

Characteristics of Patients Admitted to the Medical Ward with a Positive Urine Test for Cannabis: A Medical Center Experience

George Habib^{1,2*}, Uriel Levinger¹, Mohammad Haydar¹, Fahed Sakas³, Mohammad Yassin¹

¹Medicine C, Laniado Hospital, Netanya, Israel

²Rheumatology Clinic, Nazareth Hospital, Nazareth, Israel

³Clalit Health Services, Kfar Yaseef, Israel

Email: *Gshabib@gmail.com

How to cite this paper: Habib, G., Levinger, U., Haydar, M., Sakas, F. and Yassin, M. (2025) Characteristics of Patients Admitted to the Medical Ward with a Positive Urine Test for Cannabis: A Medical Center Experience. *Open Journal of Internal Medicine*, 15, 1-7.

<https://doi.org/10.4236/ojim.2025.151001>

Received: October 5, 2024

Accepted: January 23, 2025

Published: January 26, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Introduction: Cannabis (marijuana) use (medical) and abuse is becoming more and more common practice among different age groups in Israel. There is nearly no data regarding patients admitted to the medical ward with a positive urine test for marijuana. **Research Methods:** All the patients admitted to the medical ward at Laniado Hospital during the previous 3 years with positive urine test for marijuana were identified. Demographic, clinical and Lab parameters were documented. Patients were divided into 2 groups: Group 1 that had positive test for marijuana only and Group 2 that was positive also to other substance/s besides cannabis. A third group (Group 3), with a positive urine test for toxicology substance/s but negative for marijuana, was used as a control group. **Research Results:** Forty-nine patients in either Group 1 or Group 2 and 36 patients in Group 3 were documented. Patients from Groups 1 and 2 were significantly younger than those from Group 3. The most common cause of admission among these two groups was convulsions, while in Group 3, it was suicidal attempt. Group 2 patients, as opposed to Group 3 patients, included more patients with positive urine test for hard substances such as cocaine, amphetamines and ecstasy. More patients in Group 3 needed intubation with longer duration of hospital stay and one fatality. **Conclusions:** Positive tests for marijuana are not a rare phenomenon in our admitted patients. Most of the patients are young and admitted mainly to convulsions. These patients also used significantly more other hard substances than patients with positive test for substances other than cannabis.

Keywords

Medical Ward, Cannabis, Urine Test, Marijuana, Toxicology

1. Introduction

Cannabis use (medical) and abuse is a common practice in Israel with increasing demand for its consumption [1]. Medical cannabis has been shown to have favorable effect on chronic pain syndromes regardless of cause, sleep and other resistant conditions, including neurological and gastro-intestinal problems [2]. Recreational cannabis is widely used for its “high” effect, induction of calmness, and sleep [3]. Nearly 25% of medical cannabis users report adverse effects, including nausea, vomiting, headache, palpitations, dry eyes and mouth, drowsiness sleepiness, cognitive and memory problems, hallucinations, anxiety and others [4].

Toxicological studies are performed in our hospital, Laniado Medical Center, mainly in the emergency room for different indications, such as behavioral disturbances, altered mental status, epilepsy and others. These tests were performed based on the clinical judgement of the medical team. Some of the results were positive for cannabis only and some were positive also for other drugs. A positive test for cannabis indicates its recent use or a chronic regular use of cannabis, even if it was stopped 3 weeks prior to the test [5].

There are no studies in the literature about patients admitted to the medical ward with a positive urine test for cannabis. In one study evaluating 88 patients with positive test for cannabis and cocaine, many of these patients were also positive for other substances, such as alcohol and benzodiazepines [6].

In this study, we retrospectively evaluated the demographic, clinical, and laboratory parameters and outcomes of patients admitted to the medical ward for any reason with a positive urine test for cannabis. The terms of marijuana and cannabis will be interchangeably used in this manuscript.

2. Materials and Methods

A retrospective study, that included all the patients that were admitted to the medical ward, at Laniado Hospital in Netanya, during the last 3 years with a positive urine test for marijuana. Demographic, clinical and Lab parameters of all the patients were documented, including reason for emergency room referral, admission diagnosis, reason for cannabis use (medical or non-medical), history for other substance use or abuse, meds, background medical problems, lab studies including, chemistry, complete blood count, positive toxicological test for other substances, duration of admission, outcome and discharge diagnosis.

The toxicological test evaluated the presence in urine of cocaine, morphine, benzodiazepines, marijuana, ecstasy, methadone, phencyclidine, amphetamine, tricyclic antidepressants, and barbiturates.

