Stimulant Use for Analgesia: A Case Series

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We present 2 unique cases identified on the addiction psychiatry consultation service in which patients utilized nonprescription stimulants as their preferred choice of analgesia. One patient smoked methamphetamine for relief of chronic back pain, while another smoked cocaine for relief of eye pain secondary to a workplace injury.

Case 1

The first patient was a 64-year-old white man with chronic back pain secondary to musculoskeletal trauma that occurred in the mid-2000s. The patient subsequently underwent back surgery for his injuries. Following surgery, he continued to have recurrent pain that, with engagement in pain management services, was adequately controlled until about a year prior to presentation. At that time, he saw a physician for increased back pain and obtained a prescription for opioid pain medication. The patient acknowledged that these medications did offer some pain relief but did not continue them long term due to limited benefit. Later, use of methamphetamine with an acquaintance led to incidental discovery that inhalation of methamphetamine delivered greater analgesia than the opioid medication had.

Six months after his physician visit for increased back pain, the patient presented to an outside hospital with altered mental status that improved with administration of naloxone; he was then transferred to our hospital for further management. Urine drug screen was positive for benzodiazepines, oxycodone, and amphetamines. When these results were discussed with him, he denied the intentional use of benzodiazepines or opioids, but noted that ingestion of these substances was possible, as he had taken a handful of unknown pills shortly before presentation to the outside hospital. He noted that, within the preceding 6–9 months, he had discontinued the use of prescription opioids and moved solely to methamphetamine use every 3–4 days to palliate his chronic back pain.

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Prim Care Companion CNS Disord 2021;23(1):20l02620

To cite: Opperman PJ, Derr J, Meyer Karre VM, et al. Stimulant use for analgesia: a case series. *Prim Care Companion CNS Disord*. 2021;23(1):20l02620.

To share: https://doi.org/10.4088/PCC.20l02620

Case 2

The second patient was a 51-year-old black man with chronic right eye pain secondary to a battery explosion. This injury resulted in multiple penetrating keratoplasty procedures and aphakia of the right eye. The patient was hospitalized after presenting to the emergency department due to awakening with chest pain following cocaine use. Electrocardiogram revealed non-ST elevation myocardial infarction. He subsequently underwent a cardiac catheterization. Despite long-term management in a pain medicine clinic, the patient believed that his eye pain had been undertreated and felt cocaine helped adequately treat this pain.

Discussion

Although the patients used stimulants for separate etiologies of pain, they both reported discovering their preferred stimulant's analgesic properties "accidentally" after exhausting numerous other pain relief options. Use of stimulants for chronic pain warrants further consideration and discussion.

Cocaine and methamphetamine have similar mechanisms of action, namely inhibiting reuptake or increasing release of monoamine neurotransmitters.[1–3] One study[4] found that use of intravenous cocaine provided analgesia in rats by acting on supraspinal dopamine receptors. A more recent study[5] looked at prior research of using prescription drugs, such as bupropion, that inhibit uptake of monoamine neurotransmitters and provide analgesic relief for neuropathic pain by reinforcing descending inhibitory pain pathways.

In both cases, the patients sought medical care for their chronic pain but found that nonprescription stimulants provided better analgesia over prescription opioids. With regard to methamphetamine, one possible explanation for this use could be its longer half-life of 10.7 hours compared to 3–5 hours with immediate-release oxycodone.[6,7] The analgesic effects of methamphetamine are speculated by similar site of action, similar receptors, and redundancy in transmitter modulation with analgesic medication.[8–10] As demonstrated by Etaee et al,[8] methamphetamine can potentiate the analgesic effects of opioids. If our patient started using these substances in an overlapping fashion, it may have led to the continued perception of increased analgesia from methamphetamine use. Cocaine has known use for eye analgesia, and a study[11] on topical anesthetics for intravitreal injections found that cocaine was as effective in providing analgesia as lidocaine and tetracaine.

These cases highlight one of many potential reasons why patients might use illicit substances, including the perception that their pain is not being adequately managed by their prescribed medications or the discovery that nonprescription substances better manage their symptoms. The literature supports overlap in pathways and neurotransmitters, which may provide one possible explanation for psychostimulant use as a form of analgesia.

Conclusion

Both cases brought forward an interesting discussion into stimulant use for analgesia. The exact mechanism into how their pain was managed with cocaine or methamphetamine is uncertain, though research has demonstrated nonopioid analgesia utilizing similar mechanisms to these substances.

Published online: January 14, 2021.

Potential conflicts of interest: None.

Funding/support: None.

Patient consent: Both patients provided consent to publish the case reports, and information has been de-identified to protect anonymity.

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