Persisting Visual Hallucinations and Illusions in Previously Drug-Addicted Patients

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Persistierende visuelle Illusionen und Halluzinationen bei zuvor drogenabhängigen Patienten

Zusammenfassung

Hintergrund: Tetrahydrocannabinol (Cannabis) und Lysergsäurediäthylamid (LSD) sind psychotrope Mittel, die die sensorische Wahrnehmung beeinträchtigen. Illusionen und Halluzinationen sind dabei meistens visuell. Am häufigsten treten die visuellen Phänomene bei Drogenmissbrauch auf. **Patienten und Methoden:** Drei zuvor drogenabhängige Patienten wurden entweder wegen Persistenz oder spontanem Wiederauftreten von visuellen Phänomenen untersucht. Zwei Patienten beschwerten sich über persistierende visuelle Illusionen (Flimmern und gestörte Tiefenwahrnehmung) während mehr als 12 Monate nach einer übermäßigen Cannabiseinnahme. Der dritte Patient war mehrfach drogenabhängig (LSD während 6 Jahren) und beschwerte sich über visuelle Halluzinationen und Palinopsie nach einem Alkoholgenuss, obwohl er jeden Drogenkonsum gestoppt hatte. **Ergebnisse:** Die Ergebnisse der neuroophthalmologischen und neurologischen Untersuchungen waren bei den ersten zwei Patienten normal. Der dritte Patient hatte ein pathologisches Gesichtsfeld und abnormale visuell evozierte Potenziale; eine Elektroenzephalographie war abnormal und wies auf eine toxische Enzephalopathie hin. **Schlussfolgerungen:** Persistierende visuelle Illusionen oder Halluzinationen können während mehrere Monate nach einem Einnehmen von Cannabis auftreten. Flash-back-Phänomene sind häufig bei LSD-Benutzern. Sie treten selten lange Zeit nach der letzten Einnahme auf (20 Jahre im hier beschriebenen Patienten). In solchen Fällen finden sich bestimmte Auslöser (Äthanol, Medikament, Anästhesie). Solche Phänomene entstehen durch die kortikale Funktionsstörung, die durch den Abusus von illegalen Substanzen verursacht wird.

Abstract

Background: Tetrahydrocannabinol (cannabis) and lysergic acid diethylamide (LSD) are psychomimetic agents that induce impairment of sensory perception. Illusions and hallucinations are mostly visual. Most frequently the visual phenomena occur in conjunction with drug abuse. **Patients and methods:** Three previously drug-addicted patients were examined for either persisting or spontaneously recurrent visual phenomena. Two patients complained of persisting visual illusions (vibrations, dyskinetopsia and impaired depth perception) during more than 12 months after an excessive use of cannabis. The third patient was a multiple drug abuser (LSD for 6 years) and complained of visual hallucinations and palinopsia following heavy ethanol intake, 20 years after stopping the use of any drug. **Results:** Results from neuro-ophthalmic and neurological examinations were normal for the first two patients. The third patient presented abnormal visual fields with preserved visual acuity; electroencephalography was abnormal, suggesting an underlying toxic encephalopathy. **Conclusions:** Persistent visual illusions or hallucinations can occur during several months after an intake of cannabis. Flash-back phenomena are frequent amongst LSD abusers. They rarely occur at long times after the last intake (20 years in the present case); when they do so, precipitating factors are often present (ethanol, medication, anesthesia). Such phenomena reflect the cortical dysfunctions that can be induced by illegal substances.

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Key words
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Background

Sensory perception is altered by the use of psychomimetic agents such as tetrahydrocannabinol (cannabis) and lysergic acid diethylamide (LSD). Hallucinations and illusions are mostly visual and tend to occur in temporal relationship with the use of such illicit substances [1,2].

Patients and Methods

Three patients complained of persisting or recurrent visual phenomena despite having discontinued drug abuse. Neuro-ophthalmologic examination including computerized visual field was performed.

