

Formication with destruction of the nasal septum: A rare case report

SAGE Open Medical Case Reports
Volume 13: 1–4
© The Author(s) 2025
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/2050313X251322873
journals.sagepub.com/home/sco



Michele White^{ID}, Dwayne Evans, Gary Frey,
Cleverick CD Johnson and Ben F Warner

Abstract

Delusions of parasitosis are known by several names, one of which is formication. It is an uncommon psychiatric disorder listed in the DSM V under the classification of delusional disorders. Patients experience an established, incorrect belief that they have an infection of living organisms such as parasites. There are two types of delusions of parasitosis, primary and secondary. In the primary form, the symptom is the delusion of a parasitic infection without secondary cause. The secondary form includes this symptom as well as additional psychiatric disorder, drug abuse, or medical illness. Patients often seek consultation with dental providers for dental pain with underlying medical conditions. This is a case report of a 35-year-old male with comorbid HIV and Hepatitis B disease, as reported by the patient, who sought care with a dental urgent care clinic with a chief complaint of dental pain and a presentation of collapse, atrophy, and ebbing of the nasal septum due to patient admitted formication. An accurate and complete medical was not obtainable from the patient who was subsequently lost to follow-up. Patient symptoms, clinical examination, and differential diagnosis rationale are presented. Further, information on cocaine and methamphetamine is also discussed. Followed by the conclusion that advocates for the usefulness of this case report for primary medical and dental providers. Recognition of concurrent medical and dental conditions will expedite collaborative care, patient referral, and treatment options that support best practices in patient care.

Keywords

Delusions of parasitosis, formication, drug abuse

Date received: 20 November 2024; accepted: 7 February 2025

Introduction

Cocaine or methamphetamine abuse can lead to the development of delusions of parasitosis where patients experience tactile hallucinations, often described as itching or the sensation of insects crawling on the skin.^{1,2} Severe scratching can lead to trauma and scarring. This case highlights excessive destruction of the nasal septum due to the differentially diagnosed formication and the physical effects of methamphetamine use. Though clinically relevant extraoral symptoms were present, the lack of diagnostic tests such as dental X-rays or cone beam computed tomography and an accurate medical history hindered further examination and dental treatment.

The prescription of amphetamine in medicine is used to treat attention-deficit hyperactivity disorder and obesity. Amphetamine is manufactured as an oral medicine and resembles methamphetamine in chemical structure. Methamphetamine is misused as a street drug but both cause similar physiologic action and produce stimulant effects.

Fabrication of methamphetamine or “crystal meth” is made by using ingredients in over-the-counter cold medicines such as pseudoephedrine.³ Crystal meth is consumed by smoking or intravenous use. Snorting methamphetamine leads to less intense effects than other methods of abuse. It can be hypothesized that the inclusion and concentration of these additives to the methamphetamine preparations are not standardized and vary greatly. Therefore, the effects and symptoms that can be attributed to individual preparations remain largely unknown. Dental signs of methamphetamine abuse commonly referred to as “Meth mouth” include rampant decay, xerostomia, and secondary infections such as candida albicans.

UTHealth Houston School of Dentistry, Houston, TX, USA

Corresponding Author:

Michele White, UTHealth Houston School of Dentistry, 7500 Cambridge Street, Houston, TX 77225, USA.
Email: Michele.r.white@uth.tmc.edu



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

Misuse stimulates neurotransmitter release, impacting both the cardiovascular and central nervous systems.⁴⁻⁶ Though this leads to feelings of euphoria, detrimental health risks occur due to elevated heart rate and blood pressure.⁷⁻⁹

Crystal methamphetamine (methamphetamine hydrochloride) is mostly smoked, which releases neurotransmitters dopamine, norepinephrine, and serotonin that cause stimulant effects. The average half-life of methamphetamine is a little over 10 h. Dental manifestations can include irritant or contact stomatitis as well as corrosion of dental prostheses.¹⁰ In addition, physiological manifestations associated with long-term drug abuse of cocaine or methamphetamine include breathing difficulties, heart arrhythmias, elevated blood pressure, and the risk of sudden myocardial infarction or cerebral vascular accident.¹¹

When treating these patients, healthcare providers must be able to recognize the signs and symptoms of cocaine and methamphetamine substance abuse as well as any side effects that produce psychiatric and cardiac symptoms and poor health care. In addition, Lethal Midline Granuloma may also be considered while making a differential diagnosis. Lethal Midline Granuloma is a rare disease that features destruction of and mutilation of the nose and upper aerodigestive tract.¹² Case reports are important as they share insights for the medical community while treating patients who might suffer from substance abuse.

