

What to do when adolescents with ADHD self-medicate with bath salts

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Designer drugs are rapidly making inroads with young people, primarily because of easier access, lower overall cost, and nebulous legality. These drugs are made as variants of illicit drugs or new formulations and sold as “research chemicals” and labeled as “not for human consumption,” which allows them to fall outside existing laws. The ingredients typically are not detected in a urine drug screen.

Notoriously addictive, these designer drugs, such as bath salts, are known to incorporate synthetic cathinones—namely, methylone, mephedrone or methylenedioxypyrovalerone (MDPV). The stimulant, amphetamine-like effects of bath salts make the drug attractive to adolescents with attention-deficit/hyperactivity disorder (ADHD).

Why do teens gravitate toward bath salts?

Adolescents with undiagnosed ADHD might self-medicate with drugs that are suited for addressing restlessness, intrapsychic turmoil, and other symptoms of ADHD. In 2 case studies, using the self-medication hypothesis, people with ADHD were more likely to seek cocaine by means of “self-selection.”¹ These drug-seeking behaviors often led to cocaine dependence, even when other substances, such as alcohol or *Cannabis*, were available.

Methylphenidate and other ADHD pharmacotherapies influence the nucleus accumbens in a manner similar to that of cocaine. These findings suggest that adolescents with ADHD and cocaine dependence might respond to therapeutic interventions that substitute cocaine with psychostimulants.¹

Bath salts fall within the same spectrum of psychostimulant agents as methylphenidate and cocaine. MDPV approximates the effect of methylphenidate at low doses, and cocaine at higher doses. It often is marketed under the name “Ivory Wave” and could be confused with cocaine. Self-administration of MDPV can induce psychoactive effects that help alleviate ADHD symptoms; adolescents might continue to experience enhanced concentration and overall performance.² Also, because of the low cost of “legal” bath salts, they are an appealing alternative to cocaine for self-medication.

Managing the sequelae of bath salt intoxication

Bath salts may produce sympathomimetic effects greater than cocaine, which require a proactive approach to symptom management. A medley of unknown ingredients in bath salt preparations makes it difficult for clinicians to gauge the pharmacological impact on individual patients; therefore, therapeutic interventions are on a case-by-case basis. However, emergencies concerning amphetamines and amphetamine analogues and derivatives often have similar presentations.

continued

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Adolescents with undiagnosed ADHD may use bath salts or other drugs that address untreated symptoms

Cardiovascular effects. MDPV-specific urine and blood tests conducted on patients admitted to the emergency room showed a 10-fold increase in overall dopamine levels compared with those who took cocaine. As a sympathomimetic, high doses of dopamine are responsible for raising blood pressure and could lead to the development of pronounced cardiovascular effects.^{3,4}

Agitation. Clinicians generally are advised to treat agitation before providing a more comprehensive assessment of symptoms. Endotracheal intubation often is required for adequate control of agitation. Bath salt-induced agitation often is treated with IV benzodiazepines.^{4,5} Monitor patients for excessive sedation or new-onset “paradoxical agitation” as a function of ongoing benzodiazepine therapy. Clinicians also may choose to co-administer an antipsychotic with benzodiazepines, although the practice is not universally encouraged for agitation control.

Mephedrone produces a delirious state in conjunction with psychotic symptoms. Antipsychotic therapy has been suggested for addressing ongoing agitation.⁶

Tachycardia. Symptomatic treatment of tachycardia involves beta blockers, such as labetalol. Nitroglycerine has evidence of efficacy for chest pain associated with cocaine intoxication; however, it is unclear whether it is effective for similar drugs of abuse.⁴

Multi-organ collapse caused by MDPV necessitates aggressive intervention, including prompt dialysis. Carefully evaluate the patient for the presence of organ-specific insults and initiate supportive measures accordingly. Pronounced agitation with hyperthermia might portend severely compromised renal, hepatic, and/or cardiac function in MDPV users.⁷ Those who present with MDPV intoxication and concomitant renal injury seem to benefit from hemodialysis.⁸ Repeat intoxication events may yield a presentation of acute renal injury replete with metabolic derangements, including metabolic acidosis, hyperuricemia, and rhab-

domyolysis.⁹ Thorough patient assessments and interventions are useful in determining long-term outcomes, including issues pertaining to mortality.

Confronting an epidemic

Adolescents are quickly adopting designer drugs as a readily accessible form of recreational “legal highs.”¹⁰ Public awareness and educational initiatives can bring to light the dangers of these substances that exert powerful and, sometimes, unpredictable psychoactive effects on the user.

Self-mutilation and suicidal ideation also have been documented among those who ingested bath salts. These reports appear to be escalating across Europe and the United States. On a national level, U.S. poison centers have reported an almost 20-fold increase in calls regarding bath salts between 2010 and 2011.⁵ It is of utmost importance for clinicians and emergency personnel to familiarize themselves with the sympathomimetic toxidrome and management for bath salt consumption.

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