



Case report

Hallucinogen persisting perception disorder after psilocybin consumption: a case study

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Abstract

The recurrence of flashbacks without acute or chronic hallucinogen consumption has been recognized in the DSM IV criteria as the hallucinogen persisting perception disorder (HPPD). Perceptual disturbances may last for 5 years or more and represent a real psychosocial distress. We reported here a case of a 18-year-old young man presenting HPPD after a mixed intoxication with psilocybin and cannabis. This report shows symptomatic recurrences persisting more than 8 months. Various differential diagnoses were evoked and our therapeutic strategies were described.

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1. Introduction

Flashbacks are described as recurrent perception with perceptual distortions, spontaneous and recurrent unbidden images [5]. They have been observed with lysergic acid diethylamide (LSD) consumption [1]. The recurrence of flashbacks without acute or chronic hallucinogen consumption has been recognized in the DSM-IV criteria as the hallucinogen persisting perception disorder (HPPD) [3]. The main symptomatic feature is the recurrence of perceptual alterations similar as those previously experienced after one or several hallucinogen consumptions. Perceptual disturbances such as geometrical forms, colored images, macropsia, micropsia, intensified colors trailing phenomena have been described. These symptoms can be episodic, stress or substance (cannabis or alcohol) induced or continuous. Episodes may last for 5 years or more [2], and the symptoms are criticized by patients. HPPD represents a real discomfort with a slow recovery potentially associated with dysphoric mood.

The prevalence of HPPD is difficult to estimate. Indeed, only short reports have been published after LSD or more rarely after psilocybin consumption. The following case history illustrates a number of features of HPPD after a mixed intoxication with psilocybin and cannabis.

2. Case report

Mr. S, an 18-year-old French student, was hospitalized for perceptual impairments and dysphoric mood lasting for 8 months. A psychiatric history of social anxiety was reported. Regarding the family history, depression, suicide attempts and alcoholism were noted for his mother and mental anorexia and addictive conducts for his sister. He used to smoke cannabis weekly in a moderate way (up to five snort a day on week-ends and vacations for a few years). Perceptual distortions initially appeared after unique psilocybin consumption (40 hallucinogenic mushrooms—*psilocybe semilanceata*—in infusion). He re-experienced the symptoms the following day during another cannabis snort. He reported visual disturbances such as objects' distortions, relief's modifications, auditory disturbances with resonance feeling, depersonaliza-

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tion, derealization (feeling like to be inside a transparent bubble), body lightness or weightiness feeling, spatiotemporal disturbances, and inability to distinguish illusion from reality. These symptoms were similar to those initially experienced after the initial intoxication with the mushrooms. The disorder described as flashbacks were daily recurrent. He got worse in dark environment, particularly at the sunset, but he kept a good critical attitude. The trouble was distressful and highly unpleasant so he stopped cannabis consumption 2 months later. The symptomatology first smoothed out with the cessation of cannabis and then increased again 6 months after he had stopped cannabis. HPPD was diagnosed after he had left school.

At the admission in the hospital, the somatic investigations (computerized tomography and magnetic resonance imaging of the brain, electroencephalography, blood tests) were normal. The urinary drug screen (cannabis, opium, amphetamine, cocaine) was negative. The mental state examination did not find any thought or behavioral disorganization, sensorial or psychic hallucinations, but social phobia tendencies and a depressed mood. Neuropsychological assessments did not show any disturbances in frontal functions (executive, inhibition functions). Structural personality interview suggested high scores on hysteria and hypochondria scale (Minnesota Multiphasic Personality Inventory-2). A hyper-emotionality with phobic defenses was found with the Rorschach's test.

The patient received an antipsychotic treatment by amisulpride (100 mg). Because of important sedative effects, this treatment was replaced by olanzapine (5 mg), which exacerbated the symptoms and has been, therefore, replaced by risperidone (2 mg). An antidepressant treatment (sertraline, 150 mg) was associated for two reasons: first, a persisting dysphoric mood and second, the recurrence of anxiety-like symptoms.

