

Rising Threat; Bonsai

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SUMMARY

Objectives

In recent years, and especially in the past few months, the number of synthetic cannabinoid (bonsai) users has increased in our country. The aim of this study was to draw attention to the consumption of bonsai among young people and reveal the demographic and basic clinical characteristics of these users.

Methods

This was a retrospective study conducted at the Ümraniye Training and Research Hospital. All of the adult patients (≥ 18 year old) with synthetic cannabinoid intoxication who presented to the Emergency Department throughout the two years of the study (July 1st 2012–June 30th 2014) were enrolled. The frequencies were given as the median and inter-quartile range).

Results

197 patients were included in this study, with 190 male patients (96.4%) and 7 (3.6%) female patients. Two of the four hospitalized patients were exitus, 52 left on their own will and a total of 141 patients were discharged after 6-12 hours of observation in the ED.

Conclusions

The use of synthetic cannabinoids (bonsai) in the recent years, especially in the summer months of 2014 was investigated in this study. Although these patients can have a benign clinical course, the process can also be fatal. It should especially be noted that patients with depressed respiration, low GCS scores and high PaCO₂ values are at higher risk for mortality and the necessity of early intubation should be kept in mind.

Key words: Cannabinoid receptor agonists; emergency medicine.

Introduction

Synthetic cannabinoids (SC) first emerged in 2004 and became rapidly popular, especially among adolescents.^[1,2] SC's have various names worldwide, with the most common one being "spice". However, in Turkey they are commonly known as "bonsai".^[3]

In recent years, especially in the last months, the number of bonsai users has increased in our country.

In this study we aim to draw attention to the consumption of bonsai among young people and reveal the demographic and basic clinical characteristics of these users. This study was the sole study, which mentions the role of synthetic can-

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nabinoids as a public health problem in Turkey.

Materials and Methods

This was a retrospective descriptive cross-sectional study conducted at Ümraniye Training and Research Hospital. All of the adult patients who were over 17 years old with synthetic cannabinoid intoxication and presented to the Emergency Department (ED) throughout two years of the study (July 1st 2012–June 30th 2014) were enrolled. Patient records

were obtained through the hospital information system (HIS). ICD codes F12.2, Z72.2, T40 and X44 were searched and charts that presented with “bonsai intoxication” were included. Other drug intoxications and patients less than 18 years old were excluded from the study. Suspicious abuse, patient data that was lacking and patients with a history of trauma were also excluded from the study. For the statistical analysis, SPSS for Windows ver. 11.0 (Chicago, IL, USA) was used. The frequencies were given as median and inter-quartile range.

Results

There were 197 patients who were included in this study; 190 patients (96.4%) were male and 7 (3.6%) were female. Two of hospitalized 4 patients (all were intubated) died, 52 left refusing treatment, and a total of 141 patients were discharged after 6–12 hours of observation in the ED. Patients' median systolic blood pressure (SBP) SBP was 120 mmHg, diastolic blood pressure (DBP) was 70 mmHg and pulse rate was 89 beats/min. Median SBP of the four patients who were intubated was 110 mmHg, DBP was 69 mmHg and pulse rate was 71 beats/min. Demographic specifications of the patients and clinical characters are shown in Tables 1–3. During this two-year study the number of abuses rose significantly in the second year, especially in June 2014 as shown in Figures 1 and 2.

Table 1. Demographical findings and vital signs of all of the patients

Variable	Median (IQR)
Age (year)	22 (19-27)
Male (n, %)	190 (96.4)
Pulse (beats/min)	89 (78-105)
SBP (mmHg)	120 (110-126)
DBP (mmHg)	70 (62-80)
SaO ₂ (%-%)	98 (97-99)
GCS	15 (15-15)

IQR: Inter quartile range; SBP: Systolic blood pressure; DBP: Diastolic blood pressure; SaO₂: Saturation of oxygen; GCS: Glasgow coma scale score.

Table 2. Demographical findings and vital signs of the patients who were intubated

Variable	Median (IQR)
Age (year)	29 (23-24)
Male (n, %)	4 (100.0)
Pulse (beats/min)	71 (45-125)
SBP (mmHg)	110 (83-125)
DBP (mmHg)	68 (45-77)
SaO ₂ (%-%)	41 (15-41)
GCS	3 (3-4)

IQR: Inter quartile range; SBP: Systolic blood pressure; DBP: Diastolic blood pressure; SaO₂: Saturation of oxygen; GCS: Glasgow coma scale score.

Discussion

Cannabinoids are separated into three main groups: endogenous, natural and synthetic. SC's were natural-synthetic mixtures sold as legalized marijuana in some countries and smoked in the form of cigarettes.^[3] The most common form of natural cannabinoid is 9-tetrahydrocannabinol (THC).^[3,4] Cannabinoids affect the CB1 and CB2 receptors in the body and they show these effects generally based on a CB1 like mechanism of action, impaired consciousness, sleep changes and cardiovascular effects. Whereas the role of CB2 is poorly understood, it is known that THC acts only through CB1. This is different than SC's, which act both through the CB1 and CB2 receptors and are more effective than THC.^[5-7]

The popularity of these drugs is growing since they cannot

Table 3. Outcomes of intubated patients and their blood gas results

Patient	Age/sex	Clinical result	pH	pO ₂ (mmHg)	PCO ₂ (mmHg)	HCO ₃ (mmHg)
Patient 1	34/male	Intubated+Exitus	6.91	15	128	12
Patient 2	26/male	Intubated+Exitus	6.58	65	173	?
Patient 3	19/male	Intubated+Discharged	7.06	42	61	14
Patient 4	24/male	Intubated+Discharged	6.90	40	119	11

