Case report

Whack induced psychosis: A case series

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Abstract

'Whack' is a new psychoactive substance available until recently in 'head shops'. It contains two active constituents, 4-fluorotropacocaine and desoxypipradrol. We present two case reports of subjects who developed acute psychotic states after using Whack. Both individuals displayed similar affective and anxiety symptoms in the presence of significant psychotic symptoms. Both required inpatient treatment but displayed a good treatment response to atypical antipsychotic agents. To our knowledge, this is the first published case series relating to this psychoactive substance.

Key words: Head shops; Whack; Legal highs; Drug-induced psychosis; Fluorotropacocaine; 2DPMP.

Introduction

An exponential growth in the number of head shops in Ireland was evidenced from 2008 to early 2010 with an increase from five to 113 such shops during this time.[1] A large number of products were sold in these shops and were often advertised as products such as 'bath salts' with natural ingredients listed, and messages on the products stating that they were not for human consumption.

On May 11, 2010, the Irish government moved to control the sale of psychoactive substances in head shops, commonly known as 'legal highs' by making an order declaring a specific number of head shop substances to be controlled drugs under the Misuse of Drugs Act 1977.[2] This was due to significant anecdotal and local media reports of deleterious physical and psychological sequelae secondary to their use.[3,4] On May 13, 2010, the number of head shops selling psychoactive substances had dropped to 34.[1] However, within two weeks, a new wave of legal highs were available in these head shops including the substance Whack. On the May 9, 2010 the Health Service Executive (HSE) issued an emergency warning about Whack after 40 people suffering side-effects of the drug attended Emergency Departments (EDs) or general practitioners over the preceding 10 days.[5]

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The majority of these individuals were reported to be young males in their 20s from different regions in Ireland. A large range of physical symptoms were reported including tachycardia, hypertension and an increased respiratory rate. The majority of these individuals also experienced varying levels of anxiety and at least seven individuals were reported to have experienced psychotic symptoms. However, none of these cases have been reported in the medical literature to date.

Initial analysis revealed that Whack contained a "new cocaine-type substance",[6] with subsequent analysis detecting the compound 4-fluorotropacocaine, a cocaine derivative sold in powder form,[7] and also known as 3-(p-fluorobenzoyloxy) tropane (pFBT).[8,9] More recently, another active compound, desoxypipradrol, also known as 2-diphenylmethylpiperidine (2DPMP), was found to be a constituent of Whack,[10] and has been noted to be structurally and pharmacologically related to methylphenidate and pipradrol with noradrenergic and dopaminergic reuptake inhibition properties.[11,12]

We present here two reports of individuals who presented to the Department of Psychiatry, Roscommon County Hospital in June 2010, due to psychotic symptoms, both of whom had recently used the substance Whack, which they attained in local head shops. We obtained informed written consent from both individuals.

Case No. 1

A Caucasian man in his late 20s with no previous psychiatric or medical history was referred to the department of psychiatry by his general practitioner (GP) after he presented with depressed mood, severe anxiety, insomnia and paranoid ideation, all of acute onset. Two days prior to admission, he had snorted a 0.5g of Whack which initially resulted in elation and disinhibition. On the following day, he described experiencing cravings for the same substance and subsequently consumed another 0.5g. Approximately three hours later, he described feeling increasingly anxious and agitated, with distressing feelings of guilt "for all the stupid mistakes done in [his] life" and he could not sleep because he was "very fearful of God". The following day, he became increasingly depressed and frightened and was subsequently seen by his GP who referred him to the Department of Psychiatry, Roscommon County Hospital for admission on the account of "depression and suicidal ideation".

On mental state examination, he presented as an agitated young man who was guarded and occasionally tearful, with poor eye-to-eye contact. His speech was vague and circumstantial. His mood was subjectively and objectively depressed and his affect was labile. He described excessive feelings of guilt and found it very difficult to explain or elaborate on his unusual experiences. He reported suicidal thoughts but denied any intentions or plans to self-harm. He claimed that

"demons were putting evil ideas into his mind" and because of this, he was struggling to fight against this evil. He reported persecutory ideation stating that "demons will harm [him]". He denied any perceptual disturbances. He had limited insight, as he was aware that he was distressed but was unaware that he was psychotic and he did not relate his distress to Whack consumption.