Results

Patient 1: An 18-year-old woman was examined on August 25, 2000 for persistent positive visual phenomena. She described scintillating white dots when looking at a white wall or a blue sky, and she complained of „seeing shadows" on her left side. She also described the persistence of an object (palinopsia) for several seconds after switching her gaze onto a white wall. On several occasions she perceived „visual vibration" for one to two minutes upon awakening. Past history revealed that she regularly smoked cannabis from 1996 until 1999. In 1998 she was hospitalised for a comatose episode following excessive use of cannabis. Since that episode, she complained of positive visual phenomena. Despite successful drug withdrawal in 1999, the visual phenomena were still present more than one year later. Neuro-ophthalmological examination including computerized visual field and full-field ERG was normal. In May 2002 the symptoms were still present, but to a lesser degree.

Patient 2: A 25-year-old man was examined on December 31, 2001 for the persistence of visual disturbances. He noticed visual illusions described as the impression that the objects moved spontaneously in a pendular manner horizontally and from back to front. He also complained of a stroboscopic vision (dyskinetopsia) and some difficulty with depth perception. These visual problems did not allow him to continue playing badminton. Past history was remarkable for regular and intensive smoking of cannabis between 1998 and 2000. Visual symptoms appeared at the end of year 2000. Symptoms persisted and increased despite cessation of cannabis use. He also complained of memory loss and concentration was reduced. Results from neuro-ophthalmic examination including visual field, neurologic examination including electroencephalogram (EEG), and cerebral MRI were normal.

Patient 3: A 41-year-man was examined in 2001. He complained of visual hallucinations which appeared following alcohol ingestion in the setting of anxiety attacks. He described „yellow lines" superimposed on the visual environment, as well as „bizarre" shapes. Sometimes he saw attractive women on his left side. Once, he felt like „sitting on a flying dog". Upon eye closure, he saw skulls, robots, „colored and frightening things". There have never been olfactory or auditory hallucinations. Past history was remarkable for the abuse of a multitude of hallucinogenic substances between 1974 and 1980, among which LSD. In 1978 he fell in coma following LSD intoxication. From that moment on, he stopped using LSD or other illicit substances, but regular alcohol intake persisted. The visual hallucinations present in 2001 reminded him of what he had previously experienced after LSD injection. Neuro-ophthalmic examination revealed 20/20 visual acuity in both eyes. Computerized visual field results revealed a right superior arcuate defect and a left superior nasal defect, but intraocular pressure and optic nerve heads were normal. EEG abnormalities were compatible with a toxic encephalopathy.

Symptoms decreased and EEG normalized under therapy with valproic acid (1,500 mg/day). After 7 months, valproic acid was withdrawn and the patient was asymptomatic for 4 months. Following an appreciable intake of alcohol, visual hallucinations reappeared. However, EEG recording remained normal.

Discussion

Visual hallucinations or illusions are by no means benign symptoms. They can be associated with overall diminished visual performances (Charles Bonnet syndrome), dysfunction of the retrochiasmal visual pathway (tumor, stroke, epilepsy), toxic substance (medication, alcohol, recreational drug, hallucinogenic drug) or psychiatric disturbances. Our three patients had in common the presence of visual hallucinations or illusions despite the fact that they were not related to the intake of an illicit substance.

Persistence of visual hallucinations or illusions was reported after cessation of cannabis use. Symptoms consisted of stereopsis disturbances, palinopsia and dyskinetopsia, and were reported to persist up to several months [3,4]. Patient 1 complained of palinopsia and Patient 2 noticed stereopsis disturbance and dyskinetopsia, despite more than one year of abstinence for both patients.

Flash-backs (recurrence of spontaneous visual hallucinations without drug ingestion) are present in 5% of patients addicted to hallucinogenic substances, and up to 50% of hallucinogen-addict patients hospitalised in psychiatric departments [5–7]. Recurrence of visual hallucinations without drug intake is usually triggered by elevated level of blood alcohol, medication intake, anesthesia [8]. Our third patient experienced recurrence of visual hallucinations after a major intake of alcohol. However, it is unusual for flash-backs to occur 20 years after the last intake of LSD. Electroencephalographic studies demonstrated that patients

suffering from persistent visual perception disturbances following the intake of hallucinogenic substances showed abnormalities suggestive of cortical disinhibition such as can be recorded during acute LSD intake [9]. These persistent EEG abnormalities reflect the persistent cortical dysfunction which can be induced by the intake of hallucinogenic illicit substances.

Persistence or recurrence of visual hallucinations or illusions can happen in patients previously addicted to psychomimetic agents such as cannabis and LSD.

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