

CASE-BASED REVIEW

Methamphetamine-Induced Spontaneous Skin Lesions: A Case Series and Literature Review

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Main Points

- Various spontaneous skin lesions may occur due to methamphetamine use.
- These lesions may be itchy/non-itchy, purulent/nonpurulent, like pimples or acne.
- Methamphetamine-related skin lesions heal spontaneously after stopping methamphetamine use without the need for any treatment.

Abstract

Methamphetamine has many systemic and psychiatric side effects. Additionally, there are some case reports of externally induced skin lesions associated with methamphetamine, such as pruritus, excoriations, and skin picking. However, spontaneous skin lesions are little known due to methamphetamine. In this case series, sociodemographic and clinical characteristics of the 11 patients with methamphetamine-related different kinds of spontaneous noninfectious skin lesions were examined and the cases presented in the literature to date were reviewed. Methamphetamine-induced spontaneous skin lesions are not well-known and should be misdiagnosed. These lesions usually resolve spontaneously without treatment after discontinuation of methamphetamine. Clinicians should be aware of the variety of skin lesions that may occur due to methamphetamine.

Keywords: Methamphetamine, spontaneous, skin, cutaneous, lesions

Introduction

Methamphetamine, also known as “crystal,” is a synthetic and powerful sympathomimetic agent, first synthesized in the late 19th century. It was used during World War II to keep soldiers awake. In the post-war period, methamphetamine was used for the treatment of obesity, narcolepsy, and attention deficit hyperactivity disorder due to its appetite suppressant and sleep-reducing effects. Methamphetamine has recently become a serious problem worldwide. It can be used in different ways, such as inhalation, snorting, oral, or intravenous. Methamphetamine has a stronger effect, a longer half-life, and a high addictive potential (Evren & Bozkurt, 2018).

Methamphetamine rapidly distributes in the central nervous system and increases monoamine neurotransmission. Thus, it provides an increase in energy, decreased need for sleep, desired alertness, increased

self-esteem and euphoria, decreased appetite, and improved mental, social, and sexual activities and mood for the abuser. Sympathomimetic effects may cause side effects in all systems, the most serious side effects in the cardiovascular system, such as myocardial infarction and hypertension (Vearrier et al., 2012). Dopaminergic, noradrenergic, serotonergic, and opioidergic effects of methamphetamine lead to behavioral and cognitive changes soon after its use. Short- and long-term use causes circulatory, respiratory, infectious, and neurological problems besides various psychiatric symptoms ranging from anxiety, aggression, and depression to acute paranoid psychosis (Evren & Bozkurt, 2018).

Methamphetamine abuse may lead to acne, a sensation of pruritus, pruritus related to excoriations, and skin-picking due to delusions of parasitosis called “meth mites.” Infectious skin lesions may also occur due to the intravenous administration of

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methamphetamine (Evren & Bozkurt, 2018). Methamphetamine abuse is frequently associated with specific oral diseases and tooth decay, known as “meth mouth” (Liu, 2010; Rommel, 2016). Besides, methamphetamine abuse may spontaneously lead to acne and skin lesions except picking (Winslow et al., 2007).

Data on methamphetamine-related skin lesions are rare in the literature. We present eleven cases with different kinds of spontaneous skin lesions, different localizations in the body related to methamphetamine use other than acne, independent of pruritus or skin picking.

Case presentation

Subjects

Both patients were hospitalized at an adult alcohol and substance detoxification clinic between January and December 2022. Informed consent was obtained from all patients for the scientific use of data and for taking photos of the skin lesions.

The diagnosis of methamphetamine use disorder was confirmed by a psychiatrist according to the Diagnostic and Statistical Manual of Mental Disorders-5 criteria. The researchers created a sociodemographic form including characteristics of substance use and skin lesions of the patients.

Statistical Analysis

The data were analyzed with SPSS 25.0 (IBM SPSS Corp.; Armonk, NY, USA). The sociodemographic and clinical characteristics of

the patients were evaluated with descriptive methods such as percentage, number, mean, and standard deviation.

We determined 11 patients with different types of skin lesions associated with methamphetamine use. All patients reported that existing lesions appeared after starting methamphetamine use and continued as long as they used it. None of them had any systemic disease or used any medicine. Only one of the patients was female (9.1%), and ten of them were male (90.9%). The mean age of the patients was 24.6 ± 4 years. Almost all of the patients (90.9%, $n = 10$) were using methamphetamine daily, and only one patient (9.1%) used it thrice a week. The mean duration of methamphetamine use was 3.0 ± 1.8 years. The average amount of methamphetamine used by patients who used methamphetamine every day was 0.5-2 g/day. One patient who used methamphetamine 3 days a week was using an average of 1 g/week. Ten patients (90.9%) were using methamphetamine by inhalation and one of them (9.1%) both by inhalation and by eating/drinking. The rate of patients with methamphetamine-induced psychotic symptoms was 27.3%. None of the patients had alcohol or any substance use other than methamphetamine. No pathological findings were detected in any patients in the routine laboratory examinations and hepatitis or human immunodeficiency virus tests.

The skin lesions were observed as circular healing areas with a roughly circular appearance, with surrounding scar tissue and a crust on the lesion; some of them had a secondary infection. None of the lesions was more extensive than 2 cm. Patients did



Figure 1. Skin Lesions Due to Methamphetamine Use.

