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Synthetic Cannabinoids Use in Elderly Patients

Nahla Mahgoub, MD and Robert C. Young, MD

Weill Medical College of Cornell University, Westchester Division, White Plains, NY

Abstract

Synthetic cannabinoids, also known as “Spice” or “K2,” are a group of recreational substances that elicit cannabimimetic effects similar to delta (9)-tetrahydrocannabinol, the primary psychoactive constituent in cannabis. They are becoming a public health concern because they are toxic and they are not detected by standard urine screening tests. The largest group of users of synthetic cannabinoids are adolescent males who are polysubstance users; however, no data are available concerning use of synthetic cannabinoids in the elderly. We report 2 cases of elderly individuals who used synthetic cannabinoids and were admitted to a psychiatric hospital, and we discuss biopsychosocial factors that may have contributed to abuse of these substances in the elderly.

Keywords

synthetic cannabinoids; cannabinoids; cannabis; elderly substance abuse

Introduction

Synthetic cannabinoids, also known as “Spice” or “K2,” are a group of recreational substances that elicit cannabimimetic effects similar to delta (9)-tetrahydrocannabinol, the primary psychoactive constituent in cannabis.¹ They are becoming a public health concern due to their toxicity and the fact that they are not detected by standard urine screening tests.²

The largest group of users of synthetic cannabinoids are adolescent males who are polysubstance users.³ However, no data are available concerning the use of synthetic cannabinoids in the elderly. We report the cases of 2 elderly patients who used synthetic cannabinoids and were admitted to a psychiatric hospital, and we discuss the biopsychosocial factors that may contribute to the abuse of these substances in the elderly.

Case Descriptions

Case 1

The patient was a 65-year-old man with diagnoses of bipolar disorder and polysubstance abuse and a history of multiple psychiatric admissions. He was unemployed, divorced, and homeless, and he had a daughter with whom he was not in contact. He was admitted for

Please send correspondence to: Nahla Mahgoub, MD, Clinical Assistant Professor of Psychiatry, Weill Cornell Medicine, 1300 York Avenue, New York, NY 10065 (namd06@aol.com).

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treatment of grandiose delusions and manic signs and symptoms (elated mood, pressured speech, increased energy level, and decreased need for sleep) that had been present for the previous 3 weeks. Urine toxicology and blood alcohol level were negative. He had lost his home 1 year before this admission and had used street K2 during that period. He reported his last use of K2 was on the day he was admitted. He also reported using alcohol and cocaine in the past. The patient was treated with risperidone 6 mg/day and divalproex 2000 mg/day; his serum valproate level was 91µg/mL after 10 days on medication. His manic symptoms and delusional thinking improved with treatment. He was referred to substance abuse rehabilitation and he continued taking his medications.

Case 2

The patient was a 66-year-old retired man who was married with no children and lived with his wife; he had no personal or family psychiatry history. He presented with persecutory delusions that had been present for the past month, and he also had tachycardia and hypertension. There were no signs of dementia, delirium, depression, or mania. Blood work-up and cerebral computed tomography were unremarkable and urine toxicology was negative. The patient reported a history of cannabis use during his adolescence, and daily use of street K2 in the 2 months before this admission for chronic back pain that had not responded to classical analgesics. His psychosis responded well to risperidone 2 mg/day. His tachycardia and hypertension were controlled with medications. The risperidone was tapered and then discontinued after 2 weeks. The patient maintained his improvement for another 2 weeks and was referred to a pain management clinic.

Discussion

To our knowledge, these are the first reported cases of elderly patients abusing synthetic cannabinoids. In the first case, a history of mood disorder as well as nonadherence with psychiatric medications, coupled with recent abuse of synthetic cannabinoids in the context of the patient's homelessness, may have contributed to the recurrent manic episode with psychosis. Although the second patient did not have any earlier psychiatric history he had previously used cannabis in his adolescence. This patient presented with new onset psychosis and cardiovascular manifestations after abusing synthetic cannabinoids for back pain.

Two large international surveys concerning the use of synthetic cannabinoids were conducted between 2011 and 2012.⁴ Among the 15,357 participants in the surveys, 2,681 (17.5%) reported abusing synthetic cannabinoids within the past year. The majority of the abusers were single Caucasian men, with a mean age of 26 years. Almost all of them also reported alcohol and cannabis abuse. The most common route of administration was smoking. The primary reasons for using the drugs were to experience a marijuana-like high and to avoid drug detection.⁴

Synthetic cannabinoids are associated with higher rates of toxicity than delta (9)-tetrahydrocannabinol, perhaps because they have greater binding affinity for the cannabinoid receptors 1 and 2 than delta (9)-tetrahydrocannabinol.⁵ Moreover, synthetic cannabinoids act as full agonists on the cannabinoid receptor 1, unlike delta (9)-tetrahydrocannabinol which is

a partial agonist for this receptor. Cannabinoid receptor 1 is distributed in the cerebral cortex, hippocampus, amygdala, basal ganglia, cerebellum, thalamus, and brainstem.⁵

On the basis of studies using Texas Poison Control records, the most commonly reported acute physical side effects of synthetic cannabinoids are nausea, vomiting, shortness of breath, hypertension, tachycardia, chest pain, muscle twitches, catatonia, and cardiovascular and renal toxicities.^{1,4} Acute behavioral manifestations include anxiety, agitation, psychosis, and suicidal ideation.^{1,4} Physical withdrawal symptoms can occur after discontinuation of synthetic cannabinoids; these include drug craving, elevated blood pressure, nausea, tremor, diaphoresis, and nightmares.^{1,4}

The most common psychiatric symptoms elicited by synthetic cannabinoids are auditory hallucinations, persecutory delusions, grandiosity, and irritability. Psychosis and mania occurring in association with cannabinoid abuse may be related to increased release of dopamine from the nucleus accumbens and prefrontal cortex.^{6,7}

The medical application of delta (9)-tetrahydrocannabinol (cannabis) is to treat nausea associated with cancer chemotherapy and chronic pain, and to stimulate appetite,⁸ and elderly patients may find cannabis use helpful in these medical conditions. Patients may seek synthetic cannabinoids given their greater potency and longer lasting effects.⁹ However, the psychoactive effects of synthetic cannabinoids have not been studied in the elderly, and aging is associated with physiological changes that might increase susceptibility to the adverse effects of these agents.

In the elderly, psychosocial and medical factors, such as those noted in our cases, may contribute to initiation and continued use of synthetic cannabinoids.¹⁰ A number of clinical studies have reported such associations with substance use in the elderly; these psychosocial factors include stressful life events, social isolation, a poor support system, and financial difficulties. Medical factors, particularly painful medical disorders, have also been linked to new-onset substance abuse.¹¹

Conclusions

The two cases presented here highlight the occurrence of psychosis (Cases 1 and 2) and increased bipolar psychopathology (Case 1) in the context of synthetic cannabinoid abuse. These cases, and the limited related literature, suggest the clinical complexity of these scenarios and the multidimensional perspectives that are relevant to them, including consideration of vulnerabilities such as psychosocial factors and medical comorbidities as well as the impact of aging. Clinicians treating older patients should be aware of the potential for psychiatric symptoms and medical complications in association with use of synthetic cannabinoids. Such awareness may assist early diagnosis.

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