Unintended widespread facial autoinoculation of varicella by home microneedling roller device

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INTRODUCTION
Microneedling was first described in the medical literature in 1995 to treat scars and rhytides by induction of collagen and elastin synthesis through microtrauma. In addition, individual microneedles have been attached to rollers to increase efficiency of puncturing the skin, such as for transdermal drug delivery to treat melasma. Depth of penetration has been described as ranging from 0.5 to 1.5 mm, which is sufficient to penetrate the papillary dermis.

More recently, home microneedling systems use has grown and are commercially available at very low cost. However, data on the safety of home microneedling systems are scarce. Here we present a case of unintentional widespread facial autoinoculation of varicella zoster virus (VZV) after the use of a home microneedling system.

CASE REPORT
A healthy woman in her 50s presented for a second opinion regarding new-onset, asymptomatic, erythematous papules on the right side of the chest (Fig 1, A) and similar lesions on the face (Fig 1, B). The patient reported that the chest lesions appeared first, which she mistook for acne. At this time, there were no lesions on the face. The patient thought she could self-treat her presumed acneiform eruption with a commercially available home microneedling roller device, and so she rolled the device several times on the affected chest area. Immediately after, she used the same device on her normal facial skin to try to reduce the appearance of rhytides.

The patient had a distant history of primary VZV infection as a child although no prior shingles vaccination. She had no history of immunodeficiency, nor was she taking immunosuppressive medications. Before presenting to the dermatology clinic, she sought medical care for the chest papules and was prescribed oral clindamycin for possible folliculitis, although a VZV polymerase chain reaction (PCR) test was also done of a chest skin lesion.

On physical examination, the patient had grouped, eroded papules and vesicles on the right T4 dermatome (Fig 1, A). She also had eroded papules on the forehead and lateral cheeks, many located at regularly spaced distances (Fig 1, B), corresponding to areas the patient had applied the microneedling roller device. The patient did not have any systemic signs