ISSN No:-2456-2165

Effect of Cannabis Smoke (Bango) on Complete Blood Cell Count among Sudanese Addicts

Salma H.M. Ali[1], Najla, K.H. Homri[2], Selma, E. Abdalla [3]and Omnia, M.M. Siddig[4]
[1]Department of Medical Laboratory Sciences, hematology and immune-hematology
[2]Department of Medical Laboratory Sciences, hematology and immune-hematology lecturer at Omdurman Islamic University.
[3]Department of Basic Biomedical Sciences, assistant professor at Sudan University of Science and Technology.
[4]Department of Medical Laboratory Sciences, hematology and immune-hematology

Abstract:- Cannabis is a tobacco-like greenish or brownish material consisting of the dried flowers, fruiting tops and leaves of the cannabis plant. The plant Cannabis sativa is the source of both marijuana and hashish. Both drugs are usually smoked. Their effects are similar: a state of relaxation, accelerated heart rate, perceived slowing of time, and a sense of heightened hearing, taste, touch, and smell. These effects can differ, however, depending on the amount of drug consumed and the circumstances under which it is taken. This is analytical a case control study, aimed to investigate the effects of cannabis addicted on blood cell count, of Sudanese addict. The study conducted in al-Hayat health care center, during the period from September to October, 2018. Forty cannabis abuser and twenty healthy volunteers, were enrolled in this study after a written consent had been obtained from them, the data were collected using a non-self-questionnaire and laboratory measurement. The distribution of cannabis abusers according to age (28±10). The secondary educational qualification recorded the highest frequency (26), and (3) for technical qualification. Duration of (3-5) years of cannabis addicts recorded the highest frequency (23), and (9-11) years recorded the lowest frequency (4). The distribution of other substances addicted with cannabis indicated that cigarette recorded the highest frequency (14), and tobacco recorded the lowest (1). The abuser jobs indicated that casual jobs recorded highest frequency (23), and permanent job. Hemoglobin concentration was significantly higher in cannabis abuser compared with control group (14.0±2.8 vs 12.6±2.6), (P value <0.04). Platelet count was significantly lower in cannabis abuser compared with control (260.0±69.29 vs 327.9±70.14), (P value =0.01). Neutrophils count was significantly lower in Cannabis abuser group compared to the control group (35.09±9.3 vs 40.3±12.6),(P value = 0.02) WBCs, RBCs, HCT, and RDW-SD values were not influenced significantly by cannabis addiction. Cannabis causes an increase in carboxy hemoglobin, a resultant increase in myocardial oxygen demand, decrease in oxygen supply as well as an induction of platelet.

I. INTRODUCTION

Cannabis sativa has been very popular all over the world; it is used for diverse purposes which range from medicinal use and recreation. [1] Addiction is a primary, chronic disease involving brain reward, motivation, memory and related circuitry; it can lead to relapse, progressive development, and the potential for fatality if not treated. [2] Plant derived cannabinoids; include delta-9-tetrahydrocannabinol (THC), the primary psychoactive component of cannabis.[3] Cannabinoids mediate their effects through binding specific receptors which are members of the G protein coupled receptor superfamily. Cannabis is usually smoked as cigarette [3] .Two cannabinoid receptors have been identified: Cannabinoid-1 receptor (CB1) and cannabinoid-2 receptor (CB2). CB1 are expressed primarily in the central nervous system (CNS), and are responsible for the psychoactive effects of cannabinoids by modulating neurotransmitter release[4] also CB receptors regulate progression of experimental liver fibrosis[5]. In contrast, CB2 are localized primarily in immune cells such as lymphocytes, macrophages, and neutrophils and are responsible for immunedulatory effects of cannabinoids[6]. hepatic CB1 receptors enhance liver steatogenesis in a mouse model of high fat-induced obesity, and contribute to peripheral arterial vasodilatation in cirrhosis, thereby promoting portal hypertension. In addition, CB1 and CB2 receptors elicit dual opposite effects on fibrogenesis associated to chronic liver injury, by promoting pro- and antifibrogenic effects, respectively [7]. Marijuana and hashish do not produce psychological dependence except when taken in large daily doses. The drugs can be dangerous, however, especially when smoked before driving. The physical harm caused by cannabis is less well-known. In adults, chronic bronchitis, lung cancer, myocardial infarction, hepatotoxicity, decreased sperm count and motility, gynaecomastia in males, suppression of ovulation among females, low birth weight and delayed visual system development among the newborns of cannabis using females [8]