On physical examination, he was in a state of autonomic hyperactivity, evident by tachycardia and hypertension. His pulse rate was 121 beat per minute and his blood pressure was 146/97mmHg. An electrocardiogram (ECG) showed sinus tachycardia, but was otherwise normal. His routine laboratory investigations including full blood count and full blood chemistry profile were normal. Standard urine toxicology screening (testing for benzodiazepines, barbiturates, opiates, cocaine, propoxyphene, cannabinoids, amphetamines, methadone and ethanol) was negative.

He had a previous history of recreational psychoactive substance misuse including cannabis; however he had not used them in recent months and had never experienced psychotic symptoms secondary to psychoactive substance use in the past. Similarly, he denied ever experiencing symptoms of depression or thoughts of self-harm previously. He drinks up to six units of alcohol per week and denied any history suggestive of alcohol abuse in the past (according to DSM-IV criteria).

He was admitted to the psychiatric unit, kept under close observation and was commenced on olanzapine 7.5mg daily and lorazepam 1mg as required for agitation. Within 48 hours, there was a partial alleviation of his psychotic symptoms, with a resolution of his suicidal thoughts and an improved sleep pattern and insight. He maintained this gradual improvement and five days later, he was discharged home as his condition had significantly ameliorated with him denying thoughts of self harm, symptoms of depression, elation or psychosis and his speech and thought processes appeared objectively within the normal range. He was reviewed in the outpatient clinic two weeks after discharge and he and his family reported that he was "back to his normal self".

Case No. 2

A Caucasian man in his early 40s had presented to the Emergency Department (ED) after an acute episode of severe anxiety, agitation, disturbed sleep and psychosis, which began within 48 hours after using Whack.

He reported snorting 0.5g of Whack on two consecutive days. Initially he felt "happy and cheerful", but within 48 hours he developed severe anxiety and panic attacks and subsequently presented to the ED. On examination he was agitated with an elevated blood pressure of 145/92mmHg and an ECG revealed a sinus tachycardia (pulse rate of 112 beats per minute). Routine laboratory investigations including full blood count and full blood chemistry profile were normal. Standard urine toxicology screening (testing for benzodiazepines, barbiturates, opiates, cocaine, propoxyphene, cannabinoids, amphetamines, methadone and ethanol) was negative. He discharged himself against medical advice prior to psychiatric assessment. He admitted later that he thought staff and patients in the ED were talking about him.

His symptoms however deteriorated further over the course of the following three days. Family members reported that he was "depressed, paranoid and hallucinating", as he told them that "[his] thoughts could be heard by others" and that "people were laughing at [him]". He was subsequently brought by his family for psychiatric admission.

On admission, he presented with severe anxiety and agitation. He reported significant insomnia but normal energy levels. He believed that people were talking and disseminating jokes about him on the internet. He was convinced that television programmes were referring to him. On mental state examination, he was mildly disinhibited, with evident psychomotor agitation. His speech was disorganised and circumstantial and he had an anxious affect. His mood was objectively mildly elated. He described ideas of reference, persecutory delusions and feelings of guilt and self-blame but no passive death wishes or suicidal ideation. He also exhibited elementary auditory hallucinations of "noises and knock on the door", and elementary visual hallucinations of "different shapes and funny figures". He had partial insight into his condition in that as he was aware that Whack might have caused his anxiety and agitation but not his psychotic symptoms.

He fulfilled DSM-IV diagnostic criteria for alcohol abuse and also engaged in recreational use of cannabis for many years, although he denied a recent history of their usage and a standard urine toxicology screen was negative. He had no other medical or psychiatric history and he had never experienced affective or psychotic symptoms in the past.