Table 1.
Characteristics of Methamphetamine Use and Lesions

Case Number	Age/Gender	Duration of Substance Use	Substance Use Pattern	Substance Use Frequency	Lesion Localization	Onset of Lesions	Lesion Progress	Psychotic Symptoms
Case 1	21/Male	2.5 years	Inhalation	Everyday	Both hands and legs	Spontaneous/ purulent pimples	Secondary infectious lesions/itchy inflammatory sore	Yes
Case 2	28/Male	3 years	Inhalation	Everyday	Face, arms, and legs	Spontaneous/ purulent pimples	Secondary infectious lesions	Yes
Case 3	20/Male	3 years	Inhalation	Everyday	Both arms and legs	Spontaneous/ pimples	Secondary infectious lesions	No
Case 4	27/Female	4 years	Inhalation	Everyday	Anterior and posterior trunk/multiple	Spontaneous /pimples	Itchy lesions, recovery with hyperpigmented scars	Yes
Case 5	24/Male	5 months	Inhalation	Everyday	Left foot dorsal region	Spontaneous/ purulent pimples	Itchy inflammatory sore	No
Case 6	23/Male	2 years	Inhalation	Everyday	Whole body and extremities	Spontaneous/ nonitchy red pimples	Spontaneous recovery	No
Case 7	28/Male	1 year	Inhalation	Everyday	Back of the neck, both extremities	Spontaneous/ itchy pimples	Spontaneous recovery/ dark scarring	No
Case 8	29/Male	2.5 years	Inhalation	Everyday	Hands, arms, and legs	Spontaneous/ purulent pimples	Itchy inflammatory sore	No
Case 9	21/Male	1 year	Inhalation	Everyday	Hands	Spontaneous/ itchy lesions	Spontan recovery/ dark scarring	No
Case 10	19/Male	2 years	Inhalation/ Eating and drinking	3 times a week	Mostly on the face, less on the arms and legs	Spontaneous/ itchy pimples	Itchy infectious acne	No
Case 11	31/Male	7 years	Inhalation	Everyday	Lower legs	Spontaneous/ itchy pimples	Itchy/secondary infectious lesions	No

not describe a tingling or feeling of bugs crawling on the skin. Lesions were on the face, trunk, arms, or legs; all appeared spontaneously, mostly as itchy pimples (Figure 1). The skin lesions improved visibly without specific treatment after discontinuation of methamphetamine use and usually healed with scarring. The sociodemographic data, characteristics of substance use, and skin lesions are presented in Table 1.

Discussion

Methamphetamine has a strong stimulant effect on the sympathetic system. This sympathomimetic effect results in a decrease in salivary secretion and buffering capacity of saliva, with important effects on oral health. These effects are defined as a dry mouth with a reported prevalence of 72%. Dry mouth leads to an increase in infectious or erosive oral lesions, dental caries, and tooth loss defined as “meth mouth” (DeCarolis et al., 2015; Rommel et al., 2016). Different from meth mouth, some skin symptoms may occur such as gray-dry skin and pruritus. Acne, pimples, or small red spots may occur due to methamphetamine use, as well (Albattal et al., 2021).

Methamphetamine users can experience “formication” or the feeling of bugs crawling on or under the skin due to constricting effects of the methamphetamine on the blood capillaries in the skin and causing severe itching (Albattal et al., 2021; McCormick et al., 2007). Excoriations of pruritus or skin-picking lesions may be symptoms of methamphetamine use, and some cases are reported (Frieden, 2006; Taş et al., 2018; Yaffee et al., 1971). Other skin lesions are chemical burns from cooking, injecting methamphetamine, or secondary infection in wounds (Frieden, 2006; McCormick et al., 2007).

There are only some rare case reports about methamphetamine-related spontaneous skin lesions in the literature. Methamphetamine-induced lesions were first defined as facial rash and reddish papules called “extacy pimples,” which were seen in two patients using amphetamine in 1998 by Wollina et al. It has been stated that these pimples are caused by neuropeptide-mediated stimulation of the eccrine glands in the nerve endings of methamphetamine users (Wollina et al., 1998). Topcuoglu et al., presented a patient using some other substances including methamphetamine. He had itchy and red skin lesions on his face that appeared four days later after the intensive use of methamphetamine. However, this case was evaluated as herpes labialis in the dermatological evaluation, and the lesions regressed after antiviral treatment (Topcuoglu et al., 2021). In addition to skin symptoms in the literature, spontaneous lesions may occur due to methamphetamine without scratching or plucking, too, as in the cases we presented.

The common feature of all the cases we presented is that the lesions appeared spontaneously after methamphetamine use and usually resolved within a few days/weeks after discontinuation without treatment. We noticed that these lesions sometimes could be mistakenly diagnosed as dermatitis or scabies by dermatologists. However, the lesions do not respond to specific treatments for scabies or dermatitis.

The lack of biopsy for histopathological examination of the skin lesions is a significant limitation of our study. Therefore, investigations involving skin biopsy are recommended in future studies.

Methamphetamine has common systemic and psychiatric effects. However, other than the previously described methamphetamine

-related externally induced lesions such as pruritus, skin excoriations, or skin-picking, little is known of noninfectious spontaneous skin lesions due to methamphetamine. Clinicians should be aware of the variety of skin lesions and different localizations in the body that may occur due to methamphetamine.

Informed Consent: Informed consent was obtained from the patients who agreed to take part in the study.

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