

LSD Overdoses: Three Case Reports

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ABSTRACT. Objective: In academic settings around the world, there is a resurgence of interest in using psychedelic substances for the treatment of addictions, posttraumatic stress disorder, depression, anxiety, and other diagnoses. This case series describes the medical consequences of accidental overdoses in three individuals. **Method:** Case series of information were gathered from interviews, health records, case notes, and collateral reports. **Results:** The first case report documents significant improvements in mood symptoms, including reductions in mania with psychotic features, following an accidental lysergic acid diethylamide (LSD) overdose, changes that have been sustained for almost 20 years. The second case documents how an accidental overdose of LSD early

in the first trimester of pregnancy did not negatively affect the course of the pregnancy or have any obvious teratogenic or other negative developmental effects on the child. The third report indicates that intranasal ingestion of 550 times the normal recreational dosage of LSD was not fatal and had positive effects on pain levels and subsequent morphine withdrawal. **Conclusions:** There appear to be unpredictable, positive sequelae that ranged from improvements in mental illness symptoms to reduction in physical pain and morphine withdrawal symptoms. Also, an LSD overdose while in early pregnancy did not appear to cause harm to the fetus. (*J. Stud. Alcohol Drugs*, 81, 115–118, 2020)

IN ACADEMIC SETTINGS around the world, there is a resurgence of interest in using psychedelic substances for the treatment of addictions, posttraumatic stress disorder (PTSD), depression, anxiety, and other diagnoses. Lysergic acid diethylamide (LSD) specifically showed promise in historical research (Dyck, 2006, 2008), and this interest continues today (Gasser et al., 2014, 2015). Current research protocols specify dosages that are well within the range of clinical safety (75–200 mcg; Liechti, 2017). Research with larger dosages (300 mcg or more) would present greater risk of adverse events and thus be less likely to receive approval from research ethics review. Thus, to understand the effects of extremely high dosages of psychedelics such as LSD, an examination of overdoses in naturalistic settings is required.

Case Report 1: LSD Overdose and the Consequences for Bipolar Disorder

The first case report examines an incident in which a 15-year-old female (AV) accidentally ingested more than 1,000 mcg of LSD (10 times the normal recreational dosage of 100 mcg) and subsequently experienced a significant reduction of symptoms in a previously diagnosed bipolar disorder. The information used to prepare this case report was summarized from interviews with AV, observers of the incident, AV's father, and the supplier of the LSD as well as a review of documents from two hospital admissions, am-

balance and emergency department records, and the mental health team case notes.

Trajectory of mental health concerns

AV's first contact with the mental health system was in March 1997 (at age 12), after she was referred to a community mental health youth team for "hallucinations" and behavioral problems at school. She reported having heard intermittent voices in her head for many years and a depressed mood in the context of a number of psychosocial stressors. An electroencephalogram (EEG) conducted in March 1997 was normal, with no evidence of a seizure disorder. Her initial diagnosis was unspecified psychotic disorder (with psychotic depression, bipolar disorder, and schizophreniform disorder as possible diagnoses). She was started on an antidepressant medication (sertraline) in May 1998, when she reported worsening depressive symptoms without evidence of psychosis. Her symptoms improved and stabilized until the fall of 1999, when her depression worsened. A light box (Levitt et al., 1996) was introduced in November 1999 for the treatment of a seasonal (winter) depression, and shortly thereafter she started to show signs of hypomania (decreased need for sleep, elevated mood, increased chattiness, increased productivity, and "obsessive cleaning"). The light box treatment was discontinued and the sertraline was reduced. Over the Christmas holidays, she admitted to using Ecstasy (presumably 3,4-methylenedioxy-methamphetamine [MDMA]) twice, the last time being on New Year's Eve 1999. Her hypomanic symptoms continued, and she was assessed by her psychiatrist on January 19, 2000. A urine drug screen was done that day, which was positive only for cannabis. She was diagnosed with bipolar

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II disorder and instructed to discontinue the sertraline. She refused a mood stabilizer at this time. She was hospitalized voluntarily on February 17, 2000, to recover in a low-stimulation environment and was discharged after 3 days, prematurely. Although AV was using cannabis, she had not used any stimulants since New Year's Eve. Lithium 150 mg two times a day was started on an outpatient basis on March 2, which she agreed to take as this was "a natural salt." She stopped taking it by the end of March, as she reported "feeling like myself again." Her symptoms of hypomania, however, only intensified. Her second hospitalization, on April 19, 2000, was precipitated by an incident where she bit her mother. She was committed under the provincial Mental Health Act because of safety concerns. At this point, she was not sleeping and she had grandiose delusions, including that she could purchase a town in Mexico and become the mayor, that she was enlightened, and that she could speak all languages. Hospital notes documented that she was grandiose, paranoid, irritable, and disorganized. The lithium was restarted. After a 20-day admission, she was discharged on lithium 300 mg two times a day and olanzapine 5–7.5 mg at bedtime. Her diagnosis was changed to bipolar I disorder, as she had had a full-blown manic episode with psychotic features. AV reported in retrospect that she did not feel well in between hospital admissions, nor for several months afterward, and that she did not use much cannabis in those intervening months.

