

## A Case of Swallow Syncope Associated With Cold Beverage Ingestion

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Swallow syncope (also known as deglutition syncope) is a relatively rare type of syncope that is treatable if diagnosed correctly. We report a case of a 39-year-old man with recurrent swallow syncope. The patient did not have structural heart disease. He developed a complete atrioventricular block upon drinking a cold beverage (*Chilsung cider*) while undergoing a repeated head-up tilt test. The patient was advised to avoid cold beverages and has been symptom free for 5 months. (**Korean Circ J 2012;42:212-215**)

**KEY WORDS:** Syncope; Deglutition; Atrioventricular block.

### Introduction

Situational syncope is a sudden and brief loss of consciousness, which can occur after urination, defecation, swallowing, or coughing.<sup>1)</sup> Swallow syncope is a rare type of situational syncope caused by a hypersensitive vagotonic reflex in response to deglutition.<sup>2)</sup> This type of syncope may be induced by ingesting solid foods or cold beverages, independent of underlying esophageal or cardiac disease. In this report, we describe a case of a patient who did not have cardiac disorders and experienced swallow syncope induced by a cold beverage provocation test.

### Case

A 39-year-old man was referred to the Department of Cardiology to evaluate recurrent syncope. The patient had the first syncopal episode during meals 5 months ago. At that time, he experienced

dizziness and chest tightness, which was followed by a sudden loss of consciousness. He regained full consciousness after several seconds. No seizure-like movements or urinary incontinence occurred during that episode. Subsequently, he has experienced four more episodes of syncope.

He had a 2-year history of hypertension, which was treated with telmisartan, amlodipine, and carvedilol. Additionally, he was diagnosed with diabetes mellitus 1 week before he visited our hospital. His diabetes was controlled using oral hypoglycemic agents.

On admission, his blood pressure was 118/72 mm Hg, and his heart rate was 70 beats per minute. He was alert, and the results of other physical examinations including a cardiac examination were normal. The results of most of the hematological and biochemical tests were normal, but the hemoglobin A1c level was 8.2%. Chest radiographs did not show cardiomegaly or active lung lesions. An initial 12-lead electrocardiogram (ECG) and 24 hours ECG recording both showed a normal sinus rhythm. His echocardiogram did not show any significant heart abnormalities. A treadmill exercise test showed that the patient had good exercise capacity, and no abnormal findings were obtained. Subsequently, we performed the head-up tilt test. During this test, we made him drink a cold beverage (*Chilsung cider*). The patient felt sudden dizziness, and his ECG showed a transient complete atrioventricular (AV) block with no ventricular escape beats for 6.2 seconds (Fig. 1). The head-up tilt test was repeated the next day. During that test, the patient was given a cold beverage at 5, 15, and 16 minutes from the start of the test and immediately developed a complete AV block without ventricular escape beats at time points of 4.92, 5.2, and 5.56 seconds. He simultaneously experienced dizziness and chest tightness (Fig. 2).

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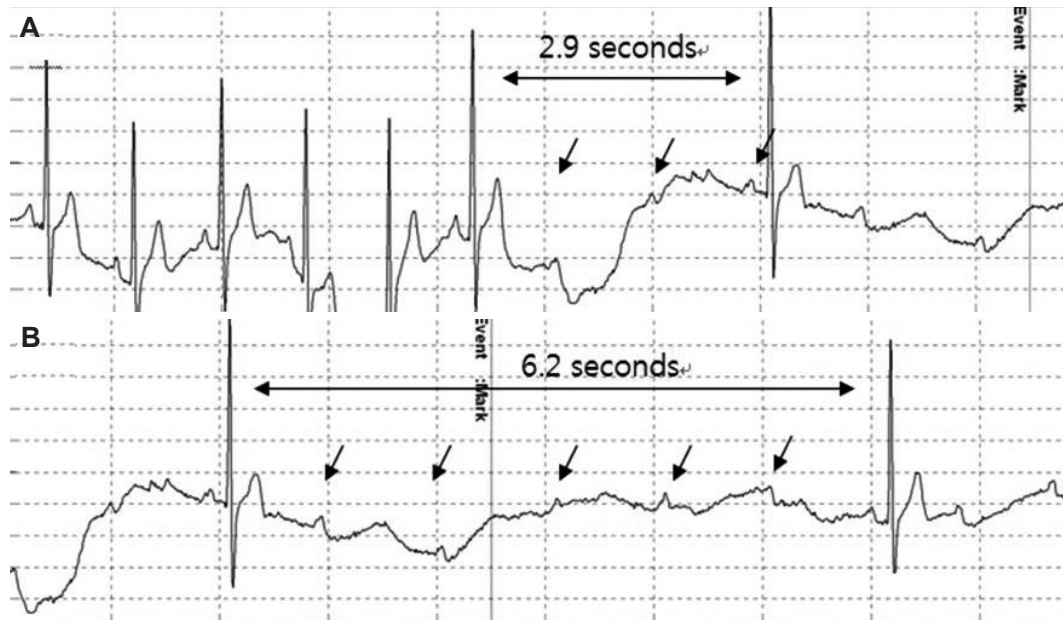
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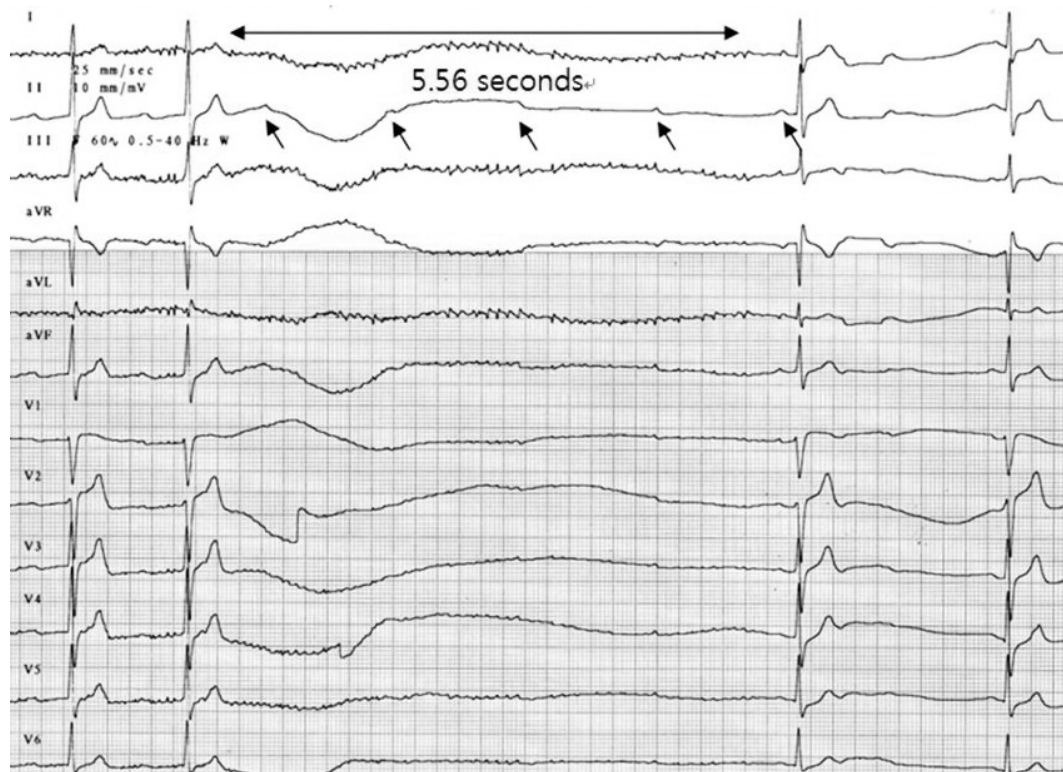
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The patient was diagnosed with swallow syncope and was advised to avoid cold beverages, particularly cold carbonated drinks. After he was discharged, the patient did not suffer from any dizziness

or syncope. However, if syncope recurs after controlling cold beverage intake, a permanent pacemaker will be implanted.



**Fig. 1.** First head-up tilt test. The patient was given a cold beverage at 3 minutes during the first passive tilt test. Advanced second atrioventricular (AV) block was simultaneously noted for 2.9 seconds (A). In addition, transient complete AV block without escape beats was also noted for 6.2 seconds. The patient felt lightheadedness during the episode of complete AV block (arrows indicate P wave) (B).