The improvement of the disorder seemed to be related to the association of risperidone and sertraline. A decrease of the daily episodes recurrences and depressive symptoms was observed. After 6 months of this treatment, HPPD flashbacks have disappeared. The patient is now more active with social leisure and relationships with his close friends and family. However, the patient feels uncomfortable in generalized social situations (classroom, market, crowd...) but without hallucinations or delusions.

3. Discussion

This case was one of the rare detailed reports [4] indicating that HPPD flashbacks could be induced by the consumption of hallucinogenic mushrooms simultaneously with cannabis snort. Contrarily to other studies [8], our report showed that these symptoms had persisted more than 8 months after the initial crisis.

Indeed, these long-lasting resurgences and the symptomatic richness suggested various differential diagnoses (tem-

poral epilepsy, panic disorder, schizophrenia, mood disorder). Somatic analyses (electroencephalography and magnetic resonance imaging) allowed to eliminate organic disorders. Although Mr. S. expressed a high level of anxiety and derealization, particularly before and during the crisis, the diagnosis of panic disorder could be questioned because of the presence of a triggering factor (hallucinogen consumption). An absence of mental disorganization, sensorial hallucinations or delusions did not lead to schizophrenia's diagnosis. However, the various symptomatology did not allow to definitively reject a psychiatric diagnosis (mood disorder or schizophrenia). Moreover, HPPD can be considered as a syndrome with potential co-morbidity. In this case, opposite effects to those reported by Aldurra and Crayton were observed [2,6]; these authors found an exacerbation of symptoms with risperidone, but a decrease of the symptoms with olanzapine associated to fluoxetine in LSD induced HPPD. As illustrated by other studies [10], the patient's perceptual disturbances decreased with sertraline, and dissipated entirely after 6 months of treatment.

In this report, psilocybin consumption induced the flashback in a chronic cannabis smoker. The continuation of the cannabis snort would trigger off the recurrence of the symptoms; 6 months after the two toxics have been stopped, the trouble persisted. These data suggested that HPPD could result from co-intoxication by these two substances [4] and persist after the drug consumption has stopped. The clinical entity of cannabis flashbacks has been recently described [7] and is related to the high blood concentration of tetrahydrocannabinol (THC) (plasmatic half-life, 8–10 days). Although THC and its metabolites would induce the sensitization of the monoaminergic system, a number of psychotomimetic symptoms would be produced by indoleamine hallucinogens (as psilocybin or LSD), through an excessive activation of the serotonergic receptors [9].

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References

- [1] Abraham HD, Mamen A. LSD-like panic from risperidone in post-LSD visual disorder. *J Clin Psychopharmacol* 1996;16:238–41.
- [2] Aldurra G, Crayton JW. Improvement of hallucinogen persisting perception disorder by treatment with a combination of fluoxetine and olanzapine: case report. *J Clin Psychopharmacol* 2001;21:343–4.
- [3] American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington, DC: American Psychiatric Association; 1994.
- [4] Halpern JH, Pope HG. Hallucinogen persisting perception disorder: what do we know after 50 years? *Drug Alcohol Depend* 2003;69:109–19.

- [5] Horowitz MJ. Recurrent intrusive images after the use of LSD. *Am J Psychiatry* 1969;126:565–9.
- [6] Lerner AG, Gelkopf M, Skaldman I, Oyffe I, Finkel B, Sigal M, et al. Flashback and hallucinogen persisting perception disorder: clinical aspects and pharmacological treatment approach. *Isr J Psychiatry Relat Sci* 2002;39:92–9.
- [7] Niveau G. Flash-back cannabique, un cas medico-légal. *Encephale* 2002;28:77–9.
- [8] Pierrot M, Josse P, Raspiller MF, Goulmy M, Rambourg MO, Manel J, et al. Intoxications par champignons hallucinogènes. *Ann Med Intern (Paris)* 2000;151:B16–B19.
- [9] Vollenweider FX, Geyer MA. A systems model of altered consciousness: integrating natural and drug-induced psychoses. *Brain Res Bull* 2001;56:495–507.
- [10] Young CR. Sertraline treatment of hallucinogen persisting perception disorder. *J Clin Psychiatry* 1997;58:85.