Patients were divided to 2 groups, Group 1, included patients that had positive urine test for cannabis only, Group 2 that had positive urine test for marijuana and other substance/s. A third group, Group 3, a control group, included all patients with positive toxicological test of the urine but negative for marijuana, during the same period.

Inclusion criteria included all patients with positive toxicology for marijuana, regardless of age and gender.

Exclusion criteria included patients that information regarding their medical history including meds could not be obtained or profoundly missing.

Statistical analysis included simple statistics of absolute numbers and ratios, and also Chi-square test.

This study was approved by the local ethic committee of Laniado Medical Center (LAN-22-2023).

3. Results

There were 49 patients in either Group 1 or Group 2 and 36 patients in Group 3. **Table 1** summarizes the demographics of the patients in all the groups. It can be seen that patients from Groups 1 and 2 were relatively young.

Table 1. Demographics of all the patients and type of cannabis.

Parameter	Group	Group 1 (49 patients)	Group 2 (49 patients)	Group 3 (36 patients)
		No. (%)	No. (%)	No. (%)
-Age 19 - 40		36 (73.4%)	30 (61.2%)	11 (30.5%)*°
-Age 41 - 100		13 (26.5%)	19 (38.8%)	25 (69.5%)*
-Male		36 (73.4%)	36 (73.4%)	18 (50%)
-Female		13 (26.5%)	13 (28.5%)	18 (50%)
-Social status				
-Single		29 (59)	26 (53)	12 (33)
-Married		9 (18)	10 (20)	9 (25)
-Divorced		8 (16%)	7 (14)	8 (22)
-Widow		0 (0)	3 (6)	3 (8)
-Other		3 (6)	3 (6)	4 (11)
-Licensed cannabis		5 (10.2%)	4 (8.1%)	Not applicable
-Unlicensed cannabis		44 (89.8%)	45 (91.9%)	Not applicable

*Significant comparing Group 1 to Group 3; °Significant comparing Group 2 to Group 1.

Table 2 summarizes the causes for medical ward admission. Convulsions were the most common cause of admission in Groups 1 and 2, while suicidal attempt was the most common cause in Group 3.

Table 3 summarizes the results of the toxicological tests of all the groups. The most common positive test in Group 2 (besides cannabis) was benzodiazepine, and also in Group 3. Cocaine was significantly more positive in Group 2 than in Group 3.

Group 2 patients had multiple positivity to different substances, with 12% of the patients were positive for 4 substances including cannabis.

Table 2. Causes of admission to the medical ward in the different groups.

Parameter \ Group	Group 1 No. (%)	Group 2 No (%)	Group 3 No. (%)
-Convulsions	10 (20.4%)	10 (20.4%)	4 (11.1%)
-Suicidal attempt	2 (4%)	5 (10.2%)	7 (19.4%)
-Fever	8 (16.3%)*	1 (2%)	3 (8.3%)
-Pneumonia	6 (12.2%)	3 (6.12%)	0 (0)
-Sinusitis	6 (12%)	1 (2%)	0 (0)
-Gastroenteritis	10 (20.4%)	7 (14.2%)	5 (13.8%)
-Weakness	0 (0)	5 (10.2%)	1 (2.7%)
-Dyspnea	2 (4%)	5 (10.2%)	6 (16.6%)
-Stroke	3 (6.1%)	2 (4%)	5 (13.8%)
-Chest pain	1 (2%)	3 (6.1%)	3 (8.3%)
-Syncope	1 (2%)	4 (8.1%)	2 (5.5%)
-Cellulitis	0 (0)	3 (6.12%)	0 (0)

*Significant between Group 1 and Group 2.

Table 3. Distribution of positivity of the urine to different substances (other than cannabis in Group 2) in patients of Groups 2 and 3.

Substance \ Group	Group 2 No. (%)	Group 3 No. (%)
-Benzodiazepines	31 (63.2%)	27 (75%)
-Cocaine	15 (30.6%)	2 (4%)*
-Morphine	12 (24.4%)	4 (11%)
-Amphetamine	4 (8.1%)	0 (0)
-Methadone	4 (8.1%)	4 (11%)
-Tricyclic antidepressants	2 (4%)	2 (5.5%)
-Ecstasy	5 (10%)	1 (2.7%)
-Phencyclidine	3 (6.1%)	0 (0)
-Barbiturates	0 (0)	0 (0)
-Positive for one substance only	28 (57.1) (other than cannabis)	31 (86)
-Positive for 2 substances	15 (30.6) (other than cannabis)	4 (11)
-Positive for 3 substances	6 (12.3) (other than cannabis)	1 (2.7)

*Significant between Group 2 and Group 3.

