

# A case of brief psychosis upon cannabis withdrawal

## Abstract

Psychosis related to Cannabis use has been reported in several literatures. This relationship has been reported to be dose dependent, with individuals who frequent use Cannabis and those who use a large amount of cannabis developing psychosis.<sup>1,2</sup> Cannabis use has been associated with episodes of psychosis during acute intoxication and also past the point of acute intoxication, that is during the withdrawal phase.<sup>3,4</sup> However, the actual causality is unclear as reports have been equivocal as to whether Cannabis in itself causes psychosis or if it exacerbates or precipitates psychosis in an individual who is already predisposed.<sup>5</sup> Some characteristics associated with Cannabis related psychotic episodes are a) disorientation, b) confusion, and c) amnesia. This group of symptoms is referred to as “toxic psychosis” and usually occurs after the use of large amounts of Cannabis within a short period.<sup>6</sup> Though acute intoxication is the bulk of the current literature, limited cases of psychosis have been reported in relation to marijuana withdrawal. In this case, we present a 23-year old Hispanic woman who experienced a brief psychotic break not during acute intoxication but upon Cannabis withdrawal.

**Keywords:** cannabis, marijuana, psychosis, withdrawal, hallucination

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Charlene Joseph,<sup>1</sup> Olawale Ojo,<sup>2</sup> Olusegun Popoola,<sup>2</sup> Heela Azizi,<sup>1</sup> Tasmia Khan,<sup>3</sup> Orin Pramanik,<sup>1</sup> Alexa Kahn,<sup>1</sup> Shazia Chaudhry,<sup>3</sup> Dina Rimawi,<sup>1</sup> Megha Singh,<sup>3</sup> Ali Mallick,<sup>3</sup> Sharon Paul,<sup>3</sup> Chiedozie Ojimba,<sup>2</sup> Ayodeji Jolayemi<sup>2</sup>

<sup>1</sup>American University of Antigua College of Medicine, Department of Psychiatry, New York

<sup>2</sup>Department of Psychiatry, Interfaith Medical Center, New York

<sup>3</sup>Medical University of the Americas, Department of Psychiatry, New York

**Correspondence:** Olusegun Popoola, Department of Psychiatry, Interfaith Medical Center, Brooklyn, New York, Email opapoola@interfaithmedical.org

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## Introduction

Psychosis can be a result of mental illness (often seen in cases of schizophrenia for example), stress, or medication side effects. Psychosis can be evident when a patient is taking substances such as Cannabis, however, the psychosis usually resolves when the drug use is discontinued.<sup>7</sup> As such, and there are limited cases of psychosis upon withdrawal from Cannabis use described in the literature as it is an infrequent phenomenon. Cannabis contains several cannabinoids with the prominent cannabinoids been cannabidiol and tetrahydrocannabinol (THC).<sup>3</sup> Cannabis acts on the cannabinoid receptors (CB1), where it converts to its active form Delta-9-tetrahydrocannabinol (THC).<sup>7</sup> It subsequently affects intracellular enzymes such as cAMP causing a reduction.<sup>7</sup> The decrease in cAMP, then causes a decrease in potassium and calcium channels. As a result, there is a reduction in the amount of neurotransmitter released from axonal terminals, except for dopamine.<sup>7</sup> Dopamine is usually inhibited by GABA neurons. Cannabis disinhibits GABA neurons leading to the activation of dopamine.<sup>7,8</sup> Excessive dopamine in the mesolimbic tract is hypothesized to cause positive psychotic symptoms.

## Case presentation

We present the case of a 23-year-old Hispanic woman who presented to the psychiatric emergency room with the paranoid delusion that her family was trying to hurt her for the past two days, along with hearing of voices telling her that she was going to die. The patient stated that this was the first time she heard these voices. The patient was brought to the hospital by her mother who agreed that her daughter's thoughts were unusual. The patient experienced these withdrawal symptoms approximately 48hours later in the evening following her last marijuana use. She reported, “I was hearing multiple unfamiliar voices saying they do not care and that I am going to die. I kept pacing back and forth throughout the night

with a bunch of thoughts running through my mind.” She admitted to smoking marijuana since age 13 and has been consistently smoking three blunts of marijuana at least three times a day for the past four years. She stated that she stopped two days prior to this presentation due to not having funds available to purchase more. The patient also stated, “I believed that people were trying to hurt me; my mother was doing usual things. She was telling me to go to the kitchen. Why would my mother keep telling me to go to the kitchen? It makes no sense. I must be bugging out. I know my mother would never hurt me. Something is wrong with me. I haven't slept for the past two days. I'm so scared.” The patient expressed feeling depressed for the past couple of months. She expressed that she had trouble staying asleep, lost interest in doing things she used to enjoy, noted a decrease in energy, and also a decrease in concentration. She did, however, notice an increase in appetite and weight gain over the past year. She denied any thoughts of suicide or homicide during evaluation. The patient had a psychiatric history of depression and PTSD which she was diagnosed with at the age of 15. She had two previous suicide attempts by overdosing on multiple pills three years ago because of depressed mood, occurring one month apart. The patient was taking Wellbutrin and Trazodone although she was non-compliant with medications. She had a history of abusing Cannabis, three blunts per day since 2014 and admitted to smoking cigarettes four times a day. Her medical history was otherwise unremarkable.

