Medico-legal aspects of hallucinogens abuse

Essay

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بسم الله الرحمن الرحيم

﴿ وَعَلَّمَكَ مَا لَمْ تَكُن تَعْلَمُ وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيماً ﴾

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المظاهر الطبية الشرعية لاستخدام المهلوسات

رسالة مقدمة من

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توطئة للحصول على درجة الماجستير
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List of abbreviations	
5-HT	Serotonin
WHO	World Health organization
CIA	Central Intelligence of America
LSD	Lysergic acid diethyalamide
DOB	4-bromo-2,5-dimethoxyamphetamine
PCP	Phencyclidine
MDA	3,4-methylenedioxyamphetamine
DEA	Drug Enforcement Administration
PEA	Phenylethylamine
CBD	Cannabidiol
THC	Δ^9-tetrahydrocannabinol
PPA	Phenylpropanolamine
FDA	Food and Drug Administration
CRPS	Complex Regional Pain Syndrome
DAT	Dopamine Transporter
SERT	Serotonin Transporter
MDA	3,4-Methylenedioxyamphetamine
MDMA	3,4-Methylenedioxy-N-methamphetamine
DOM	4-methyl-2,5-dimethoxyamphetamine
Nexus, 2-CB	4-bromo-2,5-dimethoxyphenethylamine

List of pictures

Introduction

Definitions:

Hallucination is a sensory perception without a source in the external world. The English word "hallucination" comes from the Latin verb *hallucinari*, which means "to wander in the mind." Hallucinations can affect any of the senses; and can be classified as visual, auditory, tactile, olfactory, or gustatory hallucinations. Visual and auditory hallucinations are the most common and human figures and voices most frequently form the subject of a hallucination, but in certain types other classes of objects may be seen such as animals and insects **(Medical Encyclopedia, 2010)**.

It is important to distinguish between hallucinations, illusions and delusions, as the terms are often confused. Hallucination is distorted sensory experience that appears to be a perception of something real even though it is not caused by an external stimulus. Illusion, by contrast, is a mistaken or false interpretation of a real sensory experience; while a delusion is false belief that a person maintains in spite of evidence to the contrary and other members of his culture do not share this belief **(Nelson, 1998)**.

Historical background:

Throughout history, people have scoured their environment for plants that have medicinal value or alter consciousness in ways they find pleasurable or beneficial **(Schultes & Hoffman, 1973; and Talalay & Talalay, 2001)**. Indeed, ethnologists have even found instances of non-human animals that voluntarily ingest plants in the wild that are known to contain psychoactive

chemicals. Archeological excavations have revealed remnants of plants, paraphernalia, and artwork, attesting to the fact that cultivation and ritualized use of mind-altering substances reaches back into prehistory **(Emboden, 1979; Siegel, 1989; and Devereux, 1997)**.

The discovery of hallucinogenic properties of most well-known psychoactive plants occurred before the advent of written record-keeping. It stands to reason, however, that trial-and-error experimentation in the process of searching for new sources of food must have played a large role. Food being perennially scarce, ancient hunter-gatherers were inclined to sample a wide variety of vegetation for its possible nutritive value. Occasionally, such experimentation yielded far more than sustenance for the body and accidental ingestion of mind-altering plants almost gave rise to their future ritualized use **(Huxley, 1956; and Grinspoon & Bakalar, 1997)**.

As migration occurred, roving bands would have encountered new vegetation to be sampled. When a newly samples plant product proved not deadly but to have dramatic mind-altering properties, it would quickly be woven into the culture for magical and ceremonial purposes, usually under strict shamanic control. The word “shaman” is derived from the Siberian Tungus tribe’s word “saman” meaning “medicine man or woman”. They were used, nonetheless, for inducing visions in divination and initiation rites. Mescal beans were used, for example, in the impressive ceremony known variously as the “red dance” or the “deer dance” **(Norman, 1977; and Grob et al., 1996)**.

In all cultures, religious teachings have traditionally supplied the answers to great metaphysical questions such as the origin of the universe, the meaning of life, and what happens after death. On the other hand, the ability of drug-induced reveries to provide guidance, prophesy the future, or reveal what lies beneath mundane appearances is a recurrent theme in legends and folklore from around the world. Anthropologists have traced many religious beliefs that survive to this day to probable origins in the drug-taking rituals of ancient peoples **(Hayden, 1987; and Beyerstein, 1996)**.

