

# Anesthesia Management in a Patient with Synthetic Cannabinoid Dependence: A Case Report



Eren Demir\*

Department of Anesthesiology and Reanimation, Istanbul, Turkey

Submission: November 15, 2019; Published: December 13, 2019

\*Corresponding author: Eren Demir, Department of Anesthesiology and Reanimation, Istanbul, Turkey

## Abstract

Patients with synthetic cannabinoid dependence can hide themselves because of their fear. The suspicious approach of the anesthesiologist to these cases, careful preoperative examination, plays an important role in solving the problems that may be encountered in the preoperative and postoperative period.

**Keywords:** Synthetic cannabinoid dependence; Hypertension; Tachycardia; Anesthesia, Dependence; Public health problem

**Abbreviations:** NIBP: Noninvasive Blood Pressure; HR: Heart Rate; ECG: Electrocardiogram; CHS: Cannabinoid Hyperemesis Syndrome; IV: Intravenously

## Introduction

Synthetic cannabinoid dependence is a serious public health problem. Synthetic cannabinoids have increased in popularity among drug addicts in recent years. Anesthesiologists also encounter patients with synthetic cannabinoid dependence more frequently. Synthetic cannabinoids may have cardiovascular, respiratory and neurological effects in anesthetized patients. In this article, anesthesia management in a dependent patient with tachycardia and hypertension is shared.

## Case Report

A 24-year-old male patient who was scheduled for appendectomy operation had no systemic disease or drug use in his preoperative examination. Noninvasive blood pressure (NIBP) 178/106 mmHg, heart rate (HR) 122/min, electrocardiogram (ECG), respiratory sounds and chest radiography were normal. The patient was evaluated as ASA 1E. Laboratory tests were normal except white blood cell  $16 \times 10^3/\mu\text{L}$  ( $4,511,00 \times 10^3/\mu\text{L}$ ), aspartate aminotransferase 65 U/L ( $<31$  U/L), alanine aminotransferase 58 U/L ( $<33$  U/L). In the operating room, he was anxious, NIBP 185/120 mmHg, HR 135/min, and peripheral oxygen saturation was 97%. I asked to the patient again if there was any disease or drug use. It was learned that he had been using synthetic cannabinoid for 3 years. He stated that; he could not say before, because his family was near him in the surgical department. The last substance use was 18 hours ago. There was no history of ICU stay due to synthetic cannabinoid use. Although the patient was hypertensive and tachycardic, anesthesia was given to the patient because of the emergency operation. Rapid

sequence intubation with cricoid compression was planned. The patient was hypertensive and tachycardic after induction and intubation, and invasive artery monitoring was performed. The dose of remifentanyl infusion was increased.

Propofol 1 mg/kg was administered intravenously (iv) to increase the depth of anesthesia, to the tachycardic and hypertensive patient. The dose of remifentanyl was increased to 1mcq/kg/ min. The patient was still hypertensive in the follow-up, and esmolol infusion was started at a dose of 50mcq/kg/min. Paracetamol 1000 mg and tramadol 1 mg/kg were administered for postoperative analgesia. Perioperative systolic BP was 185-140 mmHg, diastolic BP was 120-95 mmHg, and HR was 115-160 / min. At the end of the 45-minute operation, the patient was extubated after sugammadex 4 mg/kg iv administration. The artery catheter was removed. The patient's systolic BP was between 148 and 135 mmHg, diastolic BP was between 85 and 75 mmHg, and HR was between 110 to 120/min in the post anesthesia care unit. No additional medication was administered during the 1-hour follow-up. When modified aldrete score of the patient was 9, he was sent to the surgical department with recommendations.

## Discussion

Cocaine, heroin, opioids, amphetamines and synthetic cannabinoids are commonly used by addicts. The use of synthetic cannabinoids has increased in recent years due to their cheap and easy accessibility [1,2]. Cannabinoids; endocannabinoids (naturally found in humans), phyto cannabinoids (produced

from plants) and synthetic cannabinoids (chemical production) are divided into three groups (2). Synthetic cannabinoids are used by inhalation, orally or intravenously. They act via CB1 and CB2 receptors [3]. CB1 receptors are responsible for the effects of cannabinoids such as cardiovascular, euphoria, anxiety and are mainly located in the limbic system, hippocampus and basal ganglions [4]. CB2 receptors which in immune mediated cells are responsible for anti-inflammatory effects [4].