Case report

A 35-year-old African American male presented to the dental urgent care clinic with a chief complaint of oral pain. The patient stated that the pain began 3 weeks prior and constantly kept him up at night. According to Healthline¹³ a Universal pain scale reads from 0-10, with 0 measuring no pain, and 10 measuring the highest level of pain. On a Universal 10-point scale, the pain was rated a “9” on the maxillary right, and an “8” on the mandibular left. The patient’s vital signs were: blood pressure 144/90, pulse 74, respiration 26 breaths/minute, and temperature 101.0° F. A review of his medical history confirmed a Human Immunodeficiency Virus (HIV) diagnosis of 10 years, which included 5 years of poor HIV medication compliance. In addition to taking several unidentified drugs acquired from friends for pain control, he stated that he regularly took more than 10 extra-strength Tylenol and 10 Advil a day for pain management. He said that he had no other illnesses at this time that he could recall, but that he may have had Hepatitis B. The patient was uncertain as to any prescription medications or his CD4 T-cell blood values. He did not recall the last time that he went to his primary care physician.

The patient was unable to focus on any one area of painful dental symptom, stating that his “whole mouth hurts.” Clinical oral examination confirmed several decayed teeth with varying levels and severity of caries and missing teeth.

His skin was dry and discolored. Further examination of the patient exhibited a deviated nasal septum and formication lesions



Figure 1. UTHealth Houston School of Dentistry: Nose injury includes deviated septum.

on both arms, face, and nose. Figure 1, illustrates a complete loss of the outer end of the nasal septum, the columella, and the near complete destruction of the nasal septum. When queried as to how he thought his nose was disfigured and what caused the lesions on his face and arms, he stated that his nose was itching, and he kept scratching it with his fingernails.

The dental providers felt it was not safe to treat the patient due to his uncertain medical history and current HIV and Hepatitis B status. Also unknown were the patient’s CD4 value, and the current dosages of any prescription or over-the-counter medications. The patient could not name his primary care physician so the medical history of the patient could not be updated. No dental radiographs were prescribed due to the inadequate health history. The patient also lacked the funds for the procedure. Since the dental providers could not adequately examine the patient without diagnostic dental X-rays and or a CBCT which would provide 3-dimensional morphological structural limits, the treating dental providers elected not to proceed with treatment and opted for referral to the local county hospital where the patient could be provided dental treatment with medical support. The patient was lost to follow-up.

The dental urgent care clinic at our institution attends to persons with urgent dental needs. However, patients present with comorbid medical conditions that may affect the ability to safely receive dental care at that time, and consequently require medical consultation. Patients of the dental urgent care clinic are able to be seen without the requirement of being a patient of record and can make an immediate appointment. Since the patients are not patients of record, many of them are lost to follow-up as this patient was. No dental or medical diagnoses were confirmed. Also unknown, were any treatments or medications provided, or the patient’s current medical status.

Discussion

In the United States, the Substance Abuse and Mental Health Services Administration shows that methamphetamine accounts for 15.20%–19.83% of emergency department visits from March to December 2021. This patient presented to the dental urgent care clinic with a chief complaint of generalized oral pain of 8 and 9 on a 10-point scale. Destruction, deviation, and loss of the outer end of the nasal septum

Table 1. Physiological effects of cocaine use.

Irregular heartbeat	Dilated pupils	Paranoia
Hypertension	Seizures	Bruxism
Chest pain	Headaches	Extreme xerostomia
Myocardial infarction	Anxiety	Abdominal pain and nausea
Increased heart rate	Psychosis	Light and sound sensitivity
Cerebral vascular accident	Depression	
Vasoconstriction	Hallucinations	

Table 2. Physiological effects of methamphetamine use.

