

Clinical neuropsychological assessment of occasional user of synthetic drugs

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Abstract

Drug use in Europe has remained stable in recent years. Although substances such as cocaine, heroin, and especially cannabis are the most popular substances among users, new synthetic substances are a growing problem (in 2008 alone, 24 new substances were identified). Many of the synthetic substances used by users today are derived from medicinal products, including G-hydroxybutyrate (GHB) which is of interest because it is associated with a wide range of neurosocial impairment effects. The purpose of this study is to show cognitive deficits in a patient with a history of GHB use. The case of a 26-year-old man who was examined interconnectedly by the addiction service of the DG psychiatric clinic of the Aristotle University of Thessaloniki, during his treatment at the pathology clinic of the general hospital AHEPA is presented.

Keywords: Neurocognitive assessment, G-hydroxybutyrate, substance use

Introduction

G-Hydroxybutyrate (GHB) is a potent central nervous system (CNS) depressant that has a history of limited therapeutic use (1). It was first manufactured in France in 1960 and was first used in medicine as an anesthetic, which had a mainly sedative / sedative effect rather than a painkiller (2). In recent years it has been linked to cases of sexual abuse by the fact that it is unknowingly added to the victim's drink and causes memory loss and inability to resist (3). Users take it because in small doses it causes euphoria, relaxation, reduced inhibitions and suppression (4). GHB overdose poisoning causes vomiting, profuse sweating, severe respiratory depression and loss of consciousness. Chronic use of the substance leads to tolerance to its effects as well as physical and psychological dependence. Other names among the users for GHB are: liquid Ecstasy, G, Georgia homeboy, somatomax, ecstasy of the poor (5). The prevalence of GHB use in both the general and student populations remains low, but targeted surveys of regular club populations typically report higher prevalence rates (6). Contributing to this is the fact that GHB is a very cheap and easily accessible substance.

GHB (gamma hydroxybutyrate)

In the USA, this substance has no recognized medical use, but in Europe it continues to be used in anesthesia, and in the treatment of insomnia, anxiety, as well as (eg in France) at various stages of childbirth, especially for protection of the baby from cell damage caused by lack of oxygen (hypoxia) (7,8). In the US, researchers have sought to categorize it as a new drug under investigation, to use it for specific conditions such as lowering cholesterol, relieving symptoms caused by alcohol and opiate withdrawal syndrome (6). Although its use as an anesthetic has been limited, its ability to induce deep sleep has made it an attractive commercial proposition for the treatment of insomnia, and thus marketed legally in Europe without a prescription (9). The type of sleep induced by γ -hydroxybutyrate (GHB) contributes to muscle growth and thus has spread to health food stores and gyms (10). At lower doses than those under anesthesia, the drug causes a state of euphoria, which also attracted the

interest of dancers in rave parties - so it became a club drug (2). However, some cases of overdose deaths led to its ban in 1990. In the UK, GHB has been linked to sexual assault and has been dubbed a "rape drug" (11).

Way of use

GHB is consumed orally and is a colorless, odorless liquid with a slightly salty taste, sold in small bottles and online (12). Its commercial packaging may have a warning label, which prevents its use with alcohol. GHB has also been released in powder and capsule form (13). Doses of 500 - 3000 mg can cause euphoria, intense experience of music and movement, increased sociability and / or poisoning. A dose of 500 - 3000 mg corresponds to about 0.5 - 3 ml of liquid, in a concentration ratio of 1 g / 1 ml (14). The effects of using GHB can last from 1 ½ to 3 hours or more, if a higher dose is consumed, or mixed with alcohol. The standard dose of pure GHB powder (1-3 grams) is usually dissolved by users in water or fruit juice. Someone who is addicted can increase the dose to 4-5 grams (15). However, it is difficult for the average user to know how strong the solution is, unless he knows the initial purity of the powder and the amount of liquid in which it was dissolved. Easy manufacture, easy supply, cheap price and immediate results are the main reasons for the rapid spread of GHB (16).

