



Case Report

Ayahuasca-induced psychosis: A case report

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ABSTRACT

Psychosis induced by ayahuasca is a rare occurrence. However, due to an increase in the access and distribution of this substance, it is necessary to highlight the cases in which it occurs. We describe the case of a 26-year-old man who was admitted to the psychiatric service after seven months of changes in behaviour, delusions and the subsequent exacerbation of symptoms, after participating in a ritual ceremony during which he consumed an ayahuasca concoction for the first time. Initially, he required hospital treatment to control the acute psychotic episode, but after tolerating and responding well to the antipsychotic treatment, he was discharged with an outpatient follow-up.

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Psicosis por consumo de ayahuasca: un reporte de caso

RESUMEN

La inducción de psicosis por ayahuasca es un evento poco frecuente. Sin embargo, debido a un aumento en el acceso y la distribución de esta sustancia, resulta menester destacar los casos en que se presenta. Se describe el caso de un paciente varón de 26 años que ingresó al servicio de psiquiatría por un cuadro clínico de 7 meses de evolución dado por cambios en el comportamiento, ideas delirantes y posterior exacerbación de los síntomas, tras participar en una ceremonia ritual en la que consumió por vez primera un brebaje de ayahuasca. Requirió inicialmente tratamiento hospitalario para controlar el episodio psicótico agudo, con buena respuesta y tolerancia al tratamiento farmacológico, lo que permitió continuar su seguimiento clínico ambulatorio.

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Introduction

Ayahuasca is a Quechua term composed of the prefix *aya*, meaning soul, spirit or dead person, and the root *waska*, which can be interpreted as vine, cord or rope. Thus it can mean “vine of the spirits”, “rope of the soul”, “cord of the dead” or “vine of death”.^{1–3} This substance has been widely used since ancient times by indigenous communities of the northwestern Amazon in countries including Colombia, Ecuador, Peru and Brazil.^{2–4}

It is prepared with the Amazonian vine *Banisteriopsis caapi* and the leaves of the bush *Psychotria viridis*. This concoction contains biologically active chemical compounds such as *N,N*-dimethyltryptamine (DMT), which acts on 5-HT_{2A} and other receptors.¹⁰ Administration thereof is associated with hallucinations, cognitive and perceptual changes, and a heavily altered sense of self and reality; this enables unconscious and subconscious thought content to be consciously exposed, accompanied by emotions and perceptions that may be overlooked in a conscious state. However, this substance is not considered addictive, as it neither stimulates compulsive consumption nor induces withdrawal symptoms.^{5,6}

Its use is associated with ritual purposes, in a magical/religious context, in pursuit of contact with the supernatural spiritual world and nearness to the sacred, and for medicinal purposes, with the aim of curing different types of diseases. It is credited with the ability to confer visions used by shamans to discover spells cast and diseases inflicted on affected persons. More than 70 South American indigenous communities use ayahuasca in the form of a hallucinogenic beverage made by preparing a decoction from the bark of this plant and mixing it with “chacrona” leaves, “chacrona” being a shrubby plant that Andean and Amazonian peoples have called *yage* since pre-Colombian times.^{1,2,6–9}

Ayahuasca is a botanical hallucinogen used in a magical/religious context by indigenous groups of the Amazon in countries including Brazil, Peru and Colombia; an estimated 20,000 people worldwide are members of Brazilian ayahuasca religions, but epidemiological data on recreational use is limited.⁴

In 2011, Lima and Tófoli published 1994–2007 reporting system results and identified 29 cases with characteristics of psychosis. They concluded that 19 were linked to ayahuasca use: four exhibited an immediate temporal relationship in individuals with no psychiatric history (first episode); five featured a relapse or recurrence and 10 involved ayahuasca use as a predisposing factor associated with others.⁵

Based on the Beneficent Spiritist Center União do Vegetal’s (UDV’s) own censuses, the incidence of new psychotic episodes would be 10.8 per 100,000 person-years. The estimated overall risk of a psychotic break per use session would be less than two per 100,000 use episodes.⁵ A 2007 review by Gable estimated the risk of a psychotic episode per use session. According to the study, in around 25,000 ritual drinking sessions over a five-year period, only 13–24 cases were documented in which ayahuasca might have been a contributing factor in a psychotic incident, representing a rate of less than 0.1% and indicating that ayahuasca

use is not a triggering event for sustained psychosis. Most of these episodes were transient in nature and resolved spontaneously.⁵

Sensation of vivid visual images; altered auditory perception; heightened thought processing; brief but intense reactions of dysphoria, disorientation and symptoms of anxiety; and sensory and motor suppression interfering with a suitable relationship between the individual and their environment can be attributed to this preparation.^{9,13,14}

Ayahuasca use for recreational purposes, in so-called “Ayahuasca tours”, offered on trips to countries such as Colombia, Peru and Brazil, is also being documented.⁷

Considering that its use is becoming widespread outside the cultural context and the worldview in which it originated, we consider this case report to be very important.

Case report

The patient was a 26-year-old man from a rural area and a member of an indigenous community in Colombia (Páez). He was single, had no children, lived with three siblings and their mother, and worked in agriculture and farming. He had been hospitalised on the mental health unit three years earlier due to behaviour consisting of paranoid delusions, visual and auditory hallucinations, insomnia, psychomotor restlessness, and heteroaggressive behaviour.