Addiction	Psychosis
Paranoia	Hallucinations
Repetitive physiological motor activity	Memory loss
Aggressive behavior	Mood disturbances

appeared to be due to the patient's excessive scratching and differentially diagnosed delusions of parasitosis. The patient was a poor historian regarding his HIV positive, and Hepatitis B positive status and treatment and did not have any recent CD4 lab values. The patient stated he was self-medicating with large daily doses of acetaminophen and ibuprofen along with drugs received from friends.

Many of the physiological effects of cocaine are diagnosed through clinical examination and include constricted blood vessels, dilated pupils, hyperstimulation, increased heart rate, and blood pressure (Table 1). Furthermore, patients can present with irritability, anxiety, paranoia, hallucinations, unpredictable violent/aggressive behavior, extreme xerostomia, bruxism, and restlessness (Table 2). Added to these effects are the additional risks of exposure to Hepatitis B, Hepatitis C, and HIV for those who inject these and other drugs of abuse.

The Mechanism of action of cocaine is well documented and partially explains its addictive behavior. Cocaine blocks the reuptake of norepinephrine (NE) and dopamine, which extends the action of dopamine but said action leads to depletion of dopamine.² Absorption of snorted cocaine has a maximum duration of 15–30 min. Most of the immediately observed effects of snorted cocaine include a runny nose, nosebleeds, loss of smell, hoarse voice, and problems swallowing. The implications for safe dental practice suggest knowing the last "dose" of drug usage to allow for the systemic effects to lessen or wear off for patients in need of urgent dental care.

The psychological and physiological effects of cocaine and methamphetamine can cause multiple health risks as well as disfigurement. Severe drug abuse can be debilitating. Chronic inflammation, and immune suppression, combined with methamphetamine use synergistically contribute to tissue damage in this patient population and can be assessed with a Complete Blood Count (CBC) and other laboratory markers to determine oxidative stress.¹⁴ This patient's extraoral head and neck exam revealed obvious damage to the nose and nasal septum. Differential diagnosis from other

oral conditions might be aided through the intraoral clinical exam. In addition, ruling out other causative systemic diseases, including autoimmune conditions, such as Wegener's Granulomatosis, also called Granulomatosis Avasculitis with polyangiitis, which affects the upper respiratory tract, lungs, and kidneys might also be considered and require a referral if the patient history negates drug usage.¹⁵ However, a diagnostic intraoral examination which would include dental radiographs and or a (CBCT) image could not be completed for this patient at this examination site. Patients suffering from drug abuse typically present signs of inadequate oral health care in the forms of severe dental decay, missing teeth, infection, swelling, and other diseases of the teeth and gingiva. Including perforation of the maxilla and nasal complexes. This case presents an exaggerated example of delusions of parasitosis that showed aggressive nasal destruction. Other illnesses that resemble destruction of the nose due to formication may not present with such devastating extraoral findings making it difficult to differentially diagnose. Dentists should proceed with extreme caution with the management of patients suspected of substance abuse due to the probability of adulterant products within these substances and concern for the overall health of the patient. Once patients are stable and able to receive dental care, the focus of care can include services such as caries prevention, oral hygiene instruction and periodontal care, management of xerostomia, and nutrition as well as overall oral and medical health consultations and referral.

The strength of this case report is in the education of primary care providers who may see patients with comorbid medical and dental conditions. As examined in the case report, the patient's medical history information was inadequate for safe dental examination and treatment.

The limitations of this case report were the inability of the dental team to complete a comprehensive oral evaluation due to the lack of current health information on this patient and the loss of follow-up.

Conclusion

Patients with severe drug abuse are likely to be transient and noncompliant. Patients with comorbid diseases, such as HIV and Hepatitis B, require special consideration from the healthcare provider. Clinical protocols such as a

Table 3. Patient behaviors associated with substance abuse disorder.

