A Trip on “Bath Salts” Is Cheaper Than Meth or Cocaine But Much More Dangerous

Anita Slomski

BATH SALTS, THE PSYCHOACTIVE DESIGNER street drugs that emerged in the United States in 2010, have left a trail of bizarre and alarming reports: the man who slashed himself to remove the “wires” in his body; the mother who left her “demon-ridden” 2-year-old in the middle of a highway; the 21-year-old son of a family physician who, after snorting bath salts once, shot himself following 3 days of acute paranoia and psychosis, including hallucinations of police squad cars and helicopters lined up outside his house to take him away.

The fine powder in small packets doesn’t even resemble the large crystals intended for a soak in the tub. The drug merely borrows the name of an innocuous product so it can be sold openly.

“Take all the bad attributes of ecstasy, PCP, LSD, cocaine, methamphetamine: lump them together, and that’s what you get with bath salts,” says Mark Ryan, PharmD, director of the Louisiana Poison Center and assistant professor of clinical emergency medicine at Louisiana State University Health Sciences Center in Shreveport.

In late 2010, as Chinese suppliers began shipping the raw ingredients of illicit bath salts to the Port of New Orleans, Ryan found himself at the center of a widening outbreak of cases of intoxication from what he calls “the worst drug I’ve seen in 20 years.” By December 2010, the American Association of Poison Control Centers reported 304 cases of bath salts intoxication across the country. In 2011, poison centers fielded 6138 calls from hospital emergency departments for advice on how to treat bath salts abuse.

Sold under names such as White Lightning, Cloud 9, or Ivory Wave, bath salts represent a category of illicit drug that typically contains combinations of various synthetic cathinones, including 3,4-methylenedioxypyrovalerone (MDPV), phenethadrone, and methylene. People were abusing a synthetic cathinone in Russia and eastern Europe for several decades before the drug appeared in western Europe and the United Kingdom in the 2000s. And cathinone, an alkaloid derived from east Africa’s khat plant, has been chewed by people for hundreds of years for its stimulant effect.

Promoted as providing a “legal high” that can escape detection in drug tests, bath salts are intended to mimic the hallucinogenic and euphoric highs of methamphetamine or cocaine. At lower doses, they’ve also been marketed as a substitute for methylphenidate (Ritalin) to sharpen mental concentration and as an aphrodisiac. Adding to the attraction is the cheap price; a 200-mg package of bath salts—which may be 3 hits—sells for as little as $15 to $20.

“Bath salts are basically amphetamine derivatives and carry all the same cardiovascular risks,” which include hypertension, tachycardia, hyperthermia, diaphoresis, seizures, arrhythmias, and respiratory distress, says Louis Nelson, MD, professor of emergency medicine, New York University School of Medicine, New York City.

“And they can be deadly for people with underlying cardiovascular disease.” Cases of myocardial infarction, stroke, cerebral edema, coma, cardiovascular collapse, and death have been reported in people using bath salts. The effects of the drugs also vary based on the route of administration; they can be swallowed, snorted, injected, or inserted into the rectum or vagina.

A DANGEROUS DRUG THAT LINGERS

The most worrisome effects are the extreme neurological and psychiatric changes—paranoia, terrifying hallucinations, psychosis, self-destructive and violent behavior—that occur in users of bath salts. Despite these effects, some

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users continue to use the drugs. “They say, ‘This is the worst high I’ve ever had in my life, but the cravings are so bad I keep going back and taking it,’” said Ryan.

“Compared to a drug like ecstasy, bath salts are much more dangerous,” says Bruce Goldberger, PhD, professor and director of toxicology at the University of Florida College of Medicine in Gainesville. “Kids are ending up in psych wards bound with restraints because they are going to do harm to themselves and to others.” Goldberger speculates that the drug may trigger schizophrenia or acute psychosis in young people with underlying disease. “We know there have been dozens of people in Florida in the last 2 years who have died from using bath salts or related compounds due to suicides, overdoses, and vehicle crashes; others taking the drug have committed homicides.” Moreover, the effects are long lasting. “People have been hospitalized for 2 weeks even though they’ve been treated with strong sedatives,” says Ryan. In a case study Ryan published of 236 patients who had abused bath salts and were treated in emergency departments from January 2010 through February 2011, 21% were admitted to critical care and 12% to psychiatric units (Spiller H et al. Crit Care Med. 2011;39[6]:1548-1554).

The enduring high and extreme behavior may stem in part from the insidious combination of the compounds in bath salts. While mephedrone acts like methamphetamines in increasing dopamine concentrations, MDPV mimics the way in which cocaine inhibits the reuptake of dopamine, resulting in the brain staying flooded with dopamine, according to research by Louie De Felice, PhD, professor of physiology and biophysics at Virginia Commonwealth University School of Medicine in Richmond. “But it’s worse than that,” says De Felice, who is beginning to study bath salts’ dopaminergic action in rats. “MDPV is more potent than cocaine almost by a factor of 10, and when it binds to dopamine transporters, it doesn’t let go when you take the drug away, which is unlike cocaine.” Consequently, neurotransmitters remain out of balance, and the bath salts user can’t escape from the high.