Table 4. Complications during hospital stay in the medical ward and outcome.

Parameter \ Group	Group 1 No. (%)	Group 2 No. (%)	Group 3 No. (%)
-Rhabdomyolysis	3 (6.1%)	1 (2%)	1 (2.1%)
-Mechanical ventilation	2 (4%)	3 (6.1%)	6 (16.6%)

Continued

-Acute renal failure	2 (4%)	3 (6.1)	4 (11.1%)
-Diabetic ketoacidosis	1 (2%)	0 (0)	0 (0)
-Atrial fibrillation	0 (0)	1 (2%)	0 (0)
-Stroke	4 (8.1%)	0 (0)	0 (0)
-Aspiration pneumonia.	1 (2%)	4 (8.1%)	1 (2.7%)
-Hospital stay form 0 - 4 days	43 (78.7%)	44 (89.7%)	26 (72.2%)
-Hospital stay from 5 - 8 days	6 (12.2%)	5 (10.25%)	9 (25%)
-Hospital stay for ≥9 days	0 (0)	0 (0)	3 (8.3%)
-Death	0 (0)	0 (0)	1 (2.7%)

Table 4 summarizes complication and outcome of the patients during admission. As expected, Group 3 patients (older patients) had more duration of stay, more intubations and death.

4. Discussion

There were some interesting findings in our study. All patients with positive toxicological test for marijuana (Groups 1 and 2) were young people and significantly younger than those with a negative test (Group 3), in line with studies reported by others [7].

It is interesting to note that only 10% of all the patients from Groups 1 and 2 were licensed for medical license and the overwhelming majority used cannabis without license for either medical or recreational reasons.

The use of forbidden substances was more common in Group 2 compared to Group 3, though the difference was significant only for cocaine. So, using cannabis (mainly not medical) was associated with the usage of other illicit drugs such as cocaine, morphine, amphetamines, ecstasy and phencyclidine. Usually, the usage of cannabis was added to already-used narcotics and cocaine [8] [9].

More patients in Group 2 than in Group 3 had positive test for more than one substance. Patients in Group 3 had positive test, usually for one substance only. In both groups, most of the patients used mainly benzodiazepines, which are usually widely used on an outpatient basis or at nursery homes [10].

The usage of non-narcotic medicines was quite similar between the 3 groups, and mainly anti-depression treatment, so it seems that patients from the 3 groups suffered equally from depression, though their percentage in each group was relatively low.

The main cause of admission of patients from Groups 1 and 2 was convulsions in the first place, with a quite similar percentage in both groups. In the second-place gastroenteritis, the main cause of admission in Group 3 was suicidal attempt.

Medical cannabis can be given for resistant cases of epilepsy [11], on the other hand, overuse of cannabis can cause or trigger epilepsy [12], mainly in Group 2 patients, where the co-usage of other illicit drugs, like amphetamines can trigger

epileptic seizures [13]. Unfortunately, currently there is no specific test that can allude to the possibility of cannabis overuse, except for patient history. Hopefully, such tests will be available in the future.

Cannabis can improve depression, and this probably explains the low percentage of number of patients in Groups 1 and 2 with suicidal attempt [14]. On the other hand, patients in Group 3 are of advanced age, a risk factor for suicidal attempt [15].

Regarding lab tests, there was no significant difference between the 3 groups, and leukocytosis and anemia were similar among the 3 groups.

Regarding outcome, duration of hospital stay as expected, was on average longer among Group 3 patients.

Only one patient from Group 3 died, 4 patients from Group 1 had stroke. Cannabis is known that could be associated with cardiovascular events, including stroke, mainly with overuse among the young [16]. More patients from Group 3, though not significantly different, needed intubation, due to different causes, mainly aspiration.

Our study has many drawbacks, including the small number of our patients, secondly, the composition of the population of our study, mainly of one area of the city of Netanya that definitely does not represent the whole population of Israel.

