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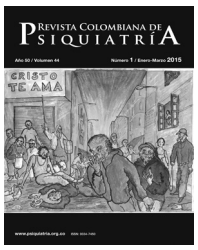

Case Report

Psychosis induced by abuse of ayahuasca: a case report

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ABSTRACT

Ayahuasca is a psychotropic infusion prepared by boiling the bark of Amazonian plants and has many psychopharmacological effects not fully understood. Some of those effects are used as treatment for different diseases. However, the side effects of ayahuasca, including ayahuasca-induced psychosis, are an important issue. Here we report the case of a patient who had a psychotic episode after taking ayahuasca and who was successfully treated with antipsychotic medication. Given the current spread of ayahuasca consumption in developed societies, the present case highlights the need for better understanding and regulation of the social-legal condition of ayahuasca and the need for further research. Additionally, psychoeducation seems advisable in order to create awareness of the potential risks of the use of ayahuasca.

Psicosis inducida por el abuso de la ayahuasca: un caso clínico

Palabras clave:
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RESUMEN

La ayahuasca es una bebida psicotrópica preparada a través de la cocción de plantas de la cuenca amazónica que tiene muchos efectos psicofarmacológicos no del todo estudiados. Algunos de esos efectos son usados como tratamiento de diversas patologías. Sin embargo, existen efectos secundarios de la ayahuasca que deben ser tenidos en cuenta, entre ellos psicosis inducida por ayahuasca. Reportamos un caso de un paciente que, tras

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autoadministración de ayahuasca, presentó un episodio psicótico y que fue satisfactoriamente tratado con antipsicóticos. Dada el uso cada vez más frecuente de ayahuasca en las sociedades desarrolladas, el caso actual resalta las necesidades de entender, regular e investigar el uso de la ayahuasca. Además, crear conciencia de los potenciales riesgos del uso de ayahuasca a través de la psicoeducación debería ser implementado.

Introduction

Ayahuasca (also known as yagé) is a psychotropic infusion prepared through boiling the bark of *Banisteriopsis caapi* and leaves of *Psychotria viridis* (occasionally, other plants of the same family).[1,2] The hallucinogenic properties of ayahuasca are mainly related to N,N-dimethyltryptamine (DMT); this molecule is present in *Psychotria viridis*,[1,2] although it is orally inactive due to first-pass metabolism by monoamine-oxidase A (MAO-A).[3,4] *Banisteriopsis caapi* contains β-carbolines such has Harmine and Harmaline,[1,5] these alkaloids act as MAO-A inhibitors, inactivating MAO-A in the liver and intestines, enabling DMT through this route to act on the central nervous system (CNS).[1,3] While *oral* use of DMT requires β-carbolines (or other MAO-A inhibitors) to be functional, both the *smoked* and *injected* use of DMT have significant psychotropic activity without any other substance.[1] Ayahuasca produces bioelectrical, neurochemical and metabolic changes in the CNS.[2,6–8] Serotonergic system is one the main targets of ayahuasca, it has been also described interactions with Dopamine, Glutamate, and Noradrenalin receptors.[3,8]

The original use of ayahuasca was as a ritualistic beverage by cultures of the Amazon basin.[1,2,5] In a close relationship with its origin, it has been reported that relatively new syncretic churches in South America use ayahuasca in sacramental rituals.[1,5] Besides, recreational and therapeutic use in developed societies is rapidly increasing, and it is currently possible to acquire through the Internet dried samples of the plants and organized ayahuasca trips.[5]

Therapeutic uses of ayahuasca have been studied in several syndromes/disorders such as anxiety, depression and substance use disorders (SUD).[1,7,8] There are different models that attempt to explain how ayahuasca's therapeutic properties could work in SUD, namely the biochemical, psychological, physiological and transcendental theories.[8]

Ayahuasca causes several psychopathologic effects such as: *Phosphenes* and "eyes-closed" colored imageries, reveries, auditory hallucinations, dissociative states, altered thought processes, intensification of emotions, and anxiety.[1,4] The initial effects begin at around a half hour after oral intake and the total duration is roughly 360 minutes.[4] Several adverse reactions and side effects are described,[4,6,9] being psychosis one of the main psychological side-effects reported.[6,9] Cases of psychosis in which ayahuasca could be involved have been previously documented.[9] Psychosis susceptibility and familial background of mental disorders have been proposed as risk factors for developing a ayahuasca-induced psychotic episodes.[9] Nevertheless, some authors propose that ayahuasca is safe when is taken in a supervised and controlled settings,[9] highlighting a reported low incidence of ayahuasca-induced psychosis compared to the total overall users of ayahuasca.[6,9]

We aim to report a patient who previously underwent targeted therapy with ayahuasca for SUD and depression, but subsequently developed an abusive and uncontrolled use of ayahuasca with a self-medicating intention for his depressive symptoms, finally suffering a psychotic episode.