Drug use history

AV's first cannabis use was at age 11 with no effect. She used again at age 12 and began using regularly, escalating through ages 13–14, when she was using it daily (1998–1999). She reported infrequent use of psilocybin mushrooms (in 1998) and LSD on one prior occasion (Remembrance Day, November 11, 1999). She used Ecstasy (likely MDMA) twice with her initial use in December 1999. It is noteworthy that her symptoms of hypomania emerged shortly after initiation of light box treatment, which was before her first use of Ecstasy. Urinalysis on January 14, 2000, was positive only for cannabis. AV reported that she never used cocaine, methamphetamine, or opiates.

Mental health family history

Mental health concerns existed in her family of origin, with bipolar diagnoses in two paternal relatives and alcoholism and trauma in her maternal lineage.

Psychosocial issues

AV's home life was turbulent, with parental separation, an incarcerated father (1996, when she was age 12), subsequent ostracization by peers, the death of her grandmother (1998,

when she was age 14), and school changes. AV was unable to function in the normal school system because of disruptive and defiant behavior and was moved to an alternative school at age 13 (in 1997).

LSD overdose incident—June 20, 2000

The LSD overdose incident occurred during a summer solstice party (June 20, 2000, at age 15), where the supplier of the liquid LSD made a decimal place error when preparing individual dosages diluted in glasses of water. Specifically, what were intended to be 100 mcg dosages (a normal recreational dosage) were actually 1,000 mcg per glass. AV drank one glass and subsequently drank the "leftover drops" from two other glasses. Her total dosage was therefore in the range of 1,100–1,200 mcg, which was ingested at 10:00 P.M. on a relatively empty stomach. Although no lethal overdoses of LSD have been documented, it is estimated that the lethal dose in a human is 14,000 mcg (Klock et al., 1973). Observers subsequently reported erratic behavior for the next 6.5 hours, followed by what they believed to be a seizure, as she was lying in a fetal position with her arms/fists clenched tightly. An ambulance was called at 4:30 A.M., and by the time the paramedics arrived 10 minutes later she was alert and oriented. She was transported to a local hospital where she was diagnosed with a seizure, as this is what the witnesses reported. This conclusion is questionable as subsequent interviews with AV and observers revealed no loss of bladder or bowel control, no biting of her tongue, no clonic movements in any limbs, and only a brief period of confusion after the clenching episode. It was unclear whether she had a loss of consciousness or whether she was intensely preoccupied with her experience at the time. Although extremely uncommon, grand mal seizures after LSD ingestion have been reported in the historical literature (Fisher & Ungerleider, 1967).

AV's father reported that when he entered the hospital room the next morning, AV stated, "It's over." He believed she was referring to the LSD overdose incident, but she clarified that she meant her bipolar illness was cured.

Mental health team case notes

The case notes from AV's mental health team psychiatrist and therapist subsequent to the overdose incident reported a significant change in her mental illness symptoms.

June 28, 2000: A second EEG was ordered, which was normal.

July 11, 2000: AV "came in today with a lovely fine balance and a glint in her eye and she is maintaining a happy and credible mood balance ever since the unfortunate incident that provoked her seizure three weeks ago" and AV "has not presented with as easy and healthy a presentation in many, many months."

July 19, 2000: AV “is entirely stable at present” and “she has an excellent perspective on her illness and some things she can do to keep herself well.”

September 6, 2000: “She has remained remarkably stable this summer with no evidence of recurrent depression or mania” and AV “is doing remarkably well even compared to last year at this time when she was noticeably depressed.”

February 14, 2001: AV discussed tapering off her lithium with her psychiatrist, who observed at the end of the case note that, “her insight and self-awareness are quite remarkable.”

May 30, 2001: AV “has gone off her lithium and there are more mood instabilities as a result of that but no evidence of clinical hypomania or depression” and “we spoke carefully with mother, father, and AV—it is clear that no one has seen symptoms of clinical depression . . .” and “she has had a fairly successful school year other than the one term out of four and has not had a breakthrough of clinical levels of depression or mania.”

AV’s father observed that his daughter appeared to be completely recovered from her mental health concerns after the overdose incident.

AV reports that she was free from all mental illness symptoms (bipolar or other) for the subsequent 13 years until she gave birth and experienced postpartum depression. The birth of her second child in 2017 was also associated with a turbulent emotional period. AV reports that after the LSD overdose incident she experienced life with a “normal” brain, whereas her brain felt chemically unbalanced before the incident.

AV’s cannabis use was unchanged by the overdose event and she continues to use cannabis regularly.

Currently, AV has stable employment, stable positive friendships, and good work relationships.

