

Spontaneous Coronary Artery Dissection following Cannabis use in a Male Patient: a Case Report

Khadim Sene ^{1*}, Papa Mouhamadou D. Fall ³, Mor Diop ², Abdoulgabar S. Mohamed ¹, Joseph S. Mingou ¹, Momar Dioum ³, Abdoul Kane ¹

¹Cardiac Medical Department, Dalal Jamm Hospital.

²Radiology and Medical imaging Department, Dalal Jamm Hospital.

³Cardiac Medical Department, FANN Hospital.

***Corresponding Author:** Khadim Sene, Cardiac Medical Department, Dalal Jamm Hospital.

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Abstract:

Spontaneous coronary artery dissection is a particular form of acute coronary syndrome (ACS) that preferentially affects women who are generally not predisposed to atherosclerotic disease. Men are exceptionally rarely affected. Its true incidence remains uncertain and is estimated at approximately 0.1 to 4% of ACS cases. Cannabis is the most widely used illicit drug in the world. It has effects on multiple organ systems, particularly the cardiovascular system. Various cases of ACS associated with cannabis use, even in the presence of normal coronary arteries, have already been reported in the medical literature. We report the case of a young man presenting with ACS with persistent ST-segment elevation in the apico-lateral leads, related to spontaneous coronary artery dissection of the diagonal branch and the right coronary artery. The outcome was favorable, with the patient remaining stable on medical treatment.

Key words: spontaneous coronary artery dissection; acute coronary syndrome; cannabis

1.Introduction:

Spontaneous coronary artery dissection is a rare cause of acute coronary syndrome. Its true incidence remains uncertain and is estimated at approximately 0.1 to 4% of ACS cases [1-2]. Although it preferentially affects young women not predisposed to atherosclerotic disease, men are not entirely spared [3,4]. Cannabis is the most widely used illicit drug in the world. It has effects on multiple organ systems, particularly the cardiovascular system. Various cases of acute coronary syndrome (ACS) associated with cannabis use, even in the presence of normal coronary arteries, have already been reported in the medical literature [5]. We report the case of a man who developed spontaneous coronary artery dissection following cannabis use.

2-Case Report

The patient was a 50-year-old active smoker (8 pack-years) with a history of hashish use, a cannabis derivative. The history began with retrosternal chest pain radiating to the back and shoulders. This pain occurred

approximately 10 hours after heavy hashish consumption. He was admitted 4 hours after pain onset to a regional hospital where an ECG (Fig 1A) was performed and showed ST-segment elevation in the apico-lateral leads, and thrombolysis was initiated. The limb leads were unremarkable (Fig 1B). Due to persistent pain after thrombolysis, he was transferred to our department for rescue angioplasty at hour 6. On arrival, blood pressure was 137/89 mmHg in the right arm and 133/85 mmHg in the left arm, with a heart rate of 85 bpm. Coronary angiography revealed a type 1 dissection of a large diagonal branch (Fig 2A) and the right coronary artery with TIMI 3 flow (Fig 2B). Post-procedure echocardiography was normal. We opted for conservative management with a single antiplatelet agent, a beta-blocker, and smoking cessation along with cessation of hashish use. The immediate course was marked by regression of chest pain. As part of a dissection extension workup, a thoraco-abdomino-pelvic CT angiography was requested and showed a focal intimal flap at the level of the tubular portion of the ascending aorta (Fig 3). The outcome was favorable and the patient was discharged on day 3.

