Psychiatr. Pol. 2026; 60(2): 207–212
PL ISSN 0033-2674 (PRINT), ISSN 2391-5854 (ONLINE)
www.psychiatriapolska.pl
DOI: https://doi.org/10.12740/PP/202518

Mitigation of mephedrone craving with bupropion in a HIV-positive male who has sex with men – a case report

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Summary

Chemsex, defined as the use of psychoactive substances to sustain sexual activity or intensify the experiences associated with it, occurs primarily among men who have sex with men. This article presents the case of a 30-year-old HIV-positive man who engaged in chemsex primarily with mephedrone and, occasionally, GHB, and who subsequently developed mephedrone dependence. He sought psychiatric care because of severe drug craving, recurrent depressive and anxiety symptoms accompanying withdrawal syndromes, and fears of losing control over his addiction. A comprehensive evaluation revealed no co-occurring psychiatric disorders or other clinically significant medical abnormalities apart from known HIV infection, which was effectively controlled with antiretroviral therapy. After initiation of bupropion at a dose of 150 mg per day, improvement in mood, reduction in mephedrone craving, and a marked decrease in the frequency of chemsex were observed. This supports the hypothesis that bupropion-induced stabilization of dopaminergic and noradrenergic neurotransmission may indirectly attenuate craving for stimulants such as mephedrone. Psychotherapy introduced during the course of treatment further supported the patient in pursuing long-term abstinence. To our knowledge, this is the first case report describing successful reduction of drug craving with bupropion in an HIV-positive patient engaging in chemsex without co-occurring psychiatric disorders. This case suggests the potential utility of bupropion in reducing mephedrone craving in individuals engaging in chemsex; however, conclusions drawn from a single clinical observation should be interpreted with caution.

Key words: bupropion; chemsex; mephedrone

Introduction

Chemsex is defined as the concurrent use of specific psychoactive substances, often in group settings, to facilitate and enhance sexual experiences, predominantly among Gay, Bisexual and Other Men-Who-Have-Sex-with-Men (GBMSM). The origins of the term "chemsex" can be traced back to the mid-2000s, when it emerged in the United

Kingdom as a way to describe the intersection of recreational drug use and sexual activity in the aforementioned GBMSM community [1]. Epidemiology studies have shown a rise in the prevalence of chemsex practices, particularly in urban areas with large LGBTQ+ populations [1]. The estimated prevalence of chemsex ranges from 3% to 42% among GBMSM [2]. Most recent studies describing the phenomenon in Europe estimate the prevalence as 16% [11–21%] in the aforementioned population [3]. The main reasons reported by GBMSM to engage in chemsex are enhancing sexual sensations and performance, achieving improved mental state after taking certain substances, tackling negative thoughts and feelings, and social motivations stemming from identification with a group [4].

Substances used during chemsex primarily include central nervous system stimulants, as well as individual substances from other groups, such as CNS depressants and erectile dysfunction medications. The most common drugs are gamma-hydroxybutyric acid (GHB), gamma-butyrolactone (GBL), 1,4-butanediol (1,4-BD), mephedrone, cocaine, methamphetamine, phosphodiesterase type 5 inhibitors, and alkyl nitrites [5].

This case report presents the treatment of a 30-year-old HIV-positive male engaging in chemsex with mephedrone and GHB since 2019, initially to reduce the anxiety associated with entering new relationships and to enhance the sexual experience. Over the following years, the patient developed mephedrone dependence syndrome, which was the main reason for seeking psychiatric help.

Case presentation

The patient, a 30-year-old male with an HIV infection diagnosis, under stable and effective antiretroviral therapy (dolutegravir and lamivudine), presented at a psychiatric outpatient clinic for the first time in April 2024. He has never received psychiatric treatment or had psychotherapy before. At the time he was single and living alone, and was working in the financial sector. On the first visit he reported long-standing chemsex behaviors involving mostly mephedrone and occasionally GHB, initiated in 2019. The patient assured that he obtained the substances from the same, verified vendor. In addition, he declared the periodic use of dedicated urine colorimetric strip tests to confirm that he was only taking the substances in question. Episodes of chemsex were initially frequent but have decreased in the past year to monthly use due to his increasing concern over his perceived loss of control and intense drug cravings, accompanied by recurrent symptoms of depression and anxiety of varying intensity, usually a few days before drug use and in the course of an abstinence syndrome. The patient also described one episode of possible transient psychotic symptoms – mild paranoia-like thoughts and unwarranted fear of others – that happened in 2021 after using a larger dose of mephedrone than usual, which resolved without intervention after a couple of hours; he was increasingly concerned about a possible recurrence of these symptoms. At the first consultation, he expressed a desire to pursue pharmacotherapy to alleviate his cravings, improve his mood, and regain personal and professional stability. He identified total abstinence from drugs as his ultimate, long-term goal. He denied other mental and physical problems besides those described above.