Case report

A 41-year-old male reported ayahuasca consumption in a ritualistic setting with aims to treat cocaine addiction when he was 25 years old. Since then, he reported sporadic use of ayahuasca orally in different contexts and even though generally through "controlled therapeutic rituals". Between ages of 27 and 30, he used ayahuasca at home, in rituals organized by himself obtaining it on the Internet attempting to palliate chronic depressive symptoms. During these "rituals" he experienced moderate affective symptoms, psychotic phenomena and behavioral changes (e.g. sensation of losing the limits of his body, fragmentation of body parts, fear of losing control, auditory hallucinations, and high anxiety), although these symptoms disappeared after each consumption. He also reported experiencing psychotic-like symptoms during cocaine intoxications in the past.

The patient had stopped ayahuasca use when he was 30 up until the month preceding the current episode. He reinitiated ayahuasca use, once a week for a month in his home without supervision, in order to alleviate emotional distress following a relationship. The last time he consumed was 10 days prior to his admission into the emergency room, experiencing thenceforth episodes of restlessness, unspecified fears, delusions of reference, severe mood fluctuations (ranging from uncontrollable crying/sadness to irritability), sensory-perceptive distortions, somaesthetic hallucinations and simple auditory hallucinations. No significant alterations were found in his blood panel, EKG or CT scan. Urine drug test was negative for cannabis, cocaine, opiates, methadone, methamphetamine and alcohol. After a Mental State Examination, he was admitted into a psychiatric inpatient unit. While inhospital, over the course of a single day frequent oscillations were observed between social isolation and hyperfamiliarity, as well as between severe anxiety episodes and subjective "peaceful" states. Besides, his discourse mainly

focused on a strong conviction of "spiritual healing" through ayahuasca use, accompanied by mystical thinking, exacerbated by kinaesthetic perceptions that the patient associated with what he defined as "astral projections" and "personal regeneration" as a consequence of his last ayahuasca consumption.

Antipsychotic medication was prescribed to treat his symptoms, with an increasing dosage of olanzapine PO up to 30 mg daily. Sensory-perceptive distortions and delusional thought decreased, but excessive sedation with Olanzapine led to its substitution with Paliperidone, which was scaled up to 9 mg daily. To achieve a better adherence, paliperidone palmitate was proposed and accepted. Upon remission of the acute symptoms, the patient was finally discharged with follow-up care in a SUD outpatient unit. The medication prescribed at the discharge was palmitate Paliperidone 100 mg/monthtly and quetiapine 200 mg/night.

Discussion

Ayahuasca-induced psychosis could be related to serotonin and dopamine system interactions,[3,8,9] and have been described as unusual when ayahuasca is used in controlled settings.[9] However, this case is a sample of an emerging and ongoing tendency in developed societies regarding use ayahuasca as an alternative therapy.[7,8] The patient originally started treatment through organized sessions with a therapist, after which he moved on to an abusive self-led consumption with ayahuasca obtained via online providers, justifying the use of the substance as a self-medicating endeavor for his depressive symptoms.[7] It is remarkable how his experience was not limited to psychotic-like symptoms similar to the psychological effects usually described with ayahuasca use,[1,4] but escalated to an experience of delusions and paranoid interpretations which persisted well after the effects of the substance wore off. One systematic review on ayuahuasca-associated psychosis described that its incidence is low, and in relation to the current case, several personal and familiar history factors are involved (such as concomitant use of other drugs).[9] Interestingly, some authors argue that people who have previous good experiences with ayahuasca continue its use, and, conversely, subjects with bad experiences stop using it in early stages; in this case, the patient used the substance even after having experienced previous undesirable effects.[9]

No specific treatment currently exists for acute ayahuasca intoxication, apart from symptom specific supportive therapy with benzodiazepines for acute distress and agitation.[3,10] Antipsychotic medication has been used in ayahuasca-associated psychosis with good response rates in case reports.[9]

The possibility of developing ayahuasca dependence (as well as to other hallucinogens) is a debatable issue,[6] although this case shines a light on the risks of severe ayahuasca abuse in certain individuals and its repercussions. With untested and unregulated "treatments" currently existing, and an evident lack of research based on evidence, further enquiry is needed on the potential use of ayahuasca as a therapeutic tool. This should take into account, amongst others, factors like dosage, risk-benefit assessment, and contraindications based on medical history (our patient, as an illustrating example, had previously experienced psychotic symptoms with cocaine). This case highlights the potential risk for psychosis of ayahuasca use, and although psychotic episodes have been described as infrequent, these symptoms generate important repercussions and therefore should always be taken into account.

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Raul Felipe Palma-Álvarez received compensation to give talks for Exeltis, Lundbeck, MSD and Mundipharma. No other relevant affiliations or financial involvement with any organization or entity that has a financial interest in or is in financial conflict with the subject matter or materials discussed in the manuscript apart from those disclosed.

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