CASE REPORT

Paroxysmal Atrial Fibrillation After Smokeless Tobacco (Maras Powder) Use

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Use of cigarettes and smokeless tobacco is a considerable public health problem. In Turkey, a type of smokeless tobacco called Maras powder (MP) is widely used in the Southeastern region. We present a case of paroxysmal atrial fibrillation that was suspected to be caused by the use of MP, which has never previously been noted in the literature. A 46-year-old man was admitted to our emergency department with angina pectoris and palpitation. He was a long time cigarette smoker and had begun using MP the fortnight before. Electrocardiography showed atrial fibrillation with rapid ventricular response. The patient had no medical history of alcohol use, surgery, palpitation, coronary arterial illness, hypertension or chronic bronchitis. Atrial fibrillation was converted to sinus rhythm after antiarrhythmic medication. Our patient was discharged from the emergency department with a suggestion to quit MP usage immediately. In conclusion, the use of MP may lead to the occurrence of paroxysmal atrial fibrillation. [*J Chin Med Assoc* 2009;72(5):265–267]

Key Words: Maras powder, paroxysmal atrial fibrillation, smokeless tobacco

Introduction

Use of cigarettes and smokeless tobacco is a considerable public health problem.[1] In Turkey, a type of smokeless tobacco called Maras powder (MP) is widely used in the Southeastern region, especially in Kahramanmaras and Gaziantep cities. MP is different from common cigarettes. It is used via the oral route, instead of smoked in cigarettes.[2] MP is often preferred while trying to quit or reduce smoking.[3] MP is obtained from a tobacco plant species known as *Nicotina rustica L.* The sun-dried leaves of the plant are powdered and mixed with oak ash in 1:2 or 1:3 proportions (tobacco and ash, respectively), and water is then sprinkled onto this mixture for humidification (Figure 1). A small amount of this mixture (approximately 1 g) is applied between the lower labial mucosa and gingiva for 4–5 minutes. This region of the mouth has many capillary vessels, so the nicotine is quickly absorbed into the circulation.[2] Because MP has a higher nicotine content than cigarettes, its harmful effects are also more pronounced.[4] However, the public believes that this smokeless powder which they take orally is less harmful than cigarette smoking.[3] Here, we present a case of paroxysmal atrial fibrillation (AF) that was suspected to be caused by the use of MP, which has not previously been noted in the literature.

Figure 1. Maras powder for usage.

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Case Report

A 46-year-old man was admitted to our emergency department with angina pectoris and palpitation. The patient had an attack of palpitation of the heart suddenly at about 7:00 a.m. He had been smoking cigarettes for a long time and had begun using MP a fortnight before. He had used MP three times a day for the first 12 days. However, in the past 3 days, the patient had used MP 8–10 times a day. He had come to the hospital because of coughing a week before, and it was found that his electrocardiogram (ECG) was in normal sinus rhythm at that time. The patient had no medical history of alcohol use, surgery, palpitation, coronary arterial illness, hypertension or chronic bronchitis. Tachyarrhythmia was noted on physical examination. The Glasgow coma scale score of the patient was E4M6V5. Arterial blood pressure was 120/80 mmHg. The patient had normal complete blood count, blood gases, blood electrolytes (Na, K, Mg, Ca) and serial cardiac markers. Thyroxin and triiodothyronine concentrations and thyrotropin-releasing hormone stimulation tests were normal. ECG showed AF with rapid ventricular response, approximately 136 beats/min.

We administered intravenous amiodarone 150 mg for medical cardioversion. AF was converted to sinus rhythm after antiarrhythmic medication. During continuous ECG monitoring in the emergency department, no recurrence of arrhythmia was observed. Transthoracic echocardiography found no structural or functional anomaly. Finally, no etiology other than MP could explain this AF episode. We discharged the patient from the emergency department at his 24th hour of admission with the suggestion that he quit MP usage immediately.

At the 1-month follow-up, ECG showed normal sinus rhythm, and during that time, he had no heart palpitation or chest pain.

Discussion

MP is as harmful to health as cigarettes because of its high nicotine content.[4] The effect of nicotine on the genesis of cardiac arrhythmias is well known.[5] Animal studies have demonstrated that nicotine delays ventricular repolarization by blocking type-A potassium channels in the heart. As a result of this, a number of arrhythmias occur.[6] According to an experimental study in dogs, no significant arrhythmias result with doses of 2.5, 5.0 and 10.0 μg/kg of intravenous nicotine, but a dose of 50 μg/kg induced supraventricular arrhythmias, atrioventricular junctional arrhythmias, and ventricular arrhythmias.[7] Stewart and Catterall[8] reported paroxysmal AF occurring in a fit 35-year-old man who had consumed large doses of nicotine chewing gum over a prolonged period. Due to insufficient technique, materials and equipment, we could not determine serum nicotine concentration in our patient. Mathew and Herity[9] reported acute myocardial infarction developing within days of initiation of nicotine replacement therapy. Smokeless tobacco may thus conceivably trigger cardiac arrhythmias in susceptible individuals with an arrhythmogenic substrate. Risk for these potential complications may be magnified in the context of significant chewing-tobacco-induced increases in blood pressure and heart rate.[10] In the literature, we came across numerous articles about the use of nicotine-containing products leading to an interaction with cardiovascular and various cardiac parameters. However, there were no articles about MP use resulting in paroxysmal AF.[3,9,10] Our case is noteworthy by calling attention to the possibility that MP usage can cause paroxysmal AF.

AF is the most common type of arrhythmia in adults. Cardiac conditions associated with the development of AF are hypertension, rheumatic mitral valve disease, coronary artery disease, and congestive heart failure. Noncardiac causes include hyperthyroidism, hypoxic pulmonary conditions, surgery, and alcohol intoxication.[11] We did not find any cardiac or noncardiac organic pathologies that could have caused paroxysmal AF in this patient. The patient's palpitations developed in the 48 hours prior to his admission and the patient had no history of AF. The AF was converted to sinus rhythm after antiarrhythmic medication. After 1 month of follow-up, ECG showed normal sinus rhythm.

In conclusion, the use of MP may lead to the occurrence of paroxysmal AF.

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