

Case Report

A Case of Prolonged Depersonalization Following Cannabis use in an Adolescent Male

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Millions of North Americans regularly use cannabis, most starting in adolescence. While cannabis' connection to several psychiatric conditions is actively investigated, case reports on the topic of dissociative episodes induced by cannabis to date are scarce. We are presenting the case of a 17 year old male, who suffered a prolonged episode of dissociative symptoms in the context of cannabis abuse. We analyze the case and relate it to the available literature, and identify potential risk factors.

Keywords: Cannabis; Adolescent; Depersonalization; Panic attacks

Introduction

Over 16 million Americans regularly use cannabis, typically beginning in adolescence [1-3]. Cannabis comprises over 420 different compounds, of which cannabinoids, and especially THC (delta-9-tetrahydrocannabinol), mediate the psychotropic effects [4]. In 2003, the average THC concentration of marijuana had risen to 7% [5].

The acute somatic effects of ingestion include tachycardia, dry mouth, conjunctival injection, and others. Acute psychotropic effects include a feeling of relaxed euphoria, and heightened or altered senses. The effects depend on the mood, setting of use, expectations and the genetic background of the user. The most commonly reported undesirable effect is anxiety, purportedly more often at higher doses or after a period of abstinence [5,6]. Depersonalization and derealization have been reported [7]; usually they appear to be desirable, however they can be experienced as dysphoric and have induced brief panic attacks in some users [6,8]. Persistent effects are not expected beyond 2-3 hours [4]. Excretion from the fat stores can take weeks, but is not known to induce symptoms associated to acute intoxication.

Depersonalisation "involves an altered perception or experience of the self, a feeling of detachment from one's body or mental processes ego dystonic and non delusional" [9]. It is known to occur in children and adults [10-12]. Anxiety or panic states have been implicated as a trigger [13,14] but depersonalisation associated to these is usually short lived. We were able to locate four studies [9,15-17] investigating the neurochemistry of depersonalization in adults and using THC for this purpose. They resulted in depersonalization symptoms lasting up to 2 hours [15], and did not result in prolonged or dysphoric experiences. These and some other studies [18] also postulate the neuroanatomical connections between brain regions, depersonalization and cannabis abuse.

It is of note that the distribution of CB1 receptors in the adolescent brain is not always the same as in the adult brain, because the white matter tracts containing CB1 are still developing [3,19,20].

Case Presentation

Our patient is a 17 year old Caucasian male referred to our clinic following his visit to the emergency department complaining of "not feeling himself", "as if outside his body". The first of these episodes occurred as he awoke one morning in the summer. The only preceding event he could think of was his marijuana use 6 days prior. He was a regular, but not daily, user since age 16, smoking up to 0.5g of marijuana at a time, with no consistent episodes of abstinence, and no other substance use. He denied smoking substantially more than usual prior to the episode in question. He was about to start a new summer job, and he did voice some anxiety regarding starting his last school year before graduation, but otherwise there were no stressors.

The depersonalization was initially accompanied by a sense of panic, as well as palpitations, shortness of breath, tightness in the chest, and numbness in the arms. These symptoms subsided after a few minutes but the feeling of depersonalization persisted for almost 72 hours. It appears that depersonalization was the initial symptoms, and triggered a panic attack. For the 72 hours, he slept and ate normally, and carried on activities such as watching TV. He reports that no one noticed any change, despite his confiding to some people about how he felt. There was no evidence of psychosis.

For the next few months, he experienced recurrent, much shorter, episodes of depersonalization and some panic attacks, lasting only minutes. These symptoms caused impairment in function. He worried about recurrence and limited his activities. His grade point average dropped by 10%. He did not abstain from sporadic marijuana use.

On investigations, no organic etiology was identified. The physical exam, performed in the ER and subsequently repeated by a paediatrician, was "unremarkable", including a normal full neurological exam.

Prenatal, birth, and developmental history are unremarkable. He was an easy baby. There is no history of parental conflict. He was always a good student, active in sports and well adapted socially. His past medical history is unremarkable and he was on no medications. He never had any head injuries.

There is no past psychiatric history; although he recalled 2 or 3 short lived, out of the blue, panic attacks during the previous year, not accompanied by depersonalization. He does not abuse alcohol and never tried other drugs.

On family history, his father reported experiencing similar depersonalization symptoms one time after substantial alcohol use around his late teens-early twenties. He never had a recurrence and never tried other substances. There is no family history of seizures.

We primarily diagnosed our patient with panic disorder secondary to cannabis, recommended abstinence and referred to a CBT group. An SSRI was considered. He followed up with his paediatrician a month later and reported successfully abstaining from cannabis. He had no further episodes and declined further care.

Discussion

Despite public perception that cannabis is a safe drug [2], it can lead to many adverse psychiatric effects [6,8,21-23]. The potential to induce dissociative states has been comparatively little investigated.

Cases of prolonged depersonalization after cannabis use appeared in 2 case series, of 4 and 6 patients each [24,25]. These were all individuals who experienced the onset of symptoms in adolescence. Their symptom onset was associated to psychosocial stressors in all cases. In addition, in the Hurlimann case series, 5 out of 6 patients had prior diagnosis of social anxiety. Both case series report daily episodes, some persisting up to 7 months after smoking as little as 2 marijuana cigarettes [24]. As with our patient, there was no dose-dependent association, no psychotic illness was suspected (except in one case), no neurological abnormalities and no abnormal investigation results. Some of the Szymanski cases had a family history of substance abuse, and in one case a family member had depersonalization episodes under stress. This family history trend has been noted in one other study [9], however the Hurlimann series did not comment on any such finding. Our patient's case stands out based on the 72 hours of the first episode duration, as well as the family history of his father's substance-induced depersonalization episode. Our patient is also remarkable in that he does not have any pre-existing symptoms of anxiety, social or other. He did however experience the onset of symptoms in the context of increased anxiety levels based on his life events at the time. Abstinence and controlling the anxiety can result in complete symptom resolution, as with our patient, but recurrent use appears to precipitate recurrence.

