a prolonged period of sinus pause (the duration was 6 seconds). CSM: carotid sinus massage.

gests, the prevalence of CSS may be increased according to the duration of CSM, and whether the massage is done in a head-tilted position. Richardson et al.¹⁵⁾ reported that the reproducibility of CSM varies from 40% to 100%, and Parry et al.⁶⁾ reported that many cases are negative in the supine position, but they are positive in a up-right head-tilted position, as in the present case. Interestingly, in our hospital, among the 73 cases that underwent a treadmill test and the patients were elderly (aged 60 or over), 5 patients (6.8%) showed a positive response to CSM, which is a higher prevalence rate compared with that of a recent report of Samsung Medical Center.¹²⁾ Additionally, the high yield of CSM might be due to the differences in the duration of CSM, in the settings and in age of the patients. The technique of CSM is not standardized: in some studies, CSM was carried out for 30 seconds or longer.⁵⁾ In the present case, the duration of CSM was 30 seconds and the patient was aged over 60 years. However, the HUT was not positive in the present case.

CSS is common in older patients, and even for those patients with no history of syncope or falls. Such a result underlines the difficulty in determining whether CSS is the cause of the syncope or if there is just a chance association of these two frequent findings in this age category.⁴⁾ Thus, the positive finding of a CSM does not necessarily preclude other causes of syncope.⁵⁾ However, the positive finding of a CSM should be considered in patients with spontaneous symptoms that are suggestive of CSS and in elderly patients with recurrent syncope and a negative diagnostic evaluation.¹⁶⁾ Masson⁴⁾ reported that the diagnosis of CSS seems more firmly established when the response is of the cardioinhibitory type and this gives rise to symptoms. Other types of responses should be interpreted cautiously.

CSS has three clinical types, the cardioinhibitory, vaso-depressor and mixed type.¹⁻³⁾ The patient in our present report showed 6 seconds of sinus pause, and so this present case is the cardioinhibitory type. Other reports have stated that the pattern of the disease can change.

Furthermore, the benefit obtained from pacemaker intervention in a patient with the cardioinhibitory type of CSS is controversial.¹⁷⁻¹⁹⁾ Therefore, a decision for inserting a pacemaker should be carefully made, and even if a patient has the cardioinhibitory type of CSS. In the present case, the patient was prescribed theophylline without the insertion of a pacemaker.

Unexplained syncope, falls and dizziness may present diagnostic challenges to the physician when dealing with elderly patients. The patient of the present case was older than 60, and the CSS was not related with the typical causes of CSS such as shaving and a tight collar. Therefore, this case illustrates that CSM remains the standard clinical test for CSS and this should particularly be done for the elderly Korean patients who suffer with unexplained syncope and unexplained falls. The positive yield of CSS will be increased if the CSM is done for a longer duration and in the upright position, as well as the supine position.

REFERENCES

- 1) Maggi R, Menozzi C, Brignole M, et al. Cardioinhibitory carotid sinus hypersensitivity predicts an asystolic mechanism of spontaneous neurally mediated syncope. *Europace* 2007;9:563-7.
- 2) Polvikoski T, Kalaria RN, Perry R, Miller V, Kenny RA. Carotid sinus hypersensitivity associated with focal alpha-synucleinopathy of the autonomic nervous system. *J Neurol Neurosurg Psychiatry* 2006;77:1064-6.
- 3) Miller VM, Kenny RA, Slade JY, Oakley AE, Kalaria RN. Medullary autonomic pathology in carotid sinus hypersensitivity. *Neuropathol Appl Neurobiol* 2008;34:403-11.
- 4) Masson C. Carotid sinus hypersensitivity: an age-related phenomenon. *J Neurol Neurosurg Psychiatry* 2006;77:1207.
- 5) Kerr SR, Pearce MS, Brayne C, Davis RJ, Kenny RA. Carotid sinus hypersensitivity in asymptomatic older persons: implications for diagnosis of syncope and falls. *Arch Intern Med* 2006;166:515-20.
- 6) Parry SW, Richardson DA, O'Shea D, Sen B, Kenny RA. Diagnosis of carotid sinus hypersensitivity in older adults: carotid sinus massage in the upright position is essential. *Heart* 2000;83:22-3.
- 7) O'Mahony D. Carotid sinus hypersensitivity in old age: clinical

- syndrome or physical sign? Age Ageing* 2001;30:273-4.
- 8) Kenny RA, Richardson DA. Carotid sinus syndrome and falls in older adults. *Am J Geriatr Cardiol* 2001;10:97-9.
- 9) Humm AM, Mathias CJ. Unexplained syncope: is screening for carotid sinus hypersensitivity indicated in all patients aged >40 years? *J Neurol Neurosurg Psychiatry* 2006;77:1267-70.
- 10) Mathias CJ, Deguchi K, Schatz I. Observations on recurrent syncope and presyncope in 641 patients. *Lancet* 2001;357:348-53.
- 11) Alboni P, Brignole M, Menozzi C, et al. Diagnostic value of history in patients with syncope with or without heart disease. *J Am Coll Cardiol* 2001;37:1921-8.
- 12) Kim PH, Ahn SJ, Kim JS. Frequency of arrhythmic events during head-up tilt testing in patients with suspected neurocardiogenic syncope or presyncope. *Am J Cardiol* 2004;94:1491-5.
- 13) Park EM, Kim NH, Shim HO, et al. A case of recurrent carotid sinus syncope in patient with hypopharyngeal cancer with neck node metastasis. *Korean J Med* 2006;70 (Suppl):324-7.
- 14) Coplan NL. Carotid sinus hypersensitivity and syncope: cause/effect or true/true/unrelated. *Arch Intern Med* 2006;166:491-2.
- 15) Richardson DA, Bexton R, Shaw FE, Steen N, Bond J, Kenny RA. How reproducible is the cardioinhibitory response to carotid sinus massage in fallers? *Europace* 2002;4:361-4.
- 16) Kapoor WN. Syncope. *N Engl J Med* 2000;343:1856-62.
- 17) Healey J, Connolly SJ, Morillo CA. The management of patients with carotid sinus syndrome: is pacing the answer? *Clin Auton Res* 2004;14 (Suppl 1):80-6.
- 18) Connolly SJ, Sheldon R, Thorpe KE, et al. Pacemaker therapy for prevention of syncope in patients with recurrent severe vasovagal syncope: a randomized trial. *JAMA* 2003;289:2224-9.
- 19) Shim WH, Oh KJ, Park SJ, Lee DK. A case of carotid sinus hypersensitivity syndrome treated with DDD pacemaker. *Korean J Med* 1987;32:242-5.