A 38-year-old woman presented with stomatitis and painful ulcers in the oral cavity (figure 1A) following dental treatment. Her medical history included severe contact dermatitis due to artificial nails at 18 years of age. Subsequently, she developed symptoms of contact dermatitis due to eyelash extension glue. (Meth)acrylate-induced contact dermatitis was suspected in view of its appearance after treatment for caries and the patient’s medical history. We performed closed patch testing with a (meth)acrylate series and metals in accordance with the International Contact Dermatitis Research Group recommendations. The results of these tests are shown in figure 1B, C. We did not perform a patch test with the dental products used for her treatment because the optimal concentrations for the patch test were unknown. Positive reactions in the patch test were elicited by 2-hydroxyethyl methacrylate (2-HEMA), 2-hydroxypropyl methacrylate and ethylene glycol dimethacrylate (EGDMA) on Days 2, 3 and 7 (figure 1B, C), and positivity was maintained until Day 14. The negative results on the patch test are described in figure 1C. The safety data sheet for the dental products used for her treatment was provided by her dentist and the information is shown in figure 1D (dental products A–D). Three of the four products (A–C) contained (meth)acrylates. These three dental products are acrylate monomers, which undergo polymerization to form plastic materials when exposed to light from a light-emitting diode in the mouth. Dental product A contained 2-HEMA, and on the basis of the patch test results, we diagnosed the patient with allergic contact stomatitis due to this component. After removing the dental

Allergic contact stomatitis caused by (meth)acrylates following sensitization by artificial nails, 20 years previously

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products from the patient’s oral cavity, her stomatitis and oral ulcers improved. This patient had suffered severe contact dermatitis due to acrylic nails and gel nails, 20 years previously. It has been widely reported that many gel nails contain 2-HEMA. Acrylic nails are often composed mainly of ethyl methacrylate (EMA). After having been sensitized to 2-HEMA, the patient was re-exposed to it during dental treatment, and allergic symptoms developed as a result. We did not perform patch testing for the three (meth)acrylates present in the dental products -bisphenol A glycerolate dimethacrylate (Bis-GMA), urethane dimethacrylate (UDMA), and methacryloxy polyethoxyphenyl propane (MPEPP)- because no samples of them were available. Cross-reactions among a wide range of (meth)acrylates have been reported [1, 2]. Although we did not test for the three (meth)acrylates in the dental products, they may have been cross-reactive with 2-HEMA. Although there are a few reports of allergic contact stomatitis caused by Bis-GMA, cases due to the other two (meth)acrylates are rare. None of these three (meth)acrylates are included in acrylic and gel nails. Goon et al. reported that based on testing for 2-HEMA, 96.7% of dental patients showed (meth)acrylate allergies [3]. (Meth)acrylates are monomers that undergo polymerization (usually through exposure to heat, chemicals, visible light, or UV radiation) to form plastic materials. Polymerized (meth)acrylates have little or no sensitizing capacity, whereas unpolymerized monomers are potent allergens [4]. Polymerization of (meth)acrylate dental products is performed in the patient’s oral cavity. Although exposure to (meth)acrylates commonly causes allergic contact dermatitis among dental personnel [5], it rarely causes allergic contact stomatitis in dental patients [6]. There are four reasons why dental patients suffer with contact dermatitis due to (meth)acrylate less frequently than dental workers. First, because un-polymerized (meth)acrylate is immediately polymerized, the period of time in which a dental patient is exposed to a high concentration during treatment is short. Second, saliva dilutes and washes away substances in the mouth, thus shortening the contact time [7]. Third, because of its high vascularization, the oral mucosa rapidly absorbs potential allergens, preventing their prolonged contact with the epithelium [7]. Fourth, compared with the skin, the oral mucosa seems less efficient in activating a cell-mediated immune response, because of the low density of Langerhans cells and T cells [7]. On the other hand, when a patient is already sensitized to (meth)acrylate, allergic symptoms develop in a short period of time in the oral cavity when acrylate dental products are applied there. As (meth)acrylates are components of various items used in daily life, there are many situations in which sensitization and cross-reactions with (meth)acrylates can occur. Clinicians should therefore be aware of allergic contact stomatitis caused by (meth)acrylates. ■