Results of the use of gamma hydroxybutyrate (GHB)

The action of GHB starts from 10 minutes to one hour after taking it, and has been reported to last up to at least 24 hours (17). GHB, like alcohol, in small doses removes social inhibitions and increases libido (18). Some users have likened its action to that of "Ecstasy", hence the name "liquid Ecstasy" (19). Even with moderate use, the user may have blurred vision, loss of balance, or dizziness (20). Some users may also suffer from burns on the lips and mouth if the solution used is not well mixed. At higher doses, the person begins to lose control, such as someone who is very drunk or taking barbiturates (21). Euphoria gives way to a strong sedative effect,

and there have been reports of nausea, vomiting, muscle stiffness, disorientation, convulsions, coma and respiratory failure. Because the drug acts very quickly, someone who has taken a large amount can fall into a coma within half an hour (22). However, although symptoms such as coma can be very frightening - especially for the patient's friends and relatives - those who have been treated for these symptoms have had a quick and complete recovery, but remember very little of what has happened (23). There are many reports of fatal mixtures of gamma hydroxybutyrate (GHB) and alcohol. We know that the risks are multiplied by the mixing of this substance with other sedatives, and are determined by the weight and sex of the person consuming it, the general state of health, etc. (24). Research has shown that long-term use of GHB can cause seizures and liver failure (23). Substance abuse can quickly lead to overdose and inability to be eliminated from the user's body with possible coma, respiratory distress and death (24).

Short-term (immediate) side effects of GHB use

The drug causes irritability, excessive speech, relaxation, loss of coordination, difficulty in attention, dizziness and drowsiness (23).

Long-term side effects of GHB use

Taking GHB for a long time causes hallucinations, constant incoherent speech, headaches and tremors. When combined with alcohol it leads to reduced seizures and loss of consciousness (23).

Factors affecting the results of GHB use

The results of the use of this substance show that they are affected by a number of factors such as the amount of the substance, its specific type, height and weight of the user, his state of health, his mood, previous experience of substance use, as well as and whether it is used concomitantly with other substances or alcohol. However, what most studies emphasize is the fact that the boundaries between the amount

of GHB consumed to produce the desired effects by the user and the amount dangerous to his health are very limited (23).

Physical and psychological dependence

As with any sedative, there is the possibility of physical and psychological dependence on GHB. Some withdrawal symptoms have been reported up to 2 weeks after use, and include dizziness, headache, nausea, vomiting, tremor, amnesia, and difficulty breathing. In small doses its effect is similar to that of alcohol. It causes euphoria, relaxation, lifting of inhibitions and drowsiness depending on the amount of substance used. It is also used by alcoholics as a self-medication to treat insomnia, depression and other alcohol withdrawal symptoms (24). In large doses, the suppressive effect of GHB can lead to sleep, coma, convulsions or even death. Systematic use of GHB causes tolerance and dependence, while substance abuse often causes insomnia, anxiety, tremor and sweating. The withdrawal symptoms that result from the psychological and physical dependence that GHB use can cause are: insomnia, anxiety, stress, tremor, sweating, loss of appetite, irritability, tachycardia, chest pain, muscle tightness, pain in sound, light and touch, discomfort (dissatisfaction), mental inactivity (24).

Case study

This is a 26-year-old male patient, a student with a history of gamma-hydroxybutyrate (GHB) use, who was examined interconnectedly by the addiction service during his treatment at the pathology clinic of AHEPA General Hospital in Thessaloniki, where he was admitted due to disturbances in the use of consciousness. Upon his request to stop using the substance, he was offered hospitalization in the psychiatric clinic of the hospital which he accepted. In the past, he was treated multiple times in pathological clinics for the same reasons. While taking a brief interview, he presented himself as a person of moderate sociability, with a lack of love life, and intense difficulty in interpersonal relationships. No cases of heterogeneous destructiveness, suicidal ideation, suicide attempt or involvement with the law were reported, while