ISSN No:-2456-2165

II. MATERIALS AND METHODOLOGY

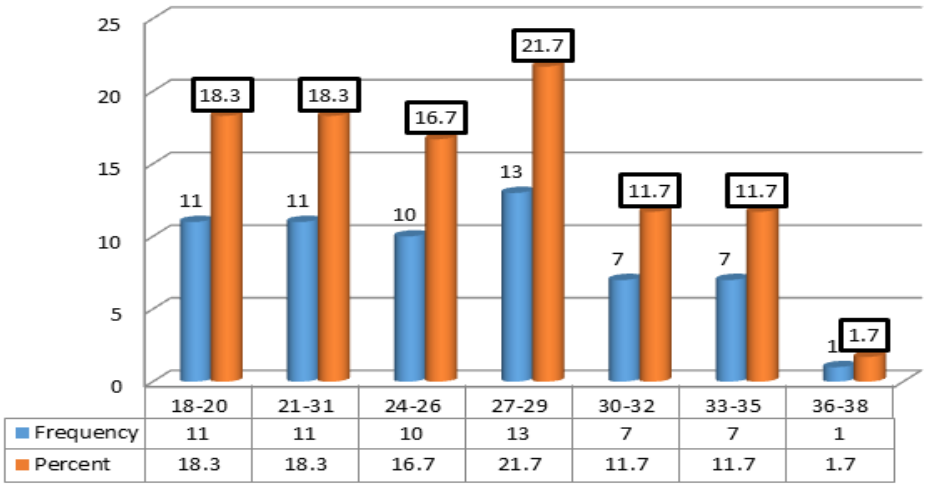
The study was carried out at Al-Hayat Health Care Center, Khartoum through the period (September to October, 2018). The study population was two groups: Sudanese addicted cannabis (excluded addicts with history of anemia, thrombocytopenia and infections and addicts not use cannabis) were considered as case group (N =40). Healthy Sudanese individuals consider as control group (N =20).

Data were collected using a questionnaire, which was designed to collect and maintain all valuable information concerning each case examined.

Two and half venous blood collected from each participant in the study. The sample collected under aseptic conditions and drawn into K3EDTA containers, and then samples were kept until the time of analysis. A complete blood count (CBC) and differential count was performed on the blood sample using Sysmex KX-21N, an automated 3-part differential hematology analyzer (Sysmex Corporation Kobe, Japan) at the laboratory of Al-Hayat Health Care Center.

III. RESULT

Data was analyzed by using SPSS (version 19).Qualitative data was represented as frequency and percentage. Quantitative data was presented as mean ± SD. Correlation between variables was tested using Pearson's Chi square. The distribution of cannabis abusers according to age (28±10). The secondary educational qualification recorded the highest frequency (26), and (3) for technical qualification. Duration of (3-5) years of cannabis addicts recorded the highest frequency (23), and (9-11) years recorded the lowest frequency (4). The distribution of other substances addicted with cannabis indicated that cigarette recorded the highest frequency (14), and tobacco recorded the lowest (1). The abuser jobs indicated that casual jobs recorded highest frequency (23), and permanent job. Hemoglobin concentration was significantly higher in cannabis abuser compared with control group (14.0±2.8 vs 12.6±2.6), (P value <0.04). Platelet count was significantly lower in cannabis abuser compared with control (260.0±69.29 vs 327.9±70.14), (P value =0.01). Neutrophils count was significantly lower in Cannabis abuser group compared to the control group (35.09±9.3 vs 40.3±12.6),(P value = 0.02) .WBCs, RBCs, HCT, and RDW-SD values were not influenced significantly by cannabis addiction



	18-20	21-31	24-26	27-29	30-32	33-35	36-38
Frequency	11	11	10	13	7	7	1
Percent	18.3	18.3	16.7	21.7	11.7	11.7	1.7

