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Recurrent myopericarditis as a complication of Marijuana use

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Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Patient: Male, 29
Final Diagnosis: Myopericarditis
Symptoms: Chest pain
Medication: Ibuprofen
Clinical Procedure: —
Specialty: Cardiology

Objective: Unusual clinical course




Background: Cannabis is the most commonly used illegal substance worldwide and its consumption portends significant side effects. Nowadays, in order to increase its psychotropic effect, various substances are being added constantly to it to promote its potency that might hold toxic effects to different organs including the heart and might lead to other unreported complications such as myopericarditis. Herein, we are presenting a unique case of recurrent myopericarditis after the consumption of contaminated marijuana, an association that has not been reported in literature before.

Case Report: A 29-year-old man presented to our institution with pressure-like left-sided chest pain that is aggravated by cough and deep inspiration and relieved by sitting and leaning forward. Examination revealed pericardial rub and workup showed elevated white blood cell count, C-reactive protein and troponin I level of 2.99 ng/ml. ECG upon admission showed ST-segment elevation in the inferior leads with PR-segment depression. Echocardiogram revealed only concentric hypertrophy. Patient was admitted to another institution with similar symptoms 2 months earlier. Patient admitted to using adulterated Marijuana on both occasions prior to hospitalization. Review of medical records from the outside hospital revealed similar ECG and laboratory findings. Treatment with Ibuprofen resulted in resolution of patient's symptoms and ECG abnormalities.

Conclusions: Recurrent myopericarditis in our patient is likely the result of consumption of contaminated Marijuana. Careful history taking in patients presenting with myopericarditis is crucial as it might be the causal link.

MeSH Keywords: Chest Pain • Pericarditis • Marijuana Abuse – complications • Myocarditis

Full-text PDF: <http://www.amjcaserep.com/download/index/idArt/889808>

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Background

The consumption of recreational drugs has reached epidemic proportions. Cannabis is the most commonly used illegal substance worldwide. Roughly 160 million people between the ages of 15 and 64 years used cannabis at least once in 2004, representing 4 percent of the world's population. Approximately, 45 million European Union citizens have used cannabis at some time, with proportionately higher use among younger people [1,2]. Unfortunately, for marketing purposes there has been an increase consumption of the so called "grit weed" which harbors a wide variety of substances that promotes and enhances its psychotropic effects and potency. For instance, there have been reports of tiny glass beads added to marijuana in order to add bulk and to mimic the crystalline appearance of the resin glands, which contain large amounts of delta-9-tetrahydrocannabinol (THC). Other substances found, have been sand, sugar, micro contaminants, industrial etchant solutions, phencyclidine and tobacco [3,4]. Currently, it is well established that the use of marijuana causes tachycardia, increase in the blood pressure and in rare situations the precipitation of an acute myocardial infarction [5]; however there has not been any report to date of any case of myocarditis related to the use of marijuana.

Here we present an interesting and first ever reported case of a 29-year-old man who presented with chest pain on two different occasions in different hospitals after the consumption of contaminated marijuana.

Case Report

A 29-year-old healthy Hispanic man presented to our emergency department complaining of pressure-like non-radiating chest pain, localized to the left anterior chest wall after being smoking cannabis for the last 3 days. The pain was aggravated by cough, deep inspiration and lying flat and relieved while sitting and leaning forward. He denied, fever, chills, any recent flu like symptoms, diarrhea or being close to sick contacts. He gave a history of a recent admission about 2 months ago prior to this hospitalization at another facility with similar symptoms that started subsequently after using cannabis for 2 days. He was an active runner and his family history was negative for premature coronary artery disease or any other type of heart disease. His social history was remarkable only for consumption of cannabis prior to these 2 admissions and he was not taking any medications at home. Furthermore, he denied any past or recent travel outside El Paso, Texas.

In our hospital his vital signs were as follows: blood pressure (115/65 mmHg), heart rate (69 beat per minute), Temperature (36.9 degrees Celsius), respiratory rate (17 per minute) and

Oxygen saturation at room air (98%). Physical exam revealed pericardial rub, more prominent while lying in left lateral decubitus position. The rest of cardiovascular examination, chest X-ray and CT angiography were unremarkable. His laboratory findings showed elevated white blood cell count of ($17.64 \times 10^3/\mu\text{L}$), C-reactive protein (6.0 mg/L) and troponin I levels (2.99 ng/ml and 6 hours later peaked to 3.49 ng/ml) with unremarkable lipid profile. Twelve-lead ECG on admission was remarkable for upwardly concave ST-segment elevation in the inferior leads and PR-segment depression (Figure 1). Echocardiogram showed an ejection fraction of 70% with moderate concentric hypertrophy consistent with athlete's heart. No wall motion abnormalities were seen, in conclusion normal echocardiogram.

