

# Acute Anterior Myocardial Infarction Following Single Dose Synthetic Cannabinoid (Bonsai) Use: Case Report

## Tek Doz Sentetik Kannabinoid (Bonzai) Kullanımı Sonrası Gelişen Akut Anterior Miyokard İnfarktüsü

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**ABSTRACT** Nowadays synthetic cannabinoid (bonsai) is the most common substance of drug abuse in young adults because of its euphoric and addictive effects. Recently, bonsai use associated acute coronary syndromes and deaths have been seen among Turkish youth. Yet there is limited evidence about bonsai induced acute myocardial infarction and the exact contribution of bonsai smoking to acute coronary syndrome and its mechanism are not known. We hereby reported a case of acute anterior myocardial infarction following bonsai smoking in a young male.

**Key Words:** Anterior wall myocardial infarction; cannabinoids

**ÖZET** Günümüzde, sentetik kanabinoid (bonsai) gençler arasında haz verici ve bağımlılık yapma etkisinden dolayı kullanılan en yaygın maddedir. Son zamanlarda, bonsai kullanımı ile ilişkili akut koroner sendrom ve ölümler Türk gençleri arasında görülmektedir. Ancak, bonsai ilişkili akut miyokard infarktüsü hakkında bilgiler sınırlıdır ve bonsai içimi ile akut koroner sendrom gelişme mekanizması tam olarak bilinmemektedir. Bu olgu sunumunda, bonsai kullanımı sonrası akut anterior miyokard infarktüsü geçiren bir genç erkek hasta bildirilmiştir.

**Anahtar Kelimeler:** Anterior duvar miyokard infarktüsü; kannabinoidler

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Synthetic cannabinoid (SC) use is particularly common among adolescents due to its sociocultural, psychotropic and addictive effects.<sup>1</sup> Substances that contain SC are known as “Spice” in Europe, “K2” in America, and “Bonsai” in Turkey<sup>1</sup>. Recently, deaths of uncertain etiology associated with Bonsai use have occurred among Turkish youth. Despite the known effects of SCs on the cardiovascular system, the mechanism of action in acute coronary syndromes (ACS) and coronary artery disease (CAD) is unclear.<sup>2</sup> We present a case admitted to the emergency department (ED) with acute anterior myocardial infarction (MI) secondary to Bonsai use.

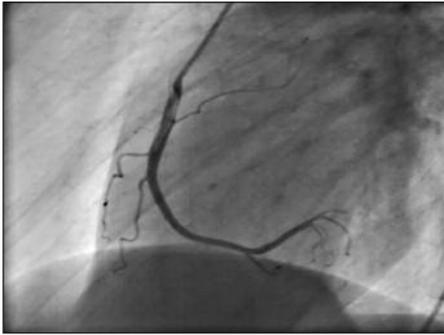
### CASE REPORT

A 28 year old man with no significant past medical history presented at the ED with chest pain that had begun 4 hours after the use of Bonsai. He had no acute distress and was conscious but agitated. His blood pressure was

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**FIGURE 4:** Coronary angiography showed normal right coronary artery (RCA).

rience MI after SC use are typically young adult smokers with no other CAD risk factors.

SCs can cause sweating, vomiting, hypertension/hypotension, chest pain, tachycardia/bradycardia, respiratory depression, confusion, psychomotor agitation, somnolence, and sedation.<sup>1,2,8</sup> One study reported 3 adolescents who experienced ST-elevation MI after SC abuse.<sup>4</sup> These patients developed chest pain days after use, demonstrated ST elevation in ECG and elevated troponin in blood chemistry, although coronary angiography failed to reveal the presence of vascular disturbances. Similarly, the present case exhibited normal coronary vessels on angiography.

Data regarding pharmacologic characteristics of SC are limited. Tetrahydrocannabinol (THC) is a component of SCs that may cause vascular thrombotic complications, coronary thrombosis, and spasms.<sup>5,6,8</sup> THC may contribute to autonomic derangements and lead to an increase in heart rate and blood pressure, increasing cardiac output and

myocardial oxygen demand.<sup>9</sup> THC is also associated with vascular inflammation and platelet activation, plaque rupture, and increased MI risk.<sup>4,10,11</sup> SCs contribute to MI through effects on cardiovascular system. In the present case, the patient did not respond to nitroglycerin and adenosine administered to reverse possible coronary spasm. The ECG findings after thrombolytic and the absence of coronary lesions support the diagnosis of thrombus-related MI caused by SC abuse. If we performed coronary angiography on admission, total occlusion of LAD could be detected. In this situation stent would be necessary to insert for revascularization. After inserting the stent, the young patient could come across with stent restenosis. Therefore, thrombolytic therapy option for patients with this condition could consider a higher priority.

SCs bind to cannabinoid receptors with high avidity.<sup>2,4</sup> It was not possible to determine the dose of Bonsai used or the identity of the other vasoactive/thrombogenic substances contained in the product. However, the occurrence of MI after first-time use indicates that SCs may be associated with a greater risk of ACS relative to other commonly abused substances.

In conclusion, unexplained deaths among SC abusers may be attributable to MI. To prevent myocardial damage and decrease associated mortality, all young patients who present to ED with chest pain should be questioned regarding SC abuse, and evaluated with ECG and cardiac enzyme biochemistry.

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