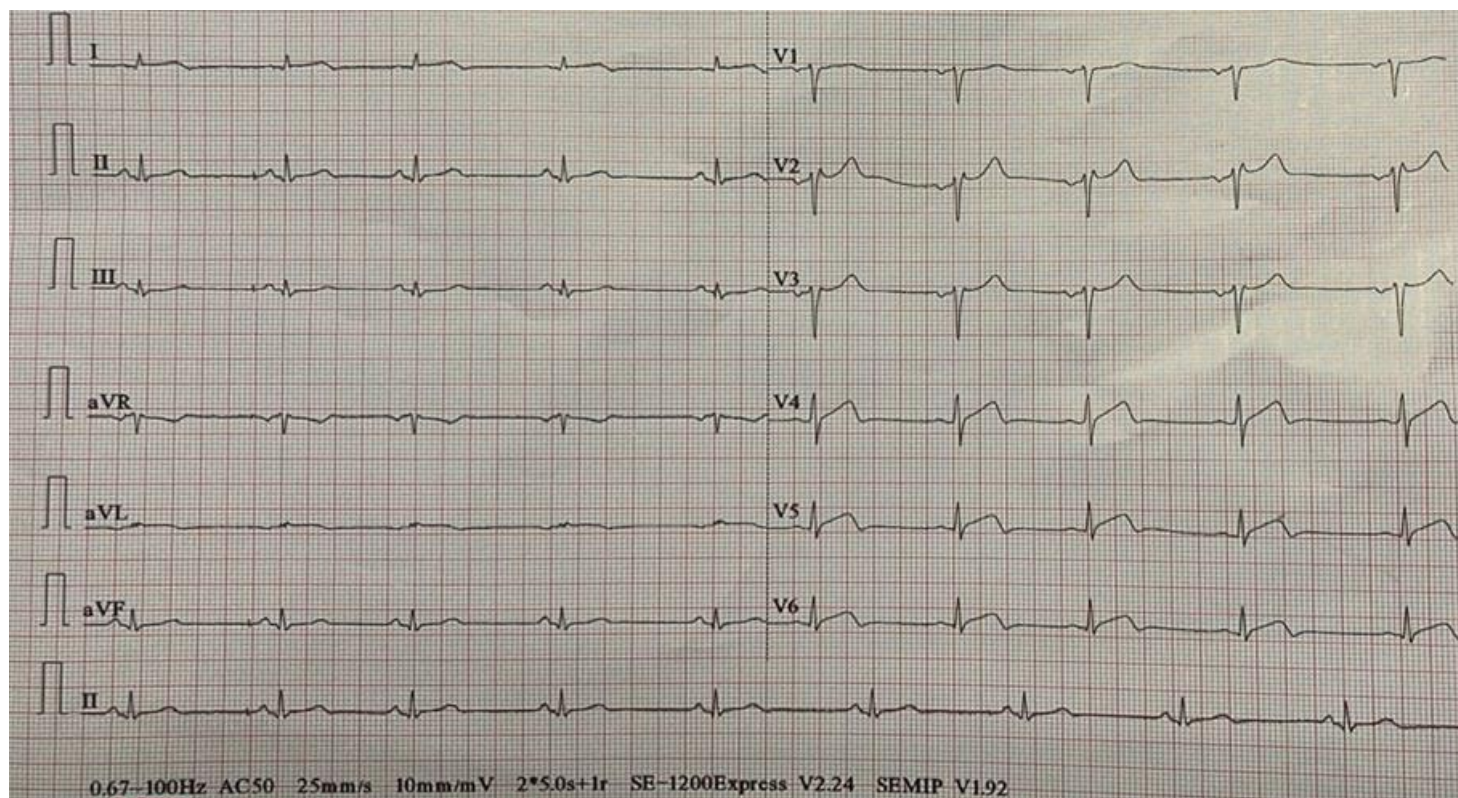


Figure 1A: 12-lead ECG showing ST-segment elevation in the apico-lateral (red arrow)