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Disseminated herpes zoster following inactivated SARS-CoV-2 vaccine in a healthy old man

A 65-year-old Chinese man presented with a six-day history of multiple painful vesicles and erythema on his head, trunk, upper limbs and buttck. The lesions first involved his left upper limb, left chest and interscapular region (the left C4~T1 dermatome) (figure 1A, B), then sporadic asymptomatic vesicles developed on the face, waist, right buttck and right forearm (figure 1C, D). He denied fever and headache. The patient reported having received the third dose of the CoronaVac (Sinovac Life Sciences, Beijing, China) about seven days before the onset of the lesions. He denied any adverse effects after the first two doses, except for mild injection-site pain. The patient had a history of hypertension for more than 10 years and regularly took amiodipine besylate. He had a history of varicella in childhood and had not received the herpes zoster (HZ) vaccine. Routine blood, hepatic and renal tests were normal, as were laboratory tests for tumour markers, an autoantibody spectrum, and HIV-Ab. The vesicles in multiple locations were examined by reflectance confocal microscopy which revealed intraepidermal blisters and multiple large round keratinocytes (ballooning degeneration) (figure 1E). The patient was diagnosed with disseminated HZ and treated with oral valacyclovir, gabapentin, vitamin B1 and mecobalamine. The lesions and symptoms regressed after two weeks.

With the widespread application of SARS-CoV-2 vaccines around the globe, their safety and adverse effects have become a matter of concern. Recently, an increasing number of HZ cases following SARS-CoV-2 vaccination have been reported in the literature [1]. However, the causal association between SARS-CoV-2 vaccination and HZ risk is still controversial. Several observations suggest that SARS-CoV-2 vaccination may increase the risk of VZV reactivation [2], while other studies suggest no association between them [3]. The potential bias risk of these studies is inevitable; thus, further studies with larger sample sizes are necessary before a causal inference can be assessed.

Several hypotheses have been postulated to explain the relationship between HZ development and SARS-CoV-2 vaccination. Some studies claim that cross-reactivity between spike protein and self-antigen may lead to immune-mediated disorders in SARS-CoV-2 patients in the long run. Some authors have suggested that a similar response can occur following SARS-CoV-2 vaccination [4]. Toll-like receptor stimulation of innate immunity might be the connection between SARS-CoV-2 vaccination and HZ development [5]. SARS-CoV-2 immunization may lead to immune reconstitution, similar to an inflammatory syndrome, weakening the capacity of VZV-specific CD8+ cells and resulting in VZV reactivation [6].

So far, the majority of reported patients with HZ following SARS-CoV-2 vaccination had received mRNA vaccines [1]. Most patients were older than 60 years of age, and more than 20% of them suffered from autoimmune disorders and/or were receiving immunosuppressants [1]. More than a half of patients developed symptoms after the first dose, on average 5.8 days post-vaccination [1]. Some patients developed HZ after the second dose. More cases of HZ following the third SARS-CoV-2 vaccination will probably occur. We report here a case of disseminated HZ following CoronaVac, an inactivated whole-virion SARS-CoV-2 vaccine, approved in more than 20 countries for emergency use.

As far as we know, this is the first case of VZV reactivation manifesting with disseminated HZ after SARS-CoV-2 vaccination. The risk of disseminated HZ depends on several factors, including old age, immunosuppression, comorbidities and concurrent medications [7]. There was no evidence of immune deficiency in our patient, except for old age. Further investigations are needed to investigate whether immune reconstitution after SARS-CoV-2 vaccination can promote disseminated HZ.

In conclusion, the causal association between SARS-CoV-2 vaccination and HZ remains unclear. The adverse effects after SARS-CoV-2 vaccination are generally sporadic and easily manageable and do not represent a contraindication to the completion of the vaccination cycle. Dermatologists and vaccinators should be familiar with these adverse effects in order to reassure candidates of SARS-CoV-2 vaccination.

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