

## Cannabis Related Coronary Thrombosis Confirmed by Optical Coherence Tomography

Righab Hamdan\*

Department of Cardiology, Beirut Cardiac Institute, Lebanon

### Abstract

We report the case of Left Ascending artery thrombosis after cannabis abuse confirmed by optical coherence tomography, treated successfully by thromboaspiration without stent implantation.

**Keywords:** Cannabis; Coronary thrombosis; Optical coherence tomography

### Introduction

Cannabis abuse is the most popular drug addiction worldwide [1,2]. Cardiovascular toxicity of cannabis varies from simple hypotension to fatal myocardial infarction. Many hypothesis have been evoked explaining the underlying mechanism of myocardial infarction after cannabis consumption. We report a case of myocardial infarction post cannabis due to LAD thrombosis, confirmed by optical coherence tomography (OCT).

### Case Report

A 29 years old healthy man was addressed to our center for circumferential STEMI. The patient has smoked cigarettes and cannabis 2 hours prior to the myocardial infarct. He has been smoking cannabis and cigarettes for seven years, prior to the incident. He has no chronic medication, especially no NSAIDs intake. On admission the patient was hemodynamically stable, with sinus tachycardia, (Blood Pressure: 120/70 mmHg, Heart Rate: 100/min, Temperature: 37°C) with ST elevation in V1 to V6 precordial leads on electrocardiogram. We also note euphoria and sudation. Blood test was unremarkable except for slightly positive Troponin I (0.3 µg/l). The urinary detection of toxics was not performed. Angiogram showed sub-occluded proximal LAD (Panel A, white arrow) and first diagonal branch (Panel A, black arrow) with TIMI 2 flow and visible intra luminal thrombus. TIMI 3 flow was established after thrombo-aspiration with no residual stenosis (Panel B). Optical coherence tomography (OCT) showed a normal LAD, with 3 layers pattern, minimal residual thrombus, and no identified ruptured plaque (Panel C, arrow). No primary stenting was performed. The aspirated material was consistent with white thrombus. The patient had good outcome at 6 months last follow up.

### Discussion

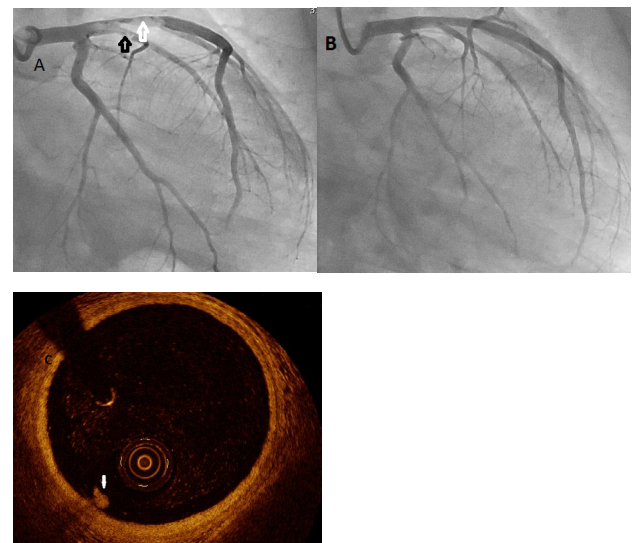
The toxic cardiovascular effect of cannabis is not fully understood. Incidence of cardiovascular disorders has been reported to be 1.5 per 1000 among recent cannabis users and 2.6 per 1000 among regular users. Cardiac and extra cardiac vascular disorders have been described previously, including myocardial infarction, cerebrovascular accidents and lower limbs arteriopathy [3,4].

Relation between Cannabis consumption and Acute Coronary Syndrome (ACS) pathogenesis remains unclear. There is emerging data on multiple pathways linking cannabinoids to atherosclerosis, nevertheless ACS after Cannabis consumption usually occurs on normal coronaries, and however no report has ever documented the normal underlying coronary anatomy in this setting. In our case, OCT was feasible in acute STEMI and helped establishing the correct underlying mechanism, which in many cases could be of great therapeutical implication, avoiding unnecessary stenting.