Thus, prolonged depersonalization following cannabis use seems associated with high arousal, either due to an underlying anxiety disorder, or induced by more acute psychosocial stressors. The risk does not appear to be dose dependent, as our patient did not consume more than usual and was not a heavy user. A family history of depersonalization may be another risk factor. It is not clear how the depersonalization persists for as long as 72 hours.

Conclusion

We presented the case of a 17 year old male who experienced 72 hours of depersonalization after cannabis use. It is proposed that cannabis abuse in young individuals with risk factors such as a family history of substance abuse and depersonalization, and a state of acute or chronic anxiety, increases the risk of prolonged dissociative states;

these can recur for several months after the onset. The risk does not appear to be dose dependent. Little is known of the neurophysiology involved and further investigations are needed to elucidate the connection between dissociative states and cannabis use.

References

- Lynch MJ, Rabin RA, George TP. The cannabis-psychosis link. *Psychiatric Times*. 2012.
- Tonkin RS. Marijuana use in adolescence. *Paediatr Child Health*. 2002; 7: 73-75.
- Johnston LD, O'Malley PM, Backman JG, Schulenberg JE. Monitoring the future national results of adolescent drug use: Overview of key findings. Bethesda, MD: National Institute on Drug Abuse. 2006.
- Agurell S, Halldin M, Lindgren JE, Ohlsson A, Widman M, Gillespie H, et al. Pharmacokinetics and metabolism of delta-9-THC and other cannabinoids with emphasis on man. *Pharm Rev*. 1986; 38: 21-43.
- Iversen L. Invited review: Cannabis and the brain. *Brain*. 2003; 126: 1252-1270.
- Weil A. Adverse reactions to marijuana. *New England Journal of Med*. 1970; 282: 997-1000.
- Johnson BA. Psychopharmacological effects of cannabis. *Br J Hosp Med*. 1990; 43: 114-116, 118-120, 122.
- Johns A. Psychiatric effects of cannabis. *Br J Psychiatry*. 2001; 178: 116-122.
- Hollander E, Carrasco JL, Mullen LS, Trugold S, DeCaria CM, Towey J. Left hemispheric activation in depersonalisation disorder: a case report. *Biol Psychiatry*. 1992; 31: 1157-1162.
- Mayer-Gross W. On depersonalisation. *Br J Med Psychol*. 1935; 15: 8-122.
- Bliss EI, Clark LD, West CD. Studies of sleep deprivation-relationship to schizophrenia. *Arch Neurol Psychiatry*. 1959; 81: 348-359.
- Reed GF, Sedman G. Personality and depersonalisation under sensory deprivation condition. *Percept Motor Skills*. 1964; 18: 659-660.
- Roth M, Argyle N. Anxiety, panic and phobic disorders: an overview. *J Psychiatry Res*. 1988; 22: 33-54.
- Cassano GB, Petracca A, Perugi G. Derealization and panic attacks: a clinical evaluation in 150 patients with panic disorder-agoraphobia. *Compr Psychiatry*. 1989; 30: 5-12.
- Mathew RJ, Wilson WH, Chiu NY, Turkington TJ, Degrado TG, Coleman RE. Regional cerebral blood flow and depersonalisation after tetrahydrocannabinol administration. *Acta Psychiatr Scand*. 1999; 100: 67-75.
- Simeon D, Guralnik O, Hazlett EA, Spiegel-Cohen J, Hollander E, Buchsbaum MS. Feeling unreal: a PET study of depersonalisation disorder. *Am J Psychiatry*. 2000; 157: 1782-1788.
- Mathew RJ, Wilson WH, Humphreys D, Lowe JV, Weithe KE. Depersonalisation after marijuana smoking. *Biol Psychiatry*. 1993; 33: 431-441.
- Kupferschmid S, Hubl D, Federspiel A, Jann K, Hauf M, Schimmelmann BG. Chronic derealisation phenomenon in a 17 year old boy after twofold cannabis abuse: when acute becomes chronic. *Schizophr Res*. 2010; 117: 348.
- Medina KL, Nagel BJ, Park A, McQueeney T, Tapert S. Depressive symptoms in adolescents: associations with white matter volume and marijuana use. *Journal of Child Psychology and Psychiatry*. 2007; 48: 592-600.
- Romero J, Garcia-Palomero E, Berrendero F, Garcia-Gil L, Hernandez ML, Ramos JA, et al. Atypical location of cannabinoid receptors in white matter areas during rat brain development. *Synapse*. 1997; 27: 317-323.
- Jager G, Kahn RS, Van Den Brink W, Van Ree JM, Ramsey NF. Long-term effects of frequent cannabis use on working memory and attention: an fMRI study. *Psychopharmacology*. 2006; 185: 358-368.
- Wilson N, Cadet JL. Comorbid Mood, psychosis, and marijuana abuse disorders: a theoretical review. *J Addict Dis*. 2009; 28: 309-319.

23. Large M, Sharma S, Compton M, Slade T, Nielssen O. Cannabis use and earlier onset of psychosis: a systematic meta analysis. Arch Gen Psychiatry. 2011; 68: 555-561.
24. Szymanski HV. Prolonged depersonalisation after marijuana use. Am J Psychiatry. 1981; 138: 2.
25. Hurlimann F, Kupferschmid S, Simon AE. Cannabis induced depersonalization disorder in adolescence. Neuropsychobiology. 2012; 65: 141-146.