Treatment

A comprehensive diagnostic assessment, including psychiatric, psychological, physical, and laboratory evaluations, revealed no significant physical health abnormalities or specific psychiatric comorbidities at the time of the assessment. The baseline urine test did not reveal the presence of the most commonly used drugs in the patient's body, that is, tetrahydrocannabinol, benzodiazepines, amphetamines, cocaine, and opioids; however, the test did not include cathinones such as mephedrone. Two symptom scales were used to assess the initial intensity of depression and anxiety symptoms: the patient scored 7 points on the Patient Health Questionnaire (PHQ-9) and 6 points on the Generalized Anxiety Disorder 7-item scale (GAD-7). He related these symptoms to an increased drug craving he had faced two days earlier. These questionnaires were used at subsequent follow-up visits to assess the severity of psychopathological symptoms and the patient's general mental state in the course of treatment.

The initial severity of drug craving was rated by the patient as 8 on a 10-point scale. Following a discussion of pharmacotherapy options and obtaining the patient's consent to use the off-label medication, bupropion at 150 milligrams daily was initiated in May 2024. In addition to the expected therapeutic effect, its lack of known interactions with the antiretroviral drugs the patient was taking was also taken into account when choosing a treatment option.

During a follow-up in July 2024, the patient reported high satisfaction with bupropion's effects, noting improved mood, energy, and decreased cravings, particularly during the evening, which he previously identified as the most challenging period. He reported only one chemsex episode since starting bupropion, indicating it was a conscious choice rather than a compulsive need. Psychological metrics showed significant improvement, with a reduction in depressive symptoms (PHQ-9: 1) and anxiety (GAD-7: 2), as well as craving intensity (4 on a 10-point scale). Additionally, after encouragement from the physician, the patient began regular sessions with an addiction therapist, further supporting his recovery process.

By October 2024, the patient reported a sustained improvement in psychological well-being and functionality, with stable sleep, appetite, and another single, self-limited chemsex episode. He rationalized it, noting the absence of compulsive urges and a more effortless ability to stop. Psychological assessments indicated minimal depressive symptoms (PHQ-9: 3) and stable, low intensity of anxiety symptoms (GAD-7: 2). The patient rated the severity of craving at 2 on a 10-point scale. Bupropion and ongoing psychotherapy were continued. By the time of the last follow-up visit, the patient had had ten psychotherapy sessions with an addiction psychotherapist, reporting additional benefits of cognitive restructuring and skill-building to manage cravings and triggers. The patient maintains a desire to achieve complete abstinence from drugs in the course of treatment.

Throughout the whole treatment period, the patient's somatic health was stable, antiretroviral treatment was not interrupted, and the lymphocyte count remained within normal limits. He remained under the constant care of the infectious disease clinic.

Discussion

This case underscores bupropion's potential benefit in reducing substance cravings and promoting abstinence from chemsex-related mephedrone use. Bupropion, an antidepressant and smoking cessation drug, is a frequently studied substance for its craving-relieving properties of drugs classified as stimulants [6–8]. Chemically, bupropion is a beta-ketone, i.e., it belongs to the same chemical group as mephedrone and its derivatives. It demonstrates moderate affinity for dopamine and norepinephrine transporters (DAT and NET), with minimal action at serotonin transporter (SERT). Additionally, it acts as an antagonist at nicotinic acetylcholine receptors, which is partly responsible for its efficacy in smoking cessation but is unrelated to its direct effects on craving reduction for stimulants [9, 10]. Conversely, mephedrone binds with high affinity to NET, followed by lower affinity for DAT and SERT [11]. The serotonergic effect differentiates mephedrone from other stimulants, and underlies its entactogenic properties, often described as a combination of stimulant and empathogen effects akin to 3,4-methylenedioxymethamphetamine (MDMA) [12].

The differences in pharmacological action highlight why bupropion's effect is likely indirect, modulating craving through dopaminergic and noradrenergic stabilization rather than mimicking mephedrone's potent and immediate reward-inducing effects [13, 14]. Despite bupropion's anti-craving properties described above, only one case of a chemsex patient addicted to mephedrone, who was successfully treated with bupropion, has so far been described. What may have significantly affected the course of treatment, however, was this patient's confirmed diagnosis of depressive disorder [2]. In addition, there is a lack of information in the literature on the efficacy of mephedrone addiction treatment in seropositive patients on antiretroviral treatment. This case report is the first to describe the successful reduction of mephedrone craving symptoms with bupropion in an HIV-positive chemsex patient who was not diagnosed with any co-occurring psychiatric disorder.

The undoubted limitations of this study include the lack of unequivocal certainty about the type of psychoactive substance the patient was taking, as well as doses taken in one go. Because of the technical and financial limitations, the possible presence of the drug in the body was also not monitored with laboratory tests throughout the treatment. Due to the lack of adequate specific psychometric tools, the severity of mephedrone craving had to be based only on the patient's highly subjective assessment. In addition, the impact of psychotherapeutic interventions on improving the patient's clinical condition cannot be overlooked. Consequently, it is impossible to determine whether a similar effect could have been achieved with bupropion psychopharmacotherapy alone as the sole treatment modality. Despite that, this patient's experience suggests that bupropion may aid in attaining harm reduction in chemsex-engaged, HIV-positive individuals.

Conclusions

Bupropion may be effective in reducing substance use cravings and improving mental health outcomes for individuals involved in chemsex using cathinone derivatives. This is especially important given the lack of mephedrone craving-reducing drugs with proven efficacy. Further studies are recommended to assess its broader applicability in managing substance use within this population.

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