Cardiovascular effect of Cannabis is mainly mediated by CB1 receptors [5]. There is many possible mechanisms for cannabis related myocardial infarction, starting from imbalance between myocardial oxygen demand and supply, to coronary prolonged vasospasm and consequent endothelial damage, slow coronary flow via a sympathetic effect, especially in patients with atherosclerotic lesions present [5-7].

A possible direct effect of cannabis on platelets has also been reported [5], with a slight increase in factor VII activity, despite no clinically important changes in the coagulation system [8]. There is limited data, as to whether cannabis alone induces direct thrombosis formation.

On the other hand, few recent data show positive anti-inflammatory and antioxidant effects of cannabis, both in vitro and in



**Figure 1: A-C:** Positive anti-inflammatory and antioxidant effects of cannabis, both in vitro and in various preclinical models

\*Corresponding author: Righab Hamdan, Cardiologist, Department of Cardiology, Beirut Cardiac Institute, Marie Lannelongue Hospital, Lebanon, Tel : 009613257318; E-mail: [mdrighabh@hotmail.com](mailto:mdrighabh@hotmail.com)

Received February 12, 2014; Accepted June 28, 2014; Published June 30, 2014

**Citation:** Hamdan R (2014) Cannabis Related Coronary Thrombosis Confirmed by Optical Coherence Tomography. J Clin Case Rep 4: 382. doi:10.4172/2165-7920.1000382

**Copyright:** © 2014 Hamdan R. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

various preclinical models (Figure 1A-1C) [9]. Furthermore, cannabis has recently been reported to lower the incidence of diabetes in non-obese diabetic mice [10].

In conclusion, this brief report illustrates to the best of our knowledge for the first time, direct correlation between cannabis and intra coronary thrombus formation leading to myocardial infarction, demonstrated by OCT.

## References

1. United Nations Office of Drugs and Crime (UNODC) (2009) World drug report 2009. United Nations publications 314.
2. Beck F, Legleye S, Spilka S (2007) Niveaux d'usage et profils des usagers en France en 2005. In: Costes JM, Cannabis, Données Essentielles, eds. Martineau H, Ades JE. Saint-Denis: Observatoire français des drogues et toxicomanies (OFDT) 20-29.
3. Jouanjus E, Leymarie F, Tubery M, Lapeyre-Mestre M (2011) Cannabis-related hospitalizations: unexpected serious events identified through hospital databases. *Br J Clin Pharmacol* 71: 758-765.
4. Wolff V, Lauer V, Rouyer O, Sellal F, Meyer N, et al. (2011) Cannabis use, ischemic stroke, and multifocal intracranial vasoconstriction: a prospective study in 48 consecutive young patients. *Stroke* 42:1778-1780.
5. Yurtdas M, Aydin MK (2012) Acute myocardial infarction in a young man; fatal blow of the marijuana: a case report. *Korean Circ J* 42: 641-645.
6. Karabulut A, Cakmak M (2010) ST segment elevation myocardial infarction due to slow coronary flow occurring after cannabis consumption. *Kardiol Pol* 68: 1266-1268.
7. Mukamal KJ, Maclure M, Muller JE, Mittleman MA (2008) An exploratory prospective study of marijuana use and mortality following acute myocardial infarction. *Am Heart J* 155: 465-470.
8. Mach F, Montecucco F, Steffens S (2008) Cannabinoid receptors in acute and chronic complications of atherosclerosis. *Br J Pharmacol* 153: 290-298.
9. Rajesh M, Mukhopadhyay P, Batakai S, Patel V, Saito K, et al. (2010) Cannabidiol attenuates cardiac dysfunction, oxidative stress, fibrosis, and inflammatory and cell death signaling pathways in diabetic cardiomyopathy. *J Am Coll Cardiol* 56:2115-2125.
10. Weiss L, Zeira M, Reich S, Slavin S, Raz I, et al. (2008) Cannabidiol arrests onset of autoimmune diabetes in NOD mice. *Neuropharmacology* 54: 244-249.