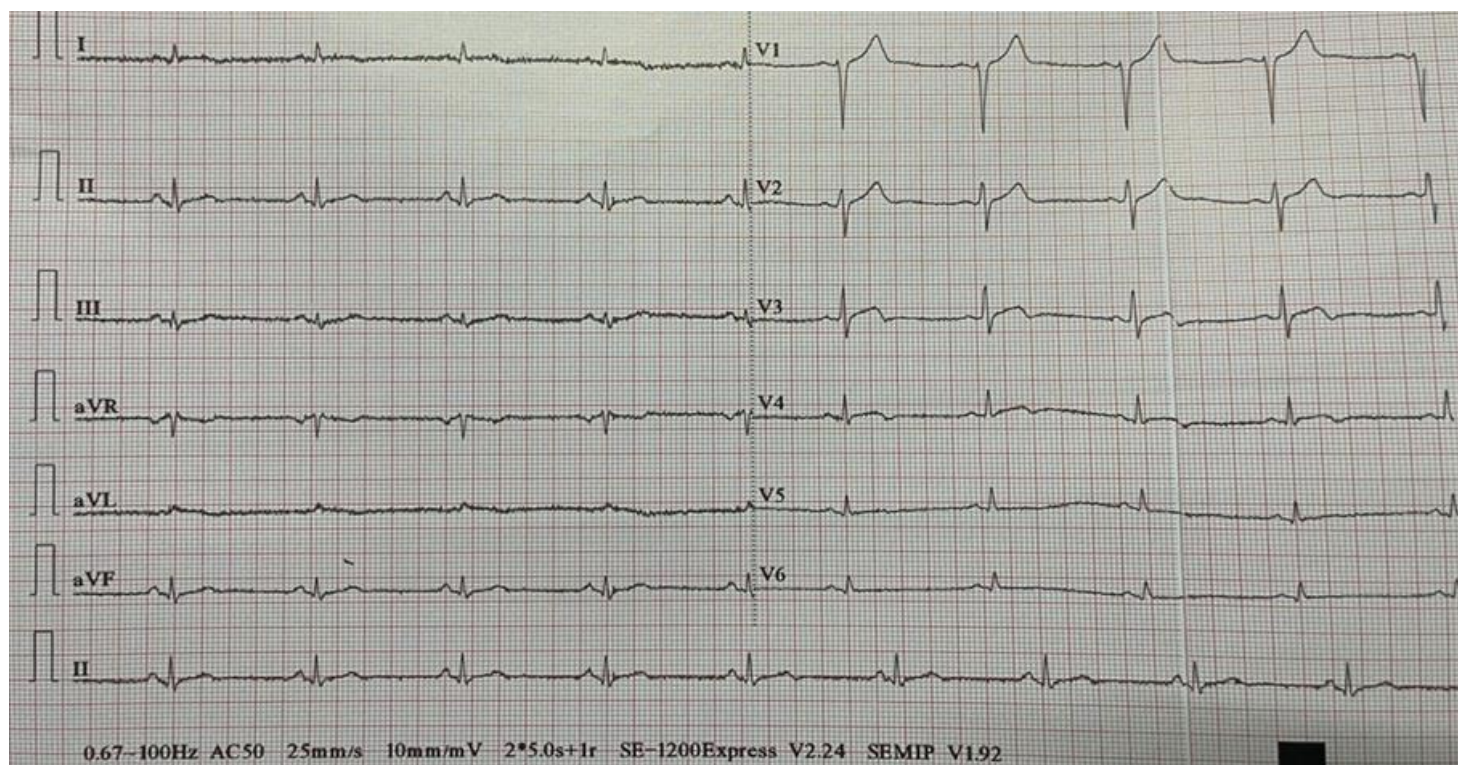


Figure 1B: ECG showing unremarkable limb leads

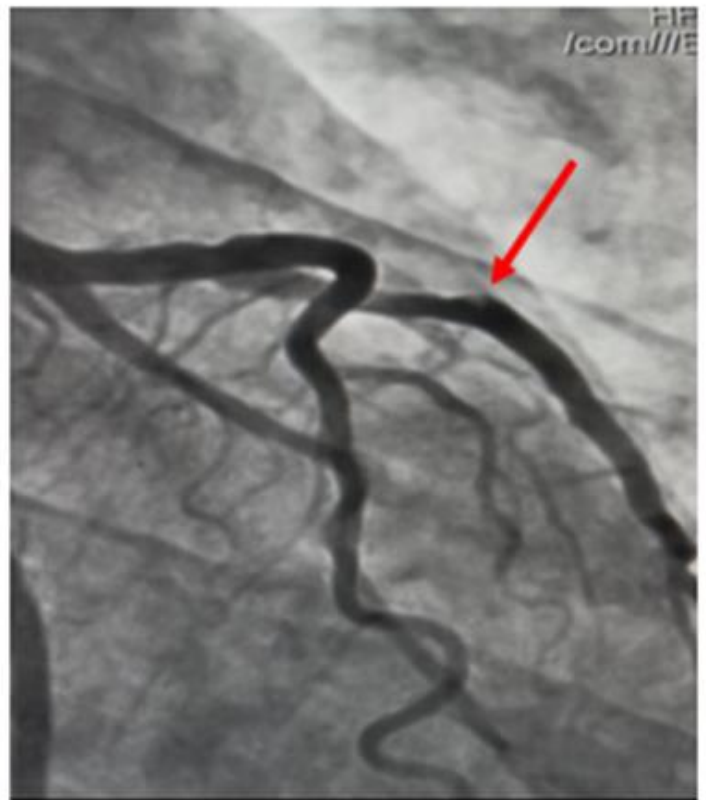
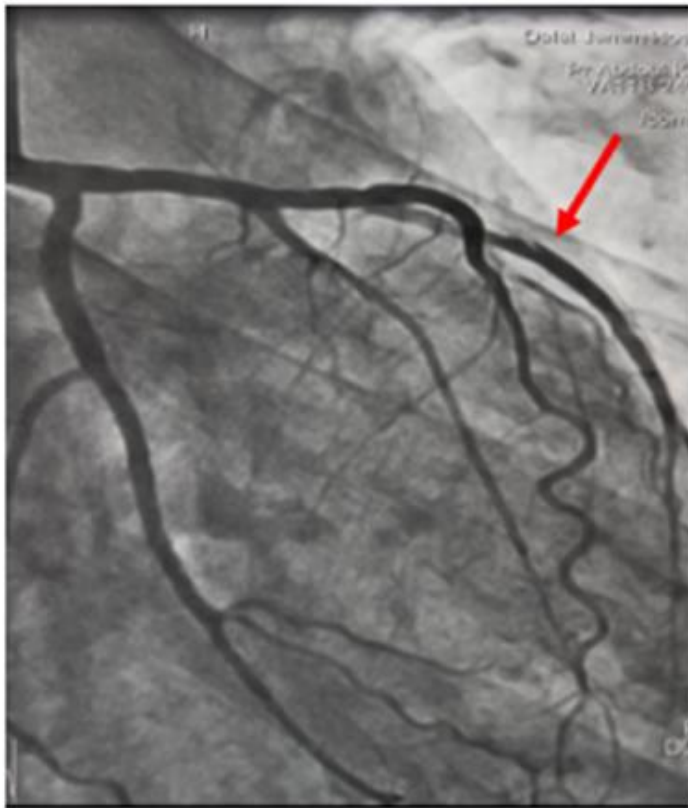


Figure 2A: Coronary angiography image in right anterior oblique caudal view showing a type 1 coronary dissection at the mid-segment of the first diagonal branch (red arrow)