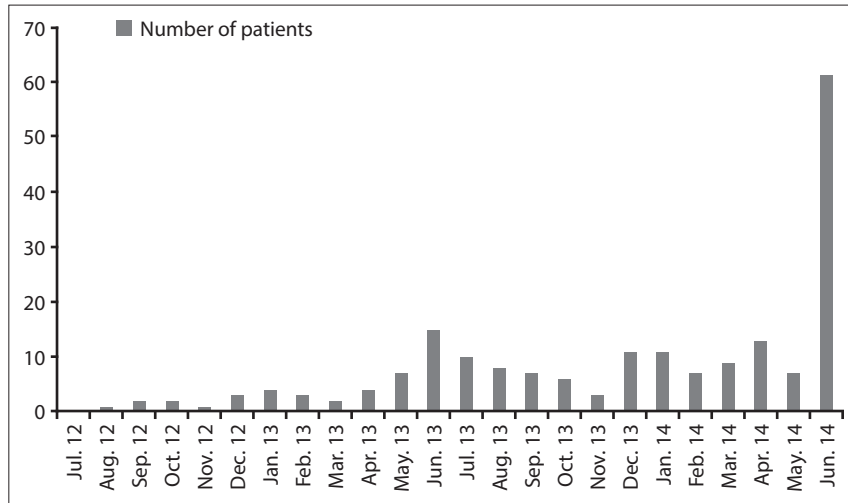


Figure 1. Number of patients presented to ED with bonsai consumption according to months.

be detected with routine screening tests and they are cheap and especially appealing to young people. In our study the median age was 22 years and there was a male gender predominance. These results were similar to the results of previous studies. Hoyte et al found the median age as 22.5 years and with a male gender predominance, although this was slightly lower than our results (cases reported in males was 74.3%).^[1] Though it remains undetected through routine screening, they can be detected with new immunoassay methods and research is ongoing in this field.^[8] Psychoactive effects of the SC's are similar to the effects of THC, but they are more potent. These drugs can cause anxiety or panic as well as opposing effects like repressed anxiety. The most frequent cardiovascular effects are hypertension and tachycardia, but effects such as bradycardia and hypotension have also been reported.^[4,9]

In our study, patients' median SBP was 120 mmHg, DBP was 70 mmHg and pulse rate 89/min, and these values were considered the normal range. Although 4 intubated patients had pulse rates and blood pressures (BP) that were slightly

lower with respect to all other patients pulse rates and BPs, they were still in the normal range. However, in our study the patients GCS was an average of 15 and there was no obvious hypoxia, with the SO_2 average of the intubated patients measured as low as 41%. These patients had 3-4 GCS scores and their high $PaCO_2$ in the blood gas was noteworthy. These four patients were intubated due to their low GCS scores, low PaO_2 , and high $paCO_2$ levels although they had normal pulse rates and normal BPs. The respiratory suppression state of these patients was thought to have gotten worse due to secondary hypercapnia, respiratory and metabolic acidosis. The death of 2 of the 4 intubated patients doesn't mean that the cannabinoids are harmless, but rather it can be seen as evidence that may change widely accepted assumptions about the safety of these drugs. Deaths caused by cannabinoids were not expected but that the fact that the SC's have a wide clinical spectrum from benign to death is quite remarkable. In recent months, especially in June 2014, the high patient admission rate is conspicuous. Again in these months the use of bonsai and the bonsai related deaths frequently announced in the media has increased public awareness. The answer of why patient numbers increased so dramatically in the last month is unclear but according to police officers' declarations, the usage of bonsai rises each day. The Turkish Monitoring Centre for Drugs and Drug Addiction 2013 report results revealed that the number of people that used SCs were 20 times higher in 2012 than in 2011. The report for 2014 has not been published yet but we think that SC consumption rose much more this year than in the previous years.^[10]

Conclusion

The use of synthetic cannabinoids (bonsai) in the recent years, especially in the summer months of 2014 is stated in this paper. Although patients can have a benign clini-

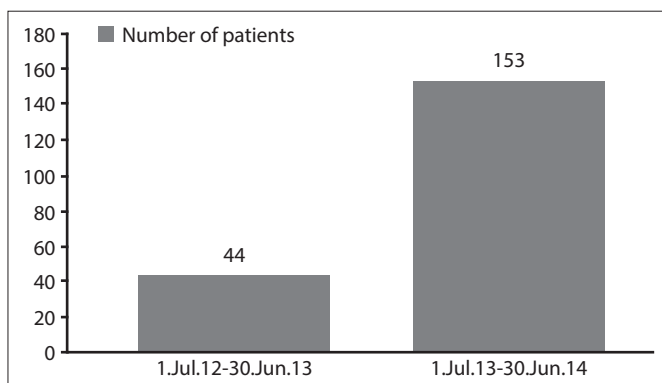


Figure 2. Number of patients presented to ED with bonsai consumption according to years.

cal course, the process can also be fatal. It should be noted that especially patients with depressed respiration, low GCS scores and high PaCO₂ values are at increased risk and the necessity of early intubation should be kept in mind.

Limitations

The major limitation of the study was its retrospective nature. The second limitation was the absence of screening tests for the synthetic cannabinoid. Confirmation of bon-sai consumption was based on the medical history learned from the patients or their relatives. However, it is known that detection of these substances with routine screening tests is not possible in most medical care centers in Turkey, so anamnesis was the only method for confirmation.

Conflict of Interest

The authors declare that there is no potential conflicts of interest.

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