He was admitted to the psychiatry department due to signs and symptoms for seven months consisting of behavioural changes and delusions, with subsequent exacerbation of his symptoms accompanied by aggressive behaviour towards his relatives and complex hallucinations. He stated that he was “tormented by a spirit”. He also reported that he decided to participate in an indigenous healing ceremony, presided over by a shaman, in which for the first time in his life he consumed a dark brown concoction with a bitter taste and earthy appearance called ayahuasca or *yage*. In the course of this ceremony, he experienced vivid visual delusions and hallucinations in which it was revealed to him that one of his neighbours had given him a potion, with subsequent infiltration of his body by an evil spirit. His delusional symptoms, focused on the devil, and aggressive behaviours then persisted over the following days (“I am tormented by unclean spirits. They tell me things. They are in my stomach. They do not let me read the Bible. My neighbour sent that spirit to me.”), whereupon he was taken to a hospital.

In his mental examination, the patient appeared well dressed; participated actively in questioning; was disoriented to time and place but oriented to person; showed a cooperative attitude and hypoprosodia; and exhibited circumstantial, erratic language marked by bradyphasia in a normal tone with bizarre associations, delusional ideas with paranoid and mystical content, and verbal and visual auditory hallucinations. This was consistent with his illogical/coherent thought content, with misguided judgement, illogical reasoning, moderate impulsiveness, anxiety and a lack of awareness of his disease and situation. Physical examination revealed no abnormalities and the patient’s vital signs were within normal limits.

The laboratory tests ordered (blood glucose, blood urea nitrogen, creatinine, complete blood count, liver panel, drug testing, serology, human immunodeficiency virus [HIV] and thyroid-stimulating hormone [TSH]) were in normal ranges. Neuroimaging (simple computed tomography of the head) did not reveal any structural abnormalities in the patient's brain. Antipsychotic treatment was indicated with biperiden in 2-mg tablets every 8 h, clozapine 100 mg/12 h, risperidone 2 mg/8 h and sertraline 50 mg/24 h, and haloperidol and midazolam at doses of 5 mg/12 h in case of psychomotor agitation. After drug treatment was started, the patient's symptoms were seen to improve, with him exhibiting a modulated affect, attenuated illogical/coherent thinking with paranoid delusions, absence of sensory/perceptual alterations, language with a normal tone and flow of speech, normal motor behaviour, still-weakened judgement and reasoning, and poor introspection and prospecting. Medical discharge and outpatient follow-up were considered in light of the patient's favourable clinical course.

Discussion

We report the case of a patient with a history of episodes with paranoid delusions, visual and auditory hallucinations, insomnia, psychomotor restlessness, and heteroaggressive behaviour. In a context of ayahuasca use, this patient showed exacerbation of his symptoms with vivid illusions and visual hallucinations, inciting us to review the literature on these two factors.

In the case reported, the clinical characteristics of ayahuasca-induced psychosis were seen to be similar to those in other published case reports: altered sensory perception, with visual hallucinations being most common, as in this case. It has also often been seen to be accompanied by psychomotor agitation, ataxia and tremors,⁵ as well as somaesthetic alterations, other sensory alterations, altered thought content, dysphoria and emotional and affective lability.^{1,6}

Likewise, some case reports have featured plasma abnormalities such as increased prolactin, cortisol and growth hormone following ayahuasca use and moderate abnormalities in measurements of autonomic system functions such as temperature, respiration and pupil measurements.⁵ However, this case report featured only abnormalities related to exacerbation of psychosis, with no other associated clinical abnormalities.

However, the incidence of psychosis after ayahuasca use has not been thoroughly elucidated. As seen, this type of presentation is rare, accounting for less than 1% of cases.^{12,13} Several studies have been conducted that included ayahuasca use as part of treatment for psychiatric disorders and psychoactive substance use, yielding positive results with a significant reduction in intensity of psychiatric symptoms after one week of use and reduction of problematic use of substances such as cocaine, alcohol and tobacco,^{5,6,9} unlike our patient, who after using the substance experienced heightening of his existing psychosis-related symptoms.

Systematic reviews on ayahuasca use and its relationship to psychotic episodes have indicated that this is a rare

phenomenon, with these isolated cases usually marked by premonitory characteristics, especially a personal or family history of schizophrenia or schizophreniform disorders, psychotic depression or mania, or ongoing manic or psychotic symptoms; such people should avoid drinking this type of beverage. Thus this case report represents an instance of an isolated presentation of psychosis that also had important antecedents that heightened the condition following the use of this substance.¹¹

In this vein, the differential diagnosis could include diagnosis of substance-induced mental disorders, based on DSM-V criteria when the characteristic symptoms of the disorder appear during use or up to one month later, as long as there is no evidence of a primary disorder²; however, as the patient had already suffered from psychiatric symptoms, a diagnosis of ayahuasca-induced schizophrenia was not seen to be founded.

This study was not without limitations. First, a blood test to detect DMT was not performed; however, the patient had consumed the concoction seven months earlier, so DMT could not have been measured as it is rapidly eliminated in urine. The composition of the product and the amount ingested were not known for certain. Similarly, it was not very clear how much time had elapsed between the use of the substance and the onset of symptoms. The patient's history of psychosis also might have played an essential role in this episode. Finally, given that few case reports exist, the extent to which this beverage exacerbated his underlying medical condition was unknown.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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