He was commenced on quetiapine XR 100mg daily and within one day there was an improvement of his sleep pattern with a reduction of his anxiety levels. After 72 hours, quetiapine XR was increased to 150mg daily due to ongoing psychotic symptoms although his agitation and insomnia had significantly ameliorated. By day five of his admission, he denied all psychotic symptoms, appeared euthymic and calm and after five more days in hospital he was discharged home on quetiapine XR 100mg daily. At out patient follow up two weeks later he showed continued stability and no recurrence of any psychopathology.

Discussion

Both cases demonstrate a temporal relationship between the use of the head shops substance Whack and the onset of psychotic symptoms with some affective symptoms, agitation and autonomic hyperactivity. To our knowledge, this is the first published case series in the medical literature relating to this psychoactive substance.

There was a striking similarity between the two cases in symptomatology with initial elation and disinhibition followed by severe anxiety, insomnia, depressed mood, psychomotor agitation and psychosis. Reported psychotic symptoms included delusions of thoughts interference, persecutory delusions and ideas of reference. These symptoms persisted for 7-10 days after using Whack, and responded well to atypical antipsychotics. It is possible that the passage of time and a safe environment may have been sufficient to manage these two individuals, and perhaps benzodiazepines could also have been utilised instead of antipsychotic medications to manage these individuals' psychosis and agitation. We are however unaware due to the paucity of data in relation to managing "Whack-induced psychosis" which strategy would have been optimal.

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Very limited data is available in relation to the pharmacokinetics and pharmacodynamics of whack, with little or no available data at present regarding its absorption, metabolism, bioavailability, elimination half life, drug interactions or toxicity.

4-fluorotropacocaine was labelled as a 'designer drug' by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) in 2008,[9] following reports of consumption of the drug in Finland and Denmark.[8] 4-fluorotropacocaine was researched in the mid-1980s for potential neuroleptic activity and was reported to have stimulant and local anaesthetic properties.[8] This was followed by successful synthesis and radiolabelling of 4-fluorotropacocaine to study receptor binding in 1990,[13] but this was not adopted due to low radiotracing properties. 4-Fluorotropacocaine is being offered online by some chemical suppliers,[8] most of them are based in Asia.

As mentioned in the introduction, 2DPMP similarly has stimulant properties been related to methylphenidate and has noradrenergic and dopaminergic reuptake inhibition properties.[11,12]

In our case series, Whack consumption was associated with affective and psychotics symptoms similar to those associated with abuse of nervous system stimulants.[14] It is worth noting that both individuals, when tested for the presence of cocaine/amphetamines demonstrated negative findings. The emergence of such new synthetic substances raises concerns regarding how well-equipped hospitals and poisoning centres laboratories are to identify recently developed or yet unknown psychoactive substances.

A new Criminal Law Act has been introduced in Ireland to prevent the importation, sale or advertisement of new psychoactive substances created to circumvent existing regulations.[15] A recent report by Winstock and Ramsey raised concerns about the duration of time between the emergence of new synthetic substances and the inevitable but uncertain legislative response.[16] They considered price, availability, value for money and perceived legal and physiological harms as factors contributing to the attractiveness of such substances. Whilst Whack is now prohibited, it remains available online and is probably also available as a "street drug", thus continued vigilance and a high degree of suspicion in relation to its use is required in primary care, EDs and psychiatric units.

Conclusion

The psychoactive substance Whack has until recently been available in head shops and is associated with significant affective and psychotic symptoms. Both individuals reported in this case series demonstrated severe anxiety, autonomic hyperactivity and significant psychopathology and required admission in a psychiatric unit and pharmacological treatment. Whilst both individuals displayed a good response to anti-psychotic treatment; the long terms prognosis for "Whack-induced psychosis" remains unknown.

New synthetic agents are constantly been developed and can be available on the internet or as "street drugs". Standard toxicology screening may not detect these substances in the absence of pure reference materials and analytical data for novel substances. Therefore, we feel that vigilance is required on behalf of clinicians to consider Whack as a putative cause of psychotic symptoms when these symptoms are of acute-onset and have an affective and anxiety component, even if a toxicology screen is negative.

Declaration of Interest: None.

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