Fig 1:- The Distribution of Subject According to their Age

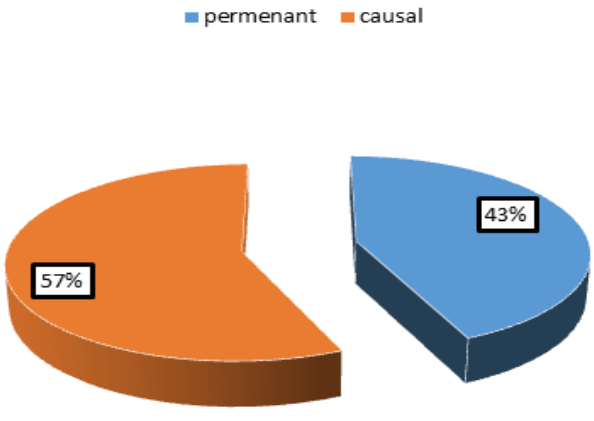


Fig 2:- The distribution of subject according to their nature of job

ISSN No:-2456-2165

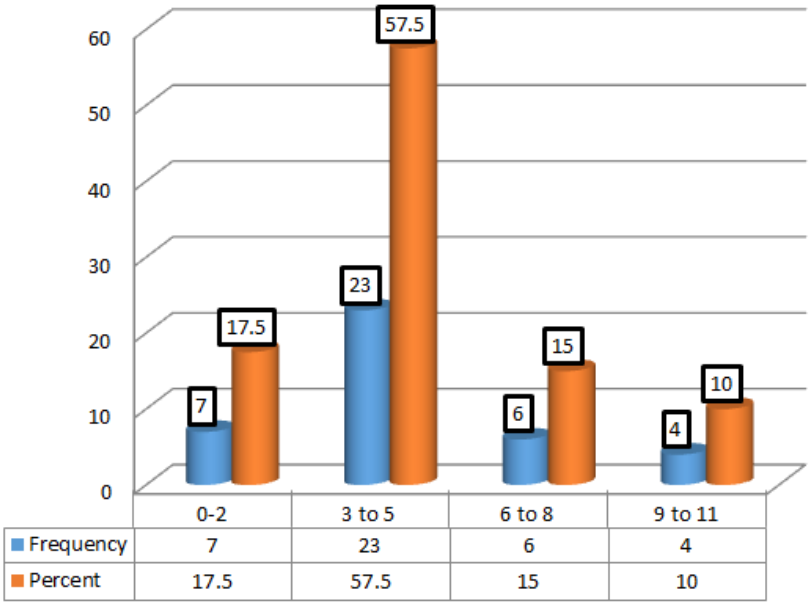


Fig 3:- Distribution of cannabis addict according to duration

Variables	Case (40) Mean ± SD	Control (20) Mean ± SD	P.Value
Hemoglobin	14.0 ± 2.8	12.6 ±2.9	0.04
Platelets	260± 69.29	327.9 ±70.14	0.01
Lymphocytes	49.30±8.00	35.4 ±7.34	0.01
Neutrophils	35.09 ±9.339	40.3 ±12.62	0.02
RBCs	4.5±1.5	4.5±1.9	0.93
WBCs	7.5±4.8	7.4±2.3	0.07
Hematocrit	38.9±9.2	37.5±8	0.17
RDW-SD	43.6±6.3	42.6±6.3	0.06

Table 1:- Comparison between Means of hemoglobin, platelets, neutrophils, lymphocytes counts in case and control group

Education	Frequency	Percent
Basic	7	17.5
Secondary	26	65
Graduate	4	10
Technical	3	7.5
Total	40	100

Table 2:- The distribution of subject according to their educational qualification

With other substance	Frequency	Percent
Tobacco	1	2.5
Cigarette	14	35
Hookah -Tobacco	2	5
Tobacco -Alcohol-Cigarette	3	7.5
Tobacco-Cigarette	7	10
Tobacco-Cigarette-Hookah-Alcohol	6	15
Cigarette-Alcohol	3	25
Cigarette- Hookah	4	10
Total	40	100

Table 3:- Distribution of cannabis addict with other substance

IV. CONCLUSION

Prolonged use also associated with poor educational attainment and high rates of unemployment. Some haematological characteristics of cannabis addict differ significantly from non-addict. The result of this study reported lower platelets and neutrophils count in addicted cannabis people compared with healthy people, neutropenia makes an individual highly susceptible to infections.

Hemoglobin concentration significantly increases; there were statistically significant association of duration and hemoglobin concentration, platelets, neutrophils counts, there were no interaction observed between addict with other substances and Hb, platelet, neutrophils counts.

REFERENCES

[1]. Spaderna ,M., Addy, P.H and Dsouza, D.C. (2013). Synthetic cannabinoids .Psychopharmacology; 288:225-4.
[2]. Smith, D.E. (2012). The process addictions and the new ASAM definition of addiction. Psychoactive drugs [Taylor and Francis online]; 44(1):1- 4.
[3]. Brady, J., Curtis, R. and Nothstein ,J. (2009). Medical Attributes of *Cannabis sativa*-Marijuana. Wilkes University. Wilkes-Barre, PA.
[4]. Sardinha, J., Lehmann, C, and Kelly, M. (2013). Targeting the endocannabinol system to treat Sepsis; 8:9-14
[5]. Hézode C, Roudot -Thoraval F, Nguyen S, Grenard P, Julien B, Zafrani ES, Pawlotsky JM, Dhumeaux D, Lotersztajn S and Mallat A (2005): Daily cannabis smoking as a risk factor for progression of fibrosis in chronic hepatitis C. Hepatology, 42(1):63-71.
[6]. Lehmann, C., Kianian ,M., Zhou, J., Cerny, V, and Kelly, M. (2011).
The impact of changes in UK classification of the synthetic cannabinoid receptor agonists in (Spico). Int.J.Drug Policy, 22:274-
[7]. Mallat A, Teixeira-Clerc F, Deveaux V and Lotersztajn S (2007): Cannabinoid receptors as new targets of antifibrosing strategies during chronic liver diseases. Exp Opin Ther Targets, 11:403- 409.
[8]. Rizwana, Q., Raka, J., Biswadip, C, and Arpita, V. (2015). High risk behav addict laboratory Profiles of treatment-seeking subjects with concurrent dependence on Cannabis and other substances:A Comparative Study. Int. J., 2(3):107-11.