Case 1: Conclusion

This case report documents a significant improvement in mood symptoms, including reductions in mania with psychotic features, following an accidental LSD overdose, changes that have been sustained for almost 20 years.

Case Report 2: LSD Overdose While Pregnant

The information for this case report was obtained from interviews with the woman who was pregnant, her son, the godfather of the son (who has known him since birth), and the supplier of the LSD.

The second case report involved a 26-year-old woman (NM), who attended the above-described summer solstice party (June 20, 2000). NM ingested half a glass of water infused with LSD (at a miscalculated dosage of 500 mcg) at 9:00 P.M. and within minutes felt an intense reaction. She reported that she did not vomit, lose consciousness, or

have a seizure. When the morning arrived she was able to engage with others and debrief the events of the previous night. NM was an experienced user of psychedelics, as she had used LSD twice, mushrooms “many times,” and 2C-B (4-Bromo-2,5-dimethoxyphenethylamine) twice. She used cannabis occasionally and drank alcohol infrequently. She never used opiates or methamphetamine.

NM did not know that she was pregnant at the time of the overdose, but retrospective calculations indicate that she was 2 weeks into her pregnancy. She subsequently gave birth to a son who is now 18 years old. He has been easy to parent, is intelligent, does well academically (mostly A’s in high school), is well adjusted socially (many healthy friends), and is fit (runs and goes to the gym).

Case 2: Conclusion

This case documents how an accidental overdose of LSD early in the first trimester of pregnancy did not negatively affect the course of NM’s pregnancy or have any obvious teratogenic or other negative developmental effects on her son.

Case Report 3: Massive LSD Overdose Associated With Reduction of Physical Pain and Morphine Use

This case report was prepared from material gained from interviews with a 49-year-old woman (CB) and her roommate who witnessed the event.

Background

CB contracted Lyme disease in her early 20s and experienced subsequent damage to her feet and ankles, causing significant pain. Eventually, she was prescribed morphine for analgesia, which she was on continuously for about a decade (2008–2018). Her average use of morphine before the LSD overdose event was four to six 10-mg pills a day with a maximum of eight pills depending on her foot pain levels (therefore 40–80 mg/day).

LSD overdose event—September 2015

In September 2015, CB (age 46) took 55 mg intranasally of what she believed was cocaine but was actually pure LSD in powder form. This was the equivalent of 550 times the normal recreational dosage of 100 mcg. She realized she had a problem within 15 minutes and called her roommate for help. He noticed that the bottle of LSD had been moved, and weighed the remaining powder to determine approximately how much she ingested. She started vomiting within an hour and vomited frequently for the next 12 hours. Her recollection was that she sat up for this experience and mostly “blacked out” for the first 12 hours, after which she was able

to communicate. She felt “pleasantly high” for the next 12 hours (with infrequent vomiting). The collateral report from the roommate revealed that she sat mostly still in a chair with her eyes either open, closed, or rolled back, frothing at the mouth, occasionally vocalizing random words and vomiting frequently. Ten hours later she was able to converse, went to the bathroom, and seemed coherent. Her roommate fed her and stayed with her for another 12 hours, after which she appeared to be “normal.”

CB reported that her foot pain was gone the next day. Therefore, she discontinued her morphine, did not use it for 5 days, and did not experience any withdrawal symptoms. Subsequently her pain returned, so she restarted her morphine but at a lower dose (one to two pills a day), and started microdosing LSD (25 mcg approximately every 3 days). She continued microdosing LSD with daily morphine until January 2018, when she stopped the morphine and all other pain medications, as she believed that her pain was significantly reduced enough that pain medications were unnecessary. After discontinuing the morphine, CB reported no typical withdrawal symptoms. However, she did experience an increase in anxiety, depression, and social withdrawal as well as a sense of being “overly sensitive” to the experiences of others.

Case 3: Conclusion

In a 46-year-old woman, intranasal ingestion of 550 times the normal recreational dosage of LSD was not fatal and had subsequent positive effects on pain levels and subsequent morphine withdrawal. Although the effect was not sustained, she was able to reduce her morphine dose significantly with microdosing LSD and was able to come off of morphine eventually without typical withdrawal symptoms.

Discussion

These case studies detail the medical consequences of three accidental LSD overdoses. This information is novel, as no clinical trial research could be done with dosages this high and there are no publications exploring the positive outcomes of very large dosages of LSD. The limitations of

this analysis are as follows: The data are anecdotal, no blood or urine samples were available, and the LSD dosages were approximated. Although this experience was distressing for all participants, there appear to be unpredictable, positive sequelae that ranged from improvements in mental illness symptoms to a reduction in physical pain and morphine withdrawal symptoms. Also, an LSD overdose while in early pregnancy did not appear to cause harm to the fetus. This report builds on the historical safety data, which observes LSD to have a low toxicity potential (Gasser et al., 2014; Krebs & Johansen, 2012; Liechti, 2017; Passie et al., 2008) and adds to the rapidly expanding literature exploring the potential therapeutic applications of psychedelic medicines.

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