the patient's attitude was friendly, cooperative and presented with normal speech. In particular, the patient described himself during childhood - adolescence and early adulthood as a "closed" person of low sociability, without many friends, with little participation in activities, with difficulty developing interpersonal relationships, compulsive behaviors and intense reading / engaging in philosophy. At the age of 23, trying to control his anxiety, difficulty in interpersonal relationships and inability to approach the opposite sex, he studied pharmacology and tried GHB which he was taking systematically without being able to determine exactly how often to take it. Since then, there has been a change in his behavior with improved sociability, reduced stress, increased self-confidence, as well as participation in ways of entertainment (parties, bars, clubs) from which he previously abstained. On his own - via the internet - he is fully informed about the substance, he also obtains it from the internet, and he often takes it "when the occasion requires" in irregular doses in order to stress, improve sociability, increase libido and increase its concentration as reported. In the last six months he has had episodes of disturbance of the level of consciousness (fainting episodes and episodes of psychomotor anxiety), as a result of which he has been continuously transported to the emergency departments of General Hospitals and has been hospitalized for a few days in pathological clinics. The period before his last admission to the pathology clinic of AHEPA hospital he attended an external detoxification program in a structure without interrupting or reducing the use of GHB. The patient's brain MRI showed no abnormalities. The thyroid gland ultrasound was within normal limits, while the problematic psychometric tests TAT and Rorschach showed an image of borderline mental function very close to the psychotic spectrum with forced and schizotypal elements.

Neuropsychological assessment

The main goal of the patient's neuropsychological assessment was to investigate possible cognitive deficits with the basic set of tests of the neuropsychological laboratory of the DG Psychiatric Clinic of the Aristotle University of Thessaloniki, which examines the major points of cognitive behavior

and performance. Specifically assessed: levels of attention and concentration, visual perception, learning ability, parameters of memory (verbal, visual, working, long-term), verbal functions and academic skills, visual-spatial and visual-constructive ability, abstract thinking, information processing speed, ability to form concepts, and executive functions. From the history and the course of the patient's recovery did not arise in the first year the need to go beyond the basic set of assessment of cognitive abilities and add specialized tests. Neuropsychological examination of the patient focused on memory function (Story memory, reverse number retrieval, verbal flow test), attention (stroop, direct number retrieval, TMT), and executive functions (Trail Making Test, cube test,anoi tower, Test of opto-spatial functions). His score on both immediate and long-term memory tests (story memory, reverse number retrieval, verbal flow test) appeared deficient for his age and cognitive level. Regarding the long-term retention at the specific time of the evaluation, difficulties were observed in the tests that allow the conceptual organization of the data to be memorized (memory of stories). The maintenance of mnemonic traces concerning general knowledge (declarative memory) fluctuated at normal levels. The patient's attention span fluctuated at very low levels as indicated by the slow execution of the AD part of the Trail Making Test but also by his performance in the Stroop interpolation condition. In general, the patient's performance in information processing speed, learning, memory, and executive function ranged below normal for his age and level of education at that time. In particular, the patient showed reduced accuracy and speed of turning the visual attention to a different type of reaction, difficulty in abstract thinking and parallel processing of information according to his performance in the individual tests of the neuropsychological array. The patient at the time of the neuropsychological assessment met the criteria of moderate cognitive impairment with the presence of deficits in the dimensions of attention (ability to maintain a stable behavioral response), alertness (ability to respond), and alertness (general alertness). and readiness for response). It showed deficits in the dimensions of both immediate and long-term memory. The patient showed that he maintains at normal levels the ability to perform daily activities as well as to assess / control reality.

Conclusions

Given GHB's ability to cause loss of consciousness, its use poses a high risk to users' health. It seems that the occasional use (6 months at irregular intervals) has the potential to cause damage, possibly reversible, to the psychomotor and cognitive skills of the individual. In particular, the use of GHB shows that it affects certain aspects of the intellect, mainly parameters of attention, the ability to concentrate, the speed of information processing and memory. The patient's age is a strong prognostic factor since the use of GHB is limited to young adulthood. The patient's neuropsychological pattern generally refers to typically delayed test performance, and impaired memory, concentration, and attention. The possibility of verbal formation of concepts is normal, while no particular deficiencies were observed in the visual-constructive and visual-perceptual ability. The delayed reaction-response times to the visual-tracking tests- Trail Making Test (parts A and B), as well as to the individual conditions of the Sroop test are a strong indication of a slowing down of the mental processing. Processing delay generally occurs in attention deficits and is associated with poor concentration, difficulty performing two simultaneous tasks, and deficient short-term memory. The possible improvement of the patient's deficits remains to be confirmed by neuropsychological reassessment after a period of six months of complete abstinence from substance use.

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