Irritability	Anxiety
Paranoia	Hallucinations
Unpredictable violent/aggressive behavior	Restlessness

specific medical history that includes assessment of the type and frequency of drug usage as well as observed findings related to methamphetamine use that measures heart rate, pupil dilation, patient anxiety, or referrals for CBC and other laboratory tests can aid the dental team in providing safe dental treatment. Additional protocols that monitor health markers can be a useful tool for updating medical history consistently and accurately. Other protocols can include resources, such as pamphlets and referrals, to help patients receive appropriate care. Those who report substance abuse must be managed with caution. Treatment of a patient with an uncertain medical history and substance abuse of Schedule II addictive drugs is discouraged without a multidisciplinary team approach due to multifaceted health risks (Tables 1–3).

A necessary precaution for safe standards of care requires a medical consultation for a patient with this presentation. Without accurate health information, dentists have restricted therapeutic options and are unable to know whether or not dental treatment can be safely provided.

Many healthcare providers, including family physicians, general dentists, med-peds, ear nose and throat, emergency room physicians, and ophthalmologists, are well positioned to recognize and report orofacial perforations, and other possible associated signs of cocaine and methamphetamine abuse such as cardiovascular effects. This is important to assist patients in making appropriate referrals that aim to optimize patients' healthcare. Goals should be to establish or support patients' seeing their medical or dental providers regularly, rather than through an urgent care clinic setting.

Acknowledgements

None.

Authors' contributions

C.D.J. wrote the initial draft manuscript and provided the case report and photos; M.W. wrote the manuscript, provided the tables, and submitted the manuscript; B.F.W. edited the final draft manuscript; D.E. reviewed the manuscript for grammatical correctness; G.F. reviewed the resubmitted final draft manuscript.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethics approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

ORCID iD

Michele White  <https://orcid.org/0000-0001-9782-7650>

References

- Hoffman R. Hallucinations, neural basis of. *Sci Direct* 2001; 6469–6473, <https://doi.org/10.1016/B0-08-043076-7/03558-0>.
- Alsafwani Z, Morroj A, Shiboski C, et al. Oral manifestation of delusional infestation: a case series. *BMC Oral Health* 2022; 22: 652.
- NIDA. *How is methamphetamine manufactured?* 2021. <https://nida.nih.gov/publications/research-reports/methamphetamine/how>
- Shekarchizadeh H, Khami M, Mohebbi S, et al. Oral health of drug abusers: a review of health effects and care. *Iran J Public Health* 2013; 42: 929–940.
- Hamamoto D and Rhodus N. Methamphetamine abuse and dentistry. *Oral Diseases* 2008; 15: 27–37.
- Curtis E. Meth mouth: a review of methamphetamine abuse and its oral manifestations. *Gen Dent* 2006; 54: 125–129.
- Rommel N, Rohleder N, Koerd S, et al. Sympathomimetic effects of chronic methamphetamine abuse on oral health: a cross-sectional study. *BMC Oral Health* 2016; 16: 59.
- Comer S, Hart C, Ward A, et al. Effects of repeated oral methamphetamine administration in humans. *Psychopharmacology* 2001; 155: 397–404.
- Donaldson M and Goodchild J. Oral health of the methamphetamine abuser. *Am J Health-Syst Pharm* 2006; 63: 21.
- Brown R and Johnson C. Corrosion of dental gold restorations from inhalation of “crack” cocaine. *Gen Dent* 1994; 42: 242–246.
- Johnson C, Lewis V, Faught K, et al. The relationship between chronic cocaine or alcohol use and blood pressure in black men during uncomplicated tooth extraction. *JOMS* 1998; 56: 323–329.
- Mallya V, Singh A and Pahwa M. Lethal midline granuloma. *Indian Dermatol Online J* 2013; 4: 37–39.
- Weatherspoon D, Cirino E. Healthline. 2018. <https://www.healthline.com/health/pain-scale>
- Kish SJ. Pharmacologic mechanisms of crystal meth. *CMAJ* 2008; 178: 1679–1682.
- Turan C, Senormanci G, Neselioglu S, et al. Oxidative stress and inflammatory biomarkers in people with methamphetamine use disorder. *Clin Psychopharmacol Neurosci* 2023; 21: 572–582.