Patient reports that her father and mother are divorced, and she was raised by her mother alone from age 9. She reports a family history of depression in her father and bipolar disorder in her mother but is unclear if either is on any form of medications. The patient expressed improvement of her symptoms since her inpatient stay; although she expressed feeling anxious due to her psychotic episode. This patient was further managed with Risperidone up to 2mg by mouth twice daily which was discontinued at the time of discharge.

## Discussion

The patient's break from reality is believed to be due to her abrupt cessation of marijuana. She was using marijuana three times a day for about four years to none at all for two days. She had a self-limiting psychotic episode, which lasted less than two days. According to Murray et al., the psychotropic effect of cannabis following smoking becomes evident within a few minutes and can last up to 3 hours.<sup>3</sup> The duration of its acute intoxicating effects is also affected by the route of use.<sup>3</sup> Cannabis withdrawal symptoms begin between 10 to 48 hours after its last use, and it is reported that these are usually mild and brief.<sup>9</sup> The timeline of her symptoms strongly suggests an episode of post-Cannabis withdrawal psychosis as described in other case reports/series. Although her family and prior psychiatric history of mood disorder may raise concern for bipolar disorder, she did not demonstrate any symptoms indicative of mania or hypomania. In addition, the patient presented has had a prior episode of depressive symptoms with prior multiple suicidal attempts. This is consistent with findings from the systematic review by Moore et al., that earlier age of first use of cannabis increases the risk of depressive episodes.<sup>1</sup>

Abrupt cessation of synthetic Cannabis use can lead to withdrawal symptoms similar to severe alcohol or opioid withdrawal. This withdrawal can manifest with sympathetic autonomic hyperactivity, seizures, and altered mental status such as psychosis and delirium.<sup>10</sup> Cannabis cessation leads to a loss of activation of CB1 receptors.<sup>11</sup> According to Up-to-date, up to and over fifty percent of individuals who use Cannabis daily experience withdrawal upon cessation, whereas individuals who use Cannabis less than weekly experience little or no withdrawal upon cessation.<sup>12</sup> According to a study by Khan and Akella, it was discovered that after Cannabis use a patient developed more pronounced psychotic behaviors and delusions. The patient had a history of long-term Cannabis use and was otherwise a highly functioning individual who ultimately developed a bipolar presentation. After this patient was observed for four months and treated, he was asymptomatic at discharge.<sup>13</sup>

Based on another study performed by Chung et al., the concept of Cannabis withdrawal was evaluated by observing symptoms following Cannabis cessation. The sample included 214 adolescents and compared acute symptoms following cessation to remaining symptoms in 197 of the 214 individuals after one year. Though not commonly noted as a characteristic symptom of Cannabis withdrawal, hallucinations were included and recorded as a symptom following Cannabis cessation in the population sample.<sup>14</sup> Furthermore; other studies have shown that gabapentin and delta-9-tetrahydrocannabinol analogs can provide good prognostic results in the treatment of Cannabis withdrawal symptoms. Mirtazapine is beneficial for treating insomnia in Cannabis withdrawal cases where this symptom is present, whereas Venlafaxine can worsen symptoms overall.

Furthermore, Cannabis withdrawal is a clearly defined entity in the Diagnostic And Statistical Manual Of Mental Disorders, Fifth Edition (DSM-V) and the listed criteria emphasizing the affective symptoms with the exclusion of psychotic symptoms.<sup>15</sup> Only one of the studies in the systematic review conducted by Gorelick et al explored hallucination as a symptom of cannabis withdrawal syndrome for inclusion in the DSM. Therefore, further studies is needed to elaborate on the causal relationship between Cannabis withdrawal and the onset of psychosis.

## Conclusion

The relationship between Cannabis and psychosis has been long debated due to the intertwining of complex subject areas. With the recent rise in the debate about the legalization of Cannabis in various states across the USA for recreational use, it has become even more essential to analyze the consequences of Cannabis use and withdrawal on cognitive development and mental function. Cannabis withdrawal symptoms are a combination of physical, model, and behavioural manifestations that include insomnia, anxiety, headaches, and tremors. These withdrawal symptoms and a brief psychotic episode were observed in a young adult Hispanic patient who presented to the emergency psychiatry department with paranoid delusions. More insight is needed to evaluate how Cannabis withdrawal symptoms affect psychosis, relapse to its use, and quality of life.

## Consent

The patient's consent was obtained orally.

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## Conflicts of interest

The authors have no conflicts of interest to declare.

## Authors contributions

All authors have participated in the procurement of this document and agree with the submitted case report.

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