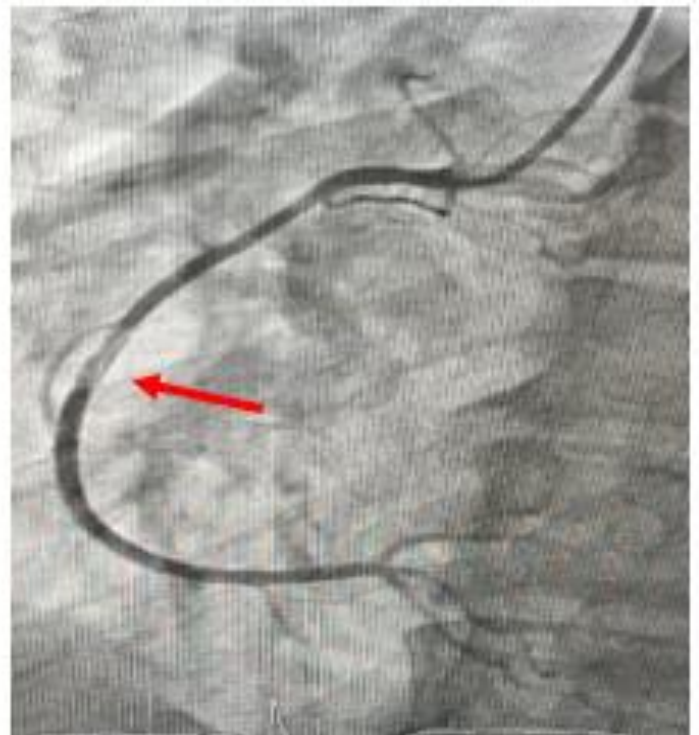


Figure 2B: Coronary angiography image in left anterior oblique view showing a spontaneous coronary artery dissection of the mid right coronary artery with an intimal flap (red arrow)



Figure 3: CT scan image showing in sagittal section A, coronal section (B), and axial section (C) an intimal flap located at the level of the ascending thoracic aorta (white arrow).

3-Discussion

Spontaneous coronary artery dissection (SCAD) (DSAC) is defined as a dissection of the epicardial coronary arteries that is non-traumatic, non-iatrogenic, and not caused by atherosclerotic plaque rupture [1,6]. DSCAD causes an acute coronary syndrome due to the sudden formation of an intramural hematoma (IMH) within one of the layers of the coronary artery wall (intima, media, or adventitia), leading to compression of the true lumen and vessel occlusion. Despite Pretty's original description in 1931, the triggering event remains poorly understood [7,8].

It is well established that DSCAD occurs disproportionately in women ≤ 50 years of age without traditional atherosclerotic risk factors [8-9]. The male sex is rarely affected. Given the unique profile of DSCAD and the low prevalence of traditional risk factors, DSCAD has been reported in association with arteriopathies such as fibromuscular dysplasia [10-11], inflammatory/immunological diseases, the peripartum period, hormonal influences [12-13], and, more recently, cannabis exposure [14-15]. Cannabis is derived from the plant *Cannabis sativa*. Several preparations derived from this plant are widely used for their euphoric and psychoactive effects (16): marijuana, hashish, charas, ganja, and others. Our patient consumed hashish. The rise in blood pressure associated with coronary vasospasm during cannabis use can generate sudden increases in shear stress on the arterial wall, leading to an increased risk of dissection in individuals with normal coronary arteries, as in our patient, and atherosclerotic plaque rupture in those with coronary artery disease [16].

Regarding treatment, current guidelines favor a conservative approach for stable spontaneous coronary artery dissections, as many dissections heal spontaneously, while percutaneous coronary intervention may be technically challenging and carries higher risks of iatrogenic extension, stent malposition, or failure to seal an intramural hematoma. In observational cohorts [17,18], approximately 83 to 86% of patients initially received conservative treatment, and only 2 to 3% required subsequent revascularization due to extension or recurrence of ischemia. Both studies support an invasive approach primarily in cases of hemodynamic instability, persistent ischemia, or high-risk anatomy (e.g., left main or multivessel proximal involvement). For our patient, we opted for medical management.

Currently, numerous studies have concluded that an antiplatelet agent (clopidogrel or aspirin) should be used in combination with beta-blockers and angiotensin-converting enzyme inhibitors, as in our case. Antiplatelet therapy with acetylsalicylic acid is often adopted in most cases, particularly since thrombus formation at the dissection site is not

uncommon. Anticoagulation, thrombolysis, and glycoprotein IIb/IIIa inhibitor administration should be avoided, as there is a risk of hemorrhage into the intramural he-tramural hematoma and consequent propagation of the dissection. In our case, the patient was initiated on dual antiplatelet therapy as a loading dose and then thrombolyzed given the ST-elevation ACS in the context of inability to perform primary angioplasty within two hours.

4-Conclusion

Spontaneous coronary artery dissection (DSAC) is a rare cause of myocardial infarction, often affecting young patients without typical cardiovascular risk factors. Cannabis use is one of its causes. Cannabis has significant cardiovascular effects that may pose a risk to patients. Conservative management is often indicated. We therefore believe it is essential to raise greater awareness of the adverse cardiovascular effects of this illicit drug.

Conflict of Interest Statement

The authors declare no conflicts of interest

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