



Monitoring of Cannabis in Ischemic Cardiac Young Egyptian Males



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Introduction: Cannabis is one of the most widely cultivated, trafficked and abused illicit drug all over the world (UNODC, 2007, 2010; SAMHSA, 2011; UNODC, 2011; UNODC, 2012). Recent studies concluded that cannabis has the highest prevalence among drugs of abuse used in Egypt (Ohanem, 2008; Abbas, 2013; Hamdi, 2013; Amr, 2014; Lashin, 2011). There is controversy about cannabis related cardiovascular disease. Recently, a clinical review recommends management of cannabis related disorder without mentioning cardiovascular disorders (Winstock, 2010) whereas cannabis has been added to risk factors of cardiac disease in another study (Nawrozi, 2011). However, most of these studies depends on patients history of cannabis usage which may be false. Drugs and substance screening using a conventional toxicological laboratory method is crucial to relate the development of ischemic heart disease and exposure to cannabis. Cannabis exposure in relation to ischemic heart disease needs more studying and confirmation.

Aim of the work: to study the possible association of cannabis consumption and the development of the myocardial injury in low risk males and to compare the cardiac pathological changes developed in cannabis exposed, with non cannabis exposed ischemic patients

Materials & Methods: This is a cross sectional study that was carried on admitted patients with acute myocardial infarction to the cardiac care unit of Tanta University hospital during the period from August 2014 to January 2015. All male patients aged 40 years and less with acute myocardial infarction were included in the study. Males over 40 years, usage of drugs that could induce cardiovascular disease and or induce autonomic hyperactivity and previous history of cardiac disease were excluded from the study. History was taken. Urine, enzyme immunoassay, screening for drugs of abuse, ECG, Echocardiography, blood routine investigations and troponine I analysis were performed for all studied patients. Statistical analysis using SPSS program, version 20 was done. Pearson chi square was used to test for significant relationships between categorical variables.

Results & Discussion: One hundred thirty eight cardiac ischemic male patients were included in this study. According to toxicological urine analysis for drugs of abuse, 96 (69.6%) of patients were positive and 42 (30.4%) were negative. Table (1) shows types, frequencies and percentages of the substances induced disorders detected during the study period. After exclusion of positive patients for cocaine, tramadol and amphetamine due to their known effects on the cardiovascular system, patients were divided into 2 groups, group 1 (cannabis group) included patients who were positive for cannabis only and group 2 included patients who were negative for cannabis. This study demonstrated that cannabis patients who suffered from myocardial infarction had no risk factors regarding dyslipidemia, diabetes or hypertension, whereas, most of them were cigarette smokers (table 2). This indicating that cannabis could be a trigger for cardiac ischemia together with cigarette smoking. There was significant relation between cannabinoid levels in urine and ECG (STEMI& NSTEMI) (p =0.024), coronary angiography as regards normal, one, two or three vessel(s) affection (p=0.000) and Echo-cardiography as regards normal function, IHD with good function, IHD with fair function and diastolic dysfunction (p=0.000). Cannabis may produce myocardial ischemia through elevation of myocardial oxygen demand associated with fall in oxygen supply, which is due in part to an increase in carboxyhemoglobin (Arcnow, 1974) that lowers the arterial threshold in patients with chronic stable angina (Aronow, 1974, 1975). Mittleman et al., observed that smoking marijuana is a rare trigger zone of acute myocardial infarction (Mittleman, 2001), the study was based on questionnaire of the ischemic women. A recent study concluded that cannabis use is a risk factor of cardiovascular diseases (Jouanjous et al., 2014). However, toxicological analysis has not been performed in these studies. In the present study, a screening enzyme immunoassay urine analysis was performed for all patients and patients were divided according to cannabinoid levels in urine into less than and more than 100ng/ml to relate levels with cardiovascular investigations results which indicate significant relation. Further studies is recommended using confirmatory methods for toxicological analysis to relate cardiac pathological changes.

Conclusion: cannabis could be a potential trigger for ischemic heart disease with nicotine smoking. Cannabis level affects cardiac pathological changes.

Tables

Table (1): frequencies of drugs of abuse consumed by studied patients as detected by urine toxicological analysis.

| Drug | Freq. | % |
|----------------|-------|-------|
| Amphetamine | 9 | 6.5 |
| Benzodiazepine | 21 | 15.2 |
| Cannabis | 30 | 21.7 |
| Cocaine | 3 | 2.2 |
| Opiates | 9 | 6.5 |
| Tramadol | 24 | 17.4 |
| Total | 96 | 100.0 |

Table(2): Distribution of the studied patients according to risk factors of ischemic heart diseases.

| Risk factor | cannabis 27=26.47 | No drugs or Other drugs 75(73.5%) | Total 102 (100 %) | X ² or Fisher's Exact (P) |
|--------------|----------------------|---|----------------------------|--|
| Smoking | 24 (88.9%) | 57(76%) | 27(79.4%) | 0.672(0.386) |
| Dyslipidemia | 0 | 9(12%) | 3(8.8%) | 1.186(0.384) |
| Diabetes | 0 | 12(16%) | 4(11.8%) | 1.632(0.273) |
| Hypertension | 0 | 6(8%) | 2(5.9%) | 0.765(0.535) |