A carefully preoperative examination in substance addicts plays a key role in resolving the problems that the anesthesiologist may encounter in the perioperative or postoperative period. Knowing the substance used is important in terms of determining the dose of anesthetic medication, preventing possible withdrawal syndrome and awareness in anesthesia [5]. There was no evidence of substance addiction in the presented case. If cardiovascular problems are suspected due to the substance dependence, echocardiography should be performed. There was no cardiac sound or murmur in the presented case, ECG was tachycardic but normal sinus rhythm. Also, ECG of the patient was normal sinus rhythm during the follow-up in post anesthesia care unit. Respiratory depression and atelectasis may be seen in patients with substance use by inhalation for a long time, and pulmonary edema or pleural effusion may be seen on chest radiographs [6]. Pulmonary sounds and chest radiography of the presented case were normal.

Cannabinoid hyperemesis syndrome (CHS) was described in 2004 [7]. Cannabinoid hyperemesis syndrome, which is seen in synthetic cannabinoid addicts with severe nausea and vomiting attacks, is important for anesthesiologists [7]. Rapid sequence intubation was performed in this patient, and any complications did not develop during ventilation and intubation. Delusions, hallucinations, blurred consciousness, bradycardia, tachycardia, hypertension, hypotension, arrhythmia, coronary artery disease, liver failure, gastritis, peptic ulcer and renal failure may also be seen in the patients with synthetic cannabinoid dependence [6].

Although most of these problems can be detected preoperatively, some of them may be seen in the peroperative or postoperative period. All these symptoms and diseases are important for the anesthesiologist and can change the anesthesia plan. There was no pathological laboratory finding except mild liver enzyme elevation and leukocytosis in the presented case.

### Conclusion

As synthetic cannabinoid dependence increases, anesthesiologists will encounter these patients more frequently in operating rooms. There are many studies on treatment approaches in patients with synthetic cannabinoid dependence in emergency and intensive care units. However, studies are limited in terms of anesthesia applications. Therefore, I think it will be beneficial to make more studies about anesthesia management in these patients.

### References

1. Hoyte CO, Jacob J, Monte AA, Al Jumaan M, Bronstein AC (2012) A characterization of synthetic cannabinoid exposures reported to the National Poison Data System in 2010. *Ann Emerg Med* 60(4): 435-438.
2. Lambert, Didier M, Christopher J Fowler (2005) The endocannabinoid system: drug targets, lead compounds, and potential therapeutic applications. *J Med Chem* 48(16): 5059-5087.
3. Pacher, Pál, Sándor Bátkai, George Kunos (2006) The endocannabinoid system as an emerging target of pharmacotherapy. *Pharmacological reviews* 58(3): 389-462.
4. Pacher P, R Mechoulam (2011) Is lipid signaling through cannabinoid 2 receptors part of a protective system. *Progress in lipid research* 50(2): 193-211.
5. Cavaliere F, Iacobone E, Gorgoglione M, Pellegrini A, Tafani C (2005) Anesthesiologic preoperative evaluation of drug addicted patient. *Minerva anestesio logica* 71(6): 367-371.
6. Samet JH (2008) Drug use and dependence. In: Goldman L, Ausiello D, (Eds.), *Cecil Medicine*, Philadelphia, 2008, Saunders, pp. 159-161.
7. Allen JH (2004) Cannabinoid hyperemesis: cyclical hyperemesis in association with chronic cannabis abuse. *Gut* 53 (11): 1566-1570.



This work is licensed under Creative Commons Attribution 4.0 License  
DOI: [10.19080/JOJPH.2019.05.555671](https://doi.org/10.19080/JOJPH.2019.05.555671)

**Your next submission with Juniper Publishers  
will reach you the below assets**

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats  
( Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

**Track the below URL for one-step submission**  
<https://juniperpublishers.com/online-submission.php>