Starting in the mid-20th century, psychedelic drugs have been the object of extensive attention in the Western world. They have been and are being explored as potential therapeutic agents in treating depression, post-traumatic stress disorder, obsessive-compulsive disorder, alcoholism, opioid addiction, (of which the last two are being tested to be treatable with Dextromethorphan Hydrobromide, a dissociative agent), cluster headaches, and other ailments. Early military research focused on their use as incapacitating agents. Intelligence agencies tested these drugs in the hope that they would provide an effective means of interrogation, with little success. Yet the most popular, and at the same time most stigmatized, use of psychedelics in Western culture has been associated with the search for direct religious experience, enhanced creativity, personal development, and "mind expansion". The use of psychedelic drugs was a major element of the 1960s counterculture, where it became associated with various social movements and a general atmosphere of rebellion and strife between generations **(Laing & Siegel, 2003)**.

Despite prohibition, the recreational, spiritual, and medical use of psychedelics continues today. Organizations, such as

Multidisciplinary Association for Psychedelic Studies and the Heffter Research Institute, have arisen to foster research into their safety and efficacy, while advocacy groups such as the Center for Cognitive Liberty and Ethics push for their legalization. In addition to this activity by proponents, hallucinogens are also widely used in basic science research to understand the mind and brain. However, since hallucinogenic experimentation was discontinued back in the late Sixties, research into the therapeutic applications of such drugs have been almost nonexistent, that is until this last decade where research has finally been allowed to resume **(Laing & Siegel, 2003)**.

Until the early twentieth century, hallucinatory percepts were regarded merely as intensified memory images; however, the most intense of ordinary representations do not possess the sensory vividness of the smallest sensation received from the external world. It follows that other conditions must be present besides the excitement of the brain, which is the correlate of representation. The seat of excitement is the same in actual sense perceptions and in memory images, but in the former the stimulus is peripherally originated in the sensory nerve, whereas in the latter it originates in the brain itself **(Berrios, 1995).**

Aetiology:

When a neural system becomes highly excited; a state which may be brought by various causes; it may serve to divert from their proper paths any set of impulses arising from the sense organs. Because any impulse ascending through the sensory nerves produces an effect of sensory vividness—normally, a true perception—the impulses thus diverted gives to the memory image an appearance of actuality not distinguishable from that produced

by a corresponding sense impression “a hallucination”**(Grossberg, 2000).**

Hallucination is common in patients who have suffered damage to the brain as a result of trauma, infection, or intoxication by drugs or alcohol. The association of hallucination, fearfulness, and agitation in these cases may be described as delirium. A patient who suffers from delirium tremens as a result of alcoholism may see such frightening things as red spiders or pink elephants, or he may feel that lice are crawling over his skin, because hallucination although usually visual may be experienced through any of the senses. Indeed, hallucinations in functional psychoses are more often auditory than visual. Schizophrenic patients may hear the voices of their persecutors, conversations about themselves between third parties, or their own thoughts spoken aloud (*echo de pensée*). Severely depressed patients may hear voices making derogatory remarks or threatening them with punishment or torture. Some schizophrenic patients even experience tactile hallucinations which give rise to delusional beliefs that they are being sexually assaulted. Olfactory hallucinations are sometimes perceived by severely melancholic patients who come to believe that they are giving off revolting odours from their bodies causing people to avoid them. Patients mistake hallucinations of all these kinds for perceptions coming from outside themselves, and attribute to others what they experience, usually without any testing of reality **(Leo, 1989).**

Explanations of hallucination refer to several processes. In delirium there tends to be a high level of arousal and at the same time a lowering of vigilance, impairment of perception, and impairment and reduction of reality testing. Enhancement of imagery as a direct effect of drugs or toxins on nervous tissue is

similar to that of electrical stimulation of the temporal lobes of the brain when it produces, in a conscious patient whose brain has been exposed during surgery, intense visual, auditory, or other imagery as 'strips' of experience. Poisoning by drugs may also, more importantly, increase the random activity of nervous tissue. Sensations then become blurred, to produce background noise, which is then elaborated into illusion. A person poisoned by LSD may see visual patterns like lace curtains, usually coloured **(Aghajanian & Marek, 1999).**

In some illnesses in which there is hallucination, the functioning of peripheral nerves is affected by neuritis, and as a result the patient may experience numbness, pins and needles, or itching, which is elaborated into the illusion of lice. Similarly, the result of neuritis of the retina may be spiders dangling in front of the eyes, brain-elaborations of phosphenes **(Engmann, 2008).**

In schizophrenia, the patient has typically disengaged from social activities, and the testing of reality is reduced as a result, but this does not account for his disowning of what he experiences. It has to be supposed that thoughts and feelings have been dissociated as a psychological defence in order to reduce the anxiety which would otherwise arise. The patient positively resists any reappraisal of what he has experienced **(Kapur, 2003).**

Classifications:

Among researchers in hallucinogens, debate still occurs as to the proper class name for this diverse group of mind altering substances. Because of their erogeneity, their wide-ranging ability