The long-term neurological effects of bath salts are likely to be as damaging as those of methamphetamines and cocaine—or worse. “Reactive oxygen species, the toxic by-products of methamphetamine and cocaine, eventually kill dopaminergic neurons,” says De Felice. “We don’t even know how many membrane proteins in the brain are affected by MDPV, the worst component of bath salts.”

ILLEGAL BUT EASY TO FIND

In July, President Obama signed legislation that adds MDPV and mephedrone, along with 29 other compounds used to produce synthetic marijuana and hallucinogens, to the controlled substances listed as Schedule 1 drugs. And although several states had acted earlier to make the components of bath salts illegal, the drug was easily obtained at gas stations, adult bookstores, convenience stores, smoke shops, head shops, and truck stops. Two weeks after the federal ban went into effect, Drug Enforcement Administration agents seized 167,000 packets of synthetic cathinones and 4.8 million packets of synthetic cannabinoids in the first nationwide law-enforcement strike against the synthetic designer drug industry. The 24-hour raid in July involved 109 US cities and resulted in 91 arrests.

But bath salts continue to be sold on the Internet and in retail stores, camouflaged under names such as stain remover, research chemicals, plant food, and insect repellent. “The ban might make people who thought bath salts were legal stay away, but it isn’t going to stop people who really want access to them,” says Nelson.

In addition, drug makers can easily skirt the ban on MDPV and mephedrone by turning to other cathinone derivatives, of which there are many. “The game with this stuff is that the labs make it change the ingredients, the packaging, the name, and the color to create confusion so it can’t be controlled,” says Ryan.

So far this year, fewer emergency departments are calling poison centers for advice on treating bath salts abuse—2468 calls as of October 31 compared with 5284 calls for the same period in 2011—but “the decrease in numbers may be giving us a false sense of security,” says Ryan. “Poison centers get called a lot when a drug is new.” As clinicians see more cases and learn how to respond, the calls drop off, he says.

CONFOUNDING THE CLINICIAN

Unlike drugs of abuse such as ecstasy, which is consistently made of the synthetic compound MDMA (3,4-methylenedioxy-N-methylamphetamine), the composition and dose of bath salts can vary tremendously, making diagnosis challenging and leading to greater risks of overdose and adverse reactions. “We tested one package of bath salts obtained from New York City and found it contained a synthetic cannabinoid and caffeine and another one from Venice Beach, California, that contained 100% lidocaine,” says Ryan. “The clinical picture will be different for each.” Immunoassay screens routinely used for drugs of abuse in emergency departments don’t detect MDPV and other components of bath salts, adding to clinical confusion.

The patient’s condition is also not a reliable guide. “Some of the symptoms can mimic medical problems such as hypertension, tachycardia, and arrhythmias rather than drug ingestion,” says Edward Ross, MD, professor of medicine, University of Florida College of Medicine, who, with Goldberger, has published a review article of bath salts intoxication (Ross E et al. Am J Med. doi:10.1016/j.amjmed.2012.02.019 [published online June 9, 2012]). “But the behavioral changes often look like psychosis.”

Benzodiazepines are generally recommended to treat the sympathetic overstimulation of bath salts, but Ross warns that administering antipsychotic medication to treat symptoms of drug-induced psychosis may lower the threshold for seizures, “which is already a concern with MDPV,” he says.
Zolpidem Increases Patients’ Fall Risk, Study Shows

Rebecca Voelker, MSJ

ZOLPIDEM, the most commonly prescribed hypnotic agent in the United States, significantly increases the risk of falls among hospitalized patients, according to a new study.

Sleep specialists at the Mayo Clinic in Rochester, Minn, compared fall rates among 4962 hospitalized patients taking zolpidem with 11 358 hospitalized patients who didn’t take the drug. During 2010, there were 131 falls among those taking zolpidem, for a fall rate of 3.04 per 100 patients. Among those who didn’t take the drug there were 81 falls, for a fall rate of 0.71 per 100.

The researchers calculated that for every 55 inpatients who took zolpidem, they could expect 1 additional fall than otherwise would have occurred. The study is published in the Journal of Hospital Medicine (Kolla BP et al. J Hosp Med. doi: 10.1002/jhm.1985 [published online November 19, 2012]).

The increased risk of falls while taking zolpidem remained significant after taking into account variables including age, sex, insomnia, delirium status, zolpidem dose, visual impairment, gait abnormalities, and dementia or cognitive impairment. The investigators noted that previous studies linked zolpidem with increased fall risk in hospitalized patients, but those studies were small and didn’t control for variables including delirium or insomnia; other studies also showed that even in healthy volunteers, zolpidem may impair the ability to maintain balance.

The Mayo Clinic is phasing out zolpidem use as a result of the study, said Timothy Morganthaler, MD, chief patient safety officer. “We are moving toward sleep enhancement techniques that are not based on drugs and which we believe are safer and probably as effective,” he said in a statement.

Morganthaler said Mayo Clinic’s overall fall rate is about 2.5 falls per 1000 patient-days. That rate is lower than that at many other hospitals, Morganthaler said, but he noted that Mayo officials haven’t been able to reduce it in recent years. “Discovering that zolpidem, which is commonly used in hospitals, is a significant risk factor for patient falls provides us with additional knowledge to help tackle this problem,” he added.