Third, the main cause of use of non-licensed cannabis among our patients (~90%) of the patients from Group 1 and Group 2 is not clear to the authors, and also the habits of its use by the patients. This information would be very important regarding the cause of admission and also the use of other meds or drugs.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Bar-Or, R.L., Kor, A., Jaljuli, I. and Lev-Ran, S. (2021) The Epidemiology of Substance Use Disorders among the Adult Jewish Population in Israel. *European Addiction Research*, **27**, 362-370. <https://doi.org/10.1159/000513776>
- [2] Naftali, T., Bar Lev, L., Yablekovitz, D., Half, E. and Konikoff, F.M. (2011) Treatment of Crohn's Disease with Cannabis: An Observational Study. *The Israel Medical Association Journal*, **13**, 455-458.
- [3] Habib, G., Khazin, F. and Artul, S. (2021) The Effect of Medical Cannabis on Pain Level and Quality of Sleep among Rheumatology Clinic Outpatients. *Pain Research and Management*, **2021**, 1-6. <https://doi.org/10.1155/2021/1756588>
- [4] Tuvel, A.L., Winiger, E.A. and Ross, J.M. (2023) A Review of the Effects of Adolescent Cannabis Use on Physical Health. *Psychiatric Clinics of North America*, **46**, 719-739. <https://doi.org/10.1016/j.psc.2023.03.005>
- [5] Sharma, P. and Bharath, M.M. (2010) Qualitative High Performance Thin Layer Chromatography (HPTLC) Analysis of Cannabinoids in Urine Samples of Cannabis Abusers. *Indian Journal of Medical Research*, **132**, 201-208.
- [6] Teherán, A.A., Pombo, L.M., Cadavid, V., Mejía, M.C., La Rota, J.F., Hernández, J.C., et al. (2019) Cocaine, Ethanol, Cannabis and Benzodiazepines Co-Consumption among

- Patients Assisted at the Emergency Room. *Open Access Emergency Medicine. OAEM*, **11**, 211-219. <https://doi.org/10.2147/OAEM.S197903>
- [7] Weinberger, A.H., Zhu, J., Lee, J., Anastasiou, E., Copeland, J. and Goodwin, R.D. (2020) Cannabis Use among Youth in the United States, 2004-2016: Faster Rate of Increase among Youth with Depression. *Drug and Alcohol Dependence*, **209**, Article ID: 107894. <https://doi.org/10.1016/j.drugalcdep.2020.107894>
- [8] Winward, J.L., Hanson, K.L., Tapert, S.F. and Brown, S.A. (2014) Heavy Alcohol Use, Marijuana Use, and Concomitant Use by Adolescents Are Associated with Unique and Shared Cognitive Decrements. *Journal of the International Neuropsychological Society*, **20**, 784-795. <https://doi.org/10.1017/s1355617714000666>
- [9] Hefner, K., Sofuoglu, M. and Rosenheck, R. (2015) Concomitant Cannabis Abuse/Dependence in Patients Treated with Opioids for Non-Cancer Pain. *The American Journal on Addictions*, **24**, 538-545. <https://doi.org/10.1111/ajad.12260>
- [10] Picton, J.D., Marino, A.B. and Nealy, K.L. (2018) Benzodiazepine Use and Cognitive Decline in the Elderly. *American Journal of Health-System Pharmacy*, **75**, e6-e12. <https://doi.org/10.2146/ajhp160381>
- [11] Gaston, T.E. and Szaflarski, J.P. (2018) Cannabis for the Treatment of Epilepsy: An Update. *Current Neurology and Neuroscience Reports*, **18**, Article No. 73. <https://doi.org/10.1007/s11910-018-0882-y>
- [12] Fitzgerald, K.T., Bronstein, A.C. and Newquist, K.L. (2013) Marijuana Poisoning. *Topics in Companion Animal Medicine*, **28**, 8-12. <https://doi.org/10.1053/j.tcam.2013.03.004>
- [13] Zagnoni, P.G. and Albano, C. (2002) Psychostimulants and Epilepsy. *Epilepsia*, **43**, 28-31. <https://doi.org/10.1046/j.1528-1157.2002.043s2028.x>
- [14] García-Gutiérrez, M.S., Navarrete, F., Gasparyan, A., Austrich-Olivares, A., Sala, F. and Manzanares, J. (2020) Cannabidiol: A Potential New Alternative for the Treatment of Anxiety, Depression, and Psychotic Disorders. *Biomolecules*, **10**, Article 1575. <https://doi.org/10.3390/biom10111575>
- [15] Pelkonen, M. and Marttunen, M. (2003) Child and Adolescent Suicide. *Pediatric Drugs*, **5**, 243-265. <https://doi.org/10.2165/00128072-200305040-00004>
- [16] Hackam, D.G. (2015) Cannabis and Stroke. *Stroke*, **46**, 852-856. <https://doi.org/10.1161/strokeaha.115.008680>