

CONTACT POINT

Oleylamine-induced pustular irritant contact dermatitis

Seungah Yoo | Juhee Han | Chulhwan Bang | Jihyun Lee 

Department of Dermatology, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea

Correspondence

Dr Jihyun Lee, Department of Dermatology, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, 222 Banpo-daero, Seoul 06591, Korea.
Email: yiji1@hanmail.net

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Oleylamine, an organic compound with the formula $C_{18}H_{35}NH_2$, is an unsaturated fatty amine associated with oleic acid. It is mainly used as a surfactant or precursor to surfactants and is known to be cytotoxic and to cause skin corrosion.¹ Pustular contact dermatitis is a rare form of contact dermatitis, with merbromin, fluorine, dexpanthenol, croton oil, and minoxidil being reported as likely causes.²⁻⁵ However, to the best of our knowledge, there is no report of pustular contact dermatitis induced by oleylamine exposure in the literature.

CASE REPORT

A 23-year-old woman presented with multiple yellowish pustules on the face, neck, and forearms, which started after accidental exposure to undiluted oleylamine. When dispensing the solution in the process of making nanoparticles, the solution accidentally splashed on her. Although she irrigated immediately after the contact, pustules and erythema developed several hours later. The following day, she had several new pustules on her neck and forearms (Figure 1). Laboratory findings revealed a C-reactive protein level of 2.34 mg/dL, and there was no bacterial growth in a culture of a pustular specimen. Histopathologic examination revealed epidermal necrolysis with neutrophil and eosinophil infiltration and pustule formation (Figure S1). Based on these clinical and histopathological findings, she was diagnosed with pustular irritant contact dermatitis. Oral prednisolone (10 mg) with cephadrine (1000 mg) was administered for 2 weeks along with topical application of methylprednisolone. The lesions improved within a month leaving slight pigmentation (Figure 1C,D).

DISCUSSION

We diagnosed the patient with oleylamine-induced contact dermatitis based on correlation with the time of onset and clinical manifestations. Surfactants are known to reduce the surface tension of the proteins and lipids of the stratum corneum. They can bind strongly to the stratum corneum and trigger irritation or allergy.⁶ In contrast to allergic contact dermatitis, irritant contact dermatitis does not require previous exposure to the causative agent. In addition, a burning sensation, itching, or stinging may occur immediately after exposure to the irritant. The patient mentioned that this had been her first exposure to oleylamine and refused patch testing. Pustulation in the patient has likely been caused by a delayed irritant reaction. Delayed irritant reaction is an acute reaction, without signs of inflammation until 8 to 24 hours or more after exposure, such as the new lesions the patient experienced on the following day. In conclusion, in dealing with oleylamine or other surfactants, the possibility of severe contact dermatitis should be considered.

CONFLICT OF INTEREST

None to declare.

ORCID

Jihyun Lee  <https://orcid.org/0000-0002-3671-502X>

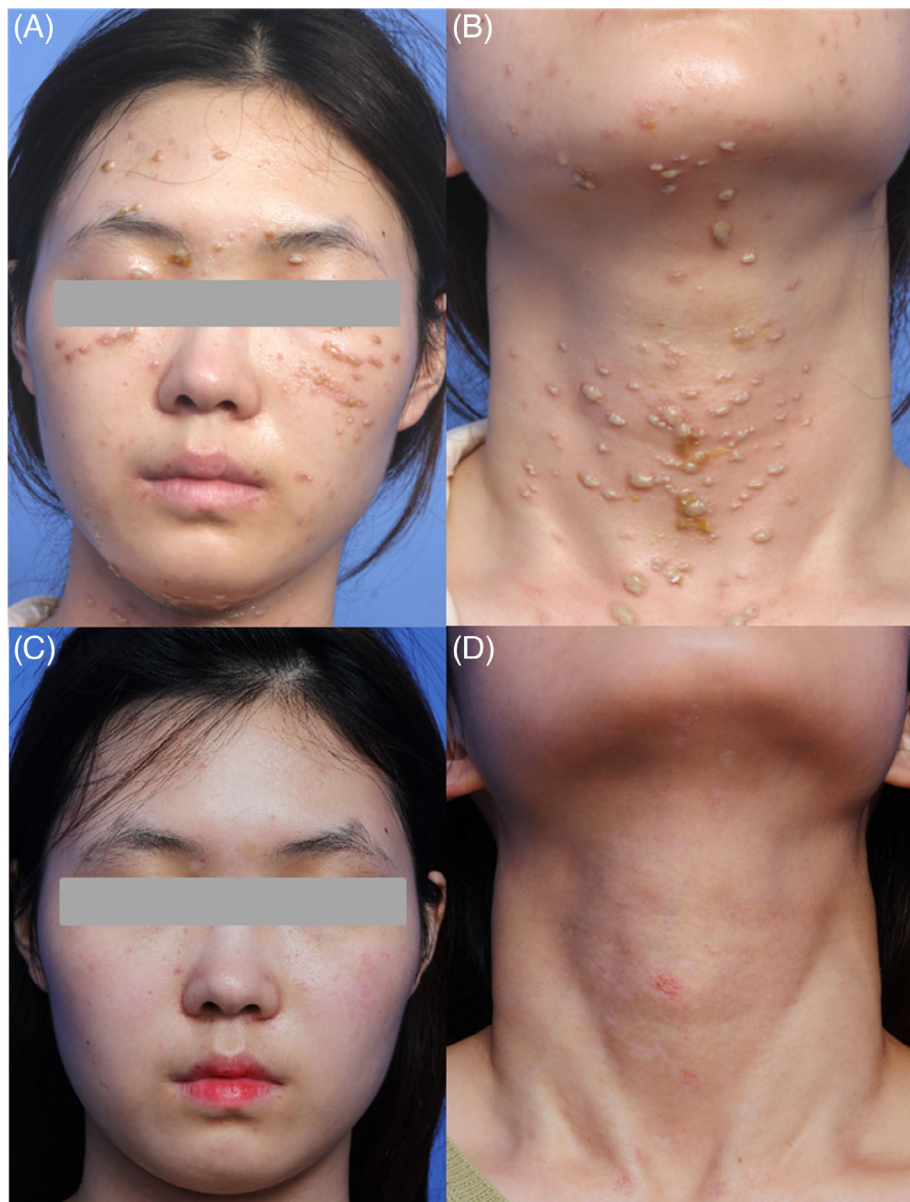


FIGURE 1 Multiple, 0.3-0.5-cm-sized, yellowish pustules on the face and neck (A,B: initial; C,D: 1 month later)

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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Online supplemental Fig.2. Histopathologic examination revealed epidermal necrosis with neutrophils and eosinophils infiltration accompanied by pustule formation (A: Hematoxylin & Eosin [H&E], x40, B: H&E, x200, C: H&E, x400).