Upon further questioning, it was determined that the patient had bought and used adulterated Marijuana from Mexico (Ciudad Juarez) on both occasions requiring hospitalization with similar presentations and the patient denied using this kind of marijuana other than those 2 times. The first event started after 48 hours of consuming cannabis and the second time was after 72 hours of consumption of cannabis. In between both hospitalizations the patient denied using cannabis. Review of his medical records from outside facility described similar ECG findings (no pictures available) with elevated troponins and elevated inflammatory biomarkers (erythrocyte sedimentation rate of 85 mm/hour) and the patient's symptoms at that time resolved gradually after he was treated with Indomethacin. No viral serological studies were performed in both admissions. During the course of this hospitalization the patient remained stable, his symptoms and ECG findings (Figure 2) resolved after being treated with ibuprofen therapy. Finally, given the prompt resolution of symptoms and lack of past family history and risk factors for coronary artery disease it was decided not to pursue coronary angiography. The patient was discharged home but he lost follow up in our cardiology clinic afterwards.

Discussion

The use of cannabis is well known to cause cardiovascular effects such as tachycardia, increase blood pressure and with higher doses, hypotension, bradycardia and vasodilation of the coronary artery bed [5]. Nonetheless, to our knowledge there is no published literature that mentions the use of cannabis as a cause of myocarditis. Interestingly, in January 2007, the United Kingdom Health Department issued a public health alert of potential harms associated with smoking contaminated cannabis including sore throat, mouth ulcers, persistent coughs, and tightness in the chest [3]. As previously reviewed by McLaren et al., currently there has been a wide spread of manufactured modified cannabis with the use of pesticides,

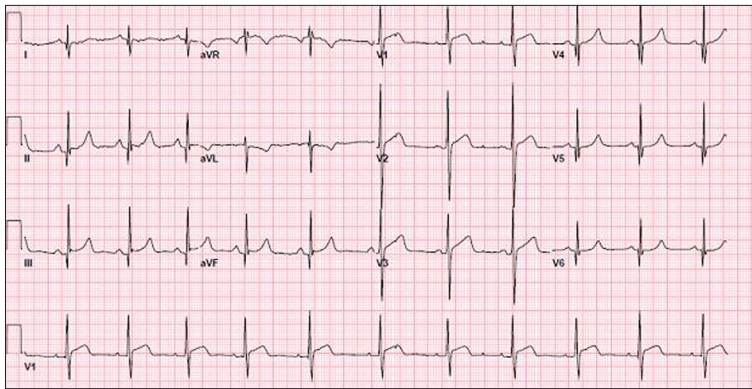


Figure 1. Electrocardiogram upon admission showing normal sinus rhythm, heart rate 67 beat/min, sinus arrhythmia, diffuse ST-segment elevation in inferior and Antero-lateral precordial leads and short PR-interval with PR-segment depression.

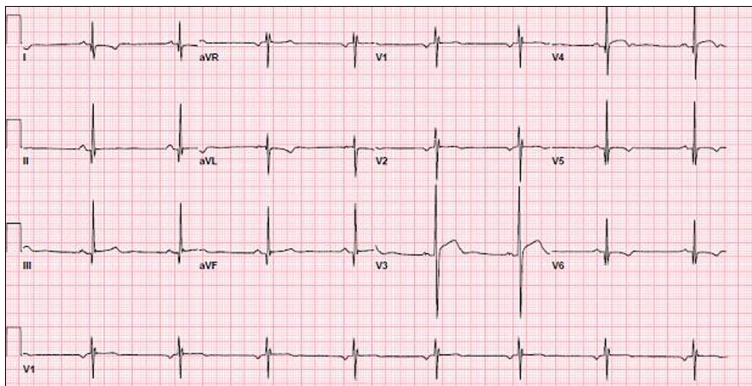


Figure 2. Electrocardiogram after Ibuprofen treatment showing sinus bradycardia with resolution of the diffuse ST-segment elevation.

solvents, micro glass beads in order to add potency and long psychotropic effect. However, these methods of enhanced cannabis may entail harmful consequences to user's health [4]. Finally, in several blogs in the internet, there have been some complaints from marijuana users about the presence of chest tightness or chest pain after the usage of contaminated marijuana or "grit weed", this may represent isolated, non-reported cases of pericarditis/myopericarditis in the community [6].

Conclusions

In this particular case, we believe that the cause of myopericarditis may be likely related to the consumption of contaminated or adulterated Cannabis, given the clinical history of using Cannabis and subsequent hospitalization on two occasions

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with similar symptoms, similar laboratory findings and hospital course. Finally, we recommend obtaining history of Marijuana usage with every admission of patients presenting with symptoms of myopericarditis, as this might be a causal link. Cannabis *per se* may not be related to the cause of pericarditis but adulterated or contaminated Cannabis may play a role.

Limitations of the case report

To our knowledge, there has not been reports of myopericarditis related to Marijuana; and since most of the cases are presumed to be viral-related, extensive work up for this condition is usually not sought such as serum viral antibodies. Nonetheless, given the history of this patient in two separate occasions in relation with contaminated and adulterated Marijuana should raise suspicion for a causal association.