Deglutition Syncope Associated With Ventricular Asystole in a Patient With Permanent Atrial Fibrillation

Ga Yeon Lee, MD1, Bok Soon Chang, MD1, Jae-Uk Song, MD1, Chang Soo Ok, MD1, Seo-Young Sohn, MD1, Hyun Chul Jo, MD2, Hye-Jin Noh, MD2, Soo Hee Choi, MD2, Jun Hyung Kim, MD3 and June Soo Kim, MD2
1Department of Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, 2Division of Cardiology, Department of Medicine, Cardiac and Vascular Center, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, 3Division of Cardiology, Department of Internal Medicine, Chungnam National University School of Medicine, Daejeon, Korea

ABSTRACT

Deglutition syncope is a situational syncope that is diagnosed only by a detailed history. We report deglutition syncope in a 62-year-old man, who had permanent atrial fibrillation. The patient had no structural or functional abnormalities of the esophagus. During syncopal attacks, his electrocardiography showed ventricular asystole that was sustained for 12 seconds. The patient was successfully treated by implantation of a permanent pacemaker. (Korean Circ J 2010;40:99-101)

KEY WORDS: Syncope; Deglutition; Atrial fibrillation.

Introduction

Situational syncope is characterized by loss of consciousness in particular situations such as with a cough, micturition, deglutition.1-3) This form of syncope is thought to account for 5% of syncopal episodes.2) Several cases of deglutition syncope have been reported to be successfully treated with a permanent pacemaker. However, there are few cases with an initial atrial fibrillation rhythm. Here, we report a case of deglutition syncope in a patient with permanent atrial fibrillation, who underwent permanent pacemaker implantation to prevent ventricular asystole during the episodes of deglutition syncope.

Case

A 62-year-old man was referred to our hospital be-
ECG monitoring showed ventricular asystole for 4 seconds (Fig. 2).

We evaluated the esophagus with a barium swallow; there were no abnormal findings in the esophagus. On the treadmill test, his heart rate and blood pressure increased to 176/min and 218/83 mmHg, respectively. The head-up tilt test three months before admission was negative; the head-up tilt test was repeated. During the repeated head-up tilt test, provocation with drinking a cold beverage showed no significant pause or hypotension.

The patient underwent permanent pacemaker implantation of a VVI type pacemaker to prevent ventricular asystole. After implantation of the permanent pacemaker, there were no further episodes of syncope after drinking a cold beverage (Fig. 3).

**Discussion**

Deglutition syncope was first documented in 1906 by Meckenzie. Since then, it has been reported in patients evaluated by many different medical disciplines including: cardiology, gastroenterology, neurology, and otolaryngology. The vasovagal reflex between the heart and the esophagus is thought to be associated with deglutition syncope via the vagus nerve, where a signal from the mechanoreceptors in the esophagus is sent to the cardioinhibitory center in the medulla; the medulla then delivers the signal to the sinoatrial or atrioventricular (AV) nodes via the vagus nerve again, and the result is a variety of brady-arrhythmias. Sapru et al. reported a case supporting this theory. They found that an esophageal lesion caused syncope while swallowing in a young female patient by repeating esophageal ballooning with ECG monitoring; the patient had eight episodes of syncope while swallowing. They removed all branches of the vagus and sympathetic nerves entering the affected esophagus. After the surgery the patient had no more syncope. The vagus nerve is the key route in the afferent and efferent limbs of deglutition syncope. Inhibition of the vagal reflex with medication has been tried for treatment in some cases. Intravenous atropine injection abolished an AV block in some provocation tests. In another case of AV block after swallowing, oral atropine sulphate tablets were tried. However, the symptoms were not relieved fully and there were into-
Deglutition syncope is often combined with esophageal disorders such as a hernia, stricture, achalasia, diverticulum, and esophageal spasm. Gordon et al. reported syncope with paroxysmal atrial fibrillation provoked by esophageal reflux. The patient was treated with a proton pump inhibitor. Maekawa et al. reported a patient with deglutition syncope that had a very large hiatal hernia compressing the left atrium after eating a large meal. If deglutition syncope is suspected by the patient’s history, an evaluation for esophageal abnormalities should be performed. The patient in our case had no abnormality of esophageal function or anatomic structure, as shown by the barium swallow. Implantation of a permanent pacemaker successfully treated the symptoms of AV block and ventricular asystole with swallowing. In a case of deglutition syncope without ECG changes, the pacemaker does not improve symptoms. Therefore, prior to implantation of a permanent pacemaker, ECG documentation of an AV block or pause should be obtained.

Deglutition syncope with atrial fibrillation has been previously reported. Gordon et al. reported that the occurrence of paroxysmal atrial fibrillation with a rapid ventricular response caused syncope after swallowing. Armstrong et al. reported a case with a slow idioventricular rhythm with permanent atrial fibrillation associated with syncope after drinking. However, our patient had ventricular asystole that caused syncope after drinking a cold beverage; after implantation of the permanent pacemaker the patient did not lose consciousness.

REFERENCES
1) Rhee KS. Cough syncope induced by gastroesophageal reflux. Korean Circ J 2004;34:718-20.
2) Kapoor WN. Syncope. N Engl J Med 2000;343:1856-62.
3) Sapru RP, Griffiths PH, Guz A, Eisele J. Syncope on swallowing. Br Heart J 1971;33:617-22.
4) Kunimoto S, Shibata S, Abiru M, et al. A case of swallow syncope induced by vagovagal reflex. Jpn J Med 1990;29:199-202.
5) Cherukuri S, Gardner GM. Deglutition syncope. Otolaryngol Head Neck Surg 2004;130:145-7.
6) Kunis RL, Garfein OB, Pepe AJ, Dwyer EM Jr. Deglutition syncope and atrioventricular block selectively induced by hot food and liquid. Am J Cardiol 1983:55:613.
7) Kakuchi H, Sato N, Kawamura Y. Deglutition syncope associated with complete atrioventricular block and vasovagal syncope. Heart 2000:83:702-4.
8) Omi W, Murata Y, Yaegashi T, Inomata J, Fujioka M, Muramoto S. Swallow syncope, a case report and review of the literature. Cardiology 2006;105:75-9.
9) Gordon J, Saleem SM, Ngaage DL, Thorpe JA. Swallow syncope associated with paroxysmal atrial fibrillation. Eur J Cardiothorac Surg 2002;21:587-90.
10) Maekawa T, Suematsu M, Shimada T, Go M, Shimada T. Unusual swallow syncope caused by huge hiatal hernia. Intern Med 2002;41:199-201.
11) Armstrong PW, McMillan DG, Simon JB. Swallow syncope. Can Med Assoc J 1985;132:1281-4.