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Ventricular Tachycardia Associated with Allium Species Intoxication

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A 55-year-old man presented to the emergency department with weakness and low systolic blood pressure (SBP) of 50 mmHg. Electrocardiogram (ECG) showed atrioventricular (AV) dissociation and bidirectional premature ventricular contractions (PVCs) (Fig. 1A). The QRS complexes had become wider and showed signs of a left bundle branch block pattern (Fig. 1B). Laboratory findings were unremarkable and echocardiography showed normal left ventricular systolic function and no structural abnormality. His BP increased slowly after administering dopamine (15 μg/minute) and norepinephrine (4 μg/minute) in an infusion of normal saline. ECG changed into bizarre, wide QRS tachycardia (Fig. 2A). His SBP maintained at around 90 mmHg despite ventricular tachycardia (VT). VT was terminated spontaneously 20 minutes after discontinuation of the dopamine infusion (Fig. 2B, C). He was on antihypertensives (telmisartan and amlodipine), but he did not take them on the morning of the event. Recently, instead of water, he was drinking Allium Hookeri (AH) extract with boiled water for 15 days as a folk remedy for blood circulation. He also drank two bottles of Soju (approximately 120 grams of alcohol) with AH extract last night. We recommended AH extract loading test to confirm its causal relationship with this event but the patient strongly refused it. ECG monitoring for 2 days showed no abnormalities (Fig. 2D). He was discharged home and has not experienced any cardiovascular events for 4 years.

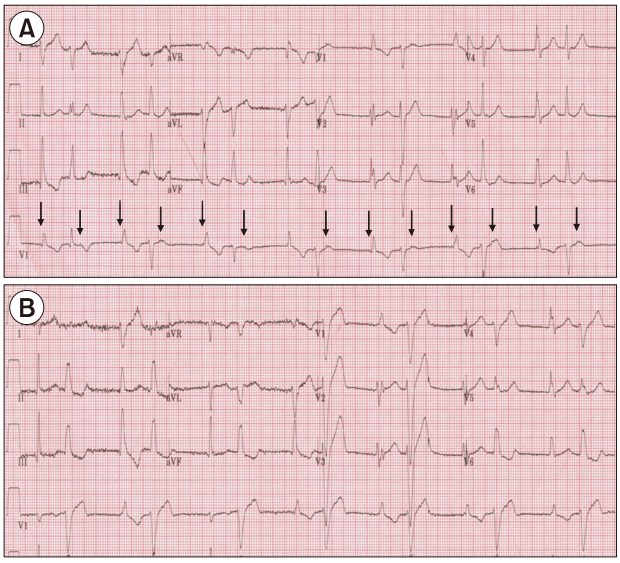

FIG. 1. (A) Initial 12-lead electrocardiography (ECG). Slow regular QRS complexes (42 beats/minute) without leading P waves are followed by another QRS complex in a fixed coupling interval and exhibit bidirectional PVCs. Atrioventricular dissociation with tiny P wave is noted (arrows). (B) Consecutive ECG. QRS complexes show a gradual change in morphology. The following QRS complexes became wider and had a complete left bundle branch block pattern.

Allium Hookeri, it is called Sam-Chae in Korean, has been widely used as a health supplement in Korea. Allium species can be toxic to dogs and cats.[1] However, there is no report of adverse cardiovascular effects of AH on humans. AH contains a variety of organosulfoxides, particularly alk(en)ylcysteine sulfoxides,[2] which have BP-lowering effects and suppressive effects on the cardiac conduction system with different intensities.[3,4] Those compounds from AH might have similar effects with unknown intensity on the human cardiovascular system.[5] The adverse event of this case occurred after drinking AH extract instead of water for 15 days. The exact amount of AH used by the patient could not be estimated, but according to the patient's statement, it was much more than the usual amount when AH is used in usual cooking. This case suggests AH intoxication might be associated with cardiac conduction disturbances and the development of fatal ventricular arrhythmia particularly when taken with alcohol and highlights the necessity of stricter caution of access to Allium hookeri (AH).

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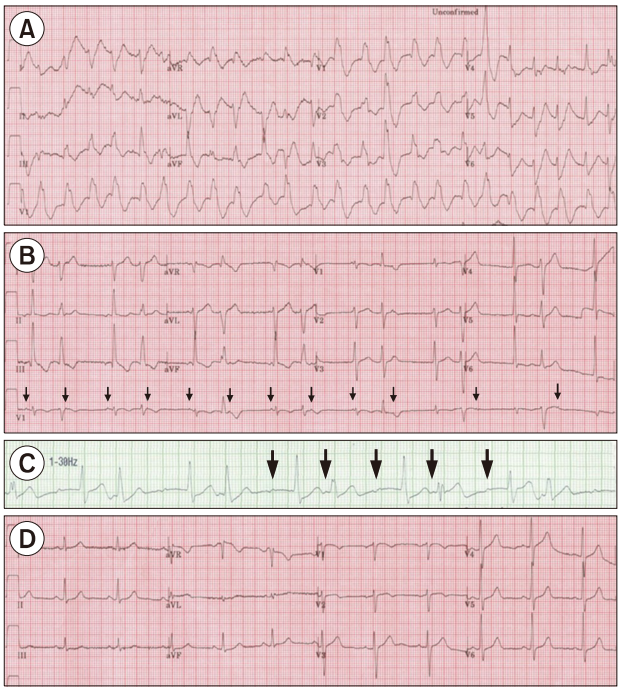

FIG. 2. (A) Electrocardiography showing wide QRS tachycardia (144 beats/minute). Atypical right bundle branch block pattern in V1 and deep S wave in V6 indicate ventricular tachycardia (VT). Because of the dopamine infusion to overcome the extremely hypotensive status (systolic blood pressure, 40 mmHg), the initial bigeminy pattern of premature beats changed to similar QRS patterns and progressed gradually to irregular VT. The initial bigeminy-like rhythm was restored with withdrawal of dopamine after approximately 20 minutes. The irregularity and gradual increase of the VT rate suggested a triggered activity or an increased pathologic automaticity rather than reentry as its mechanism. Sympathomimetics such as dopamine might have augmented the already increased irritability of the ventricle. (B) Electrocardiography recorded after 2 hours. General QRS pattern seems to be restored to the status at initial presentation. A small increase in the P wave dimension (arrows) is noted while the atrioventricular dissociation is unresolved. (C) A rhythm strip between A and B showing atrioventricular dissociation. A group of P waves is marked with arrows. (D) Electrocardiography before discharge. No abnormal finding is noted.

CONFLICT OF INTEREST STATEMENT

None declared.

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