**Fig. 2.** Second head-up tilt test. The patient was drinking a cold beverage at 26 minutes into the second passive tilt test. A transient complete atrioventricular block (AVB) without escape beats was noted simultaneously for 5.56 seconds. He felt lightheadedness during the entire AVB episode (arrows indicate P wave).

## Discussion

Syncope is defined as the transient loss of consciousness due to transient global cerebral hypoperfusion. The characteristics of syncope are rapid onset, short duration, and spontaneous complete recovery. Syncope is a common clinical symptom and is divided into cardiovascular syncope, neurally mediated syncope, and syncope due to orthostatic hypotension.

Neurally mediated syncope (also called neurocardiogenic syncope) is the most common type of syncope, whereas swallow syncope is a rare type of neurally mediated syncope.<sup>3)</sup> Since Spens described a possible case of swallow syncope in 1793,<sup>4)</sup> approximately 60 similar cases have been reported.<sup>2)</sup> Swallow syncope is associated with various conditions, including esophageal disorders, such as esophageal stricture, esophageal diverticulum, esophageal spasm, esophageal cancer, achalasia, and hiatal hernia,<sup>5-7)</sup> as well as cardiac diseases, including myocardial infarction, heart failure, and atrial fibrillation.<sup>8)9)</sup> In contrast, Palmer<sup>10)</sup> reported cases of swallow syncope without involvement of esophageal or cardiac diseases.

The mechanism of swallow syncope remains to be elucidated. The vasovagal reflex between the heart and esophagus plays an important role in the occurrence of syncope. The afferent impulses from esophageal receptors reach the nucleus tractus solitarius in the brain stem. Efferent signals from this tract reach an adjacent motor nucleus that gives rise to the efferent nerves of the parasympathetic system, which lead to the heart. These vagal fibers primarily innervate the sinoatrial (SA) node, atrial musculature, and AV node, which generates various bradyarrhythmias.<sup>2)11)</sup> AV block is the most common cause of swallow syncope. However, sinus bradycardia, SA block, and complete atrial and ventricular asystole have also been reported to cause swallow syncope.<sup>12)</sup>

Many kinds of foods such as cold beverages, alcoholic drinks, and solid food cause swallow syncope. Therefore, carefully obtaining a patient history plays a critical role recognizing the relationship between the intake of foods and the occurrence of syncopal episodes. Because swallow syncope is often combined with other disorders, it is important to evaluate the esophageal and cardiac structures of patients with swallow syncope. Endoscopy or a barium study can be used to detect underlying esophageal disorders. Additionally, echocardiography may be helpful for evaluating cardiac abnormalities in such cases.<sup>12)</sup>

In this case, we used a head-up tilt test to continuously monitor the patient's cardiac rhythm and blood pressure using a Finometer device (Ohmeda Monitoring Systems, Englewood, CO, USA), while provoking swallow syncope associated with ingestion of a cold beverage. A symptomatic transient complete AV block was reproducibly induced at an early phase of the head-up tilt test whenever

the patient drank a cold beverage. We did not perform a head-up tilt test without cold beverage provocation, because his syncopal episodes were always associated with swallowing cold beverages.

We think that consuming a cold beverage played a major role in this patient's syncopal episodes. His symptoms were always associated with a transient AV block rather than with hypotension. Furthermore, conducting the orthostatic maneuver did not result in any significant hypotension. Therefore, orthostatic stress might not have contributed to the occurrence of his syncopal episodes.

It is necessary to assess the factors that trigger and aggravate syncope before treatment, so the patient can avoid heart blocking medications such as digitalis, beta-blockers, and calcium antagonists. If the symptoms are related to ingesting specific beverages or foods, syncope could be prevented by avoiding them.<sup>2)</sup>

Swallow syncope can be treated using anticholinergic agents, but the effects are not necessarily reliable, and the side effects may be intolerable. Surgical treatment, such as denervation of portions of the esophagus, might be effective in some cases. Permanent pacemaker implantation is also effective in patients with recurrent syncope.<sup>13)</sup>

In this report, we have confirmed the association between ingestion of a cold carbonated beverage and the occurrence of syncopal symptoms. Since the patient started avoiding the consumption of cold beverages, he has not experienced loss of consciousness or shown other relevant symptoms. If syncopal episodes recur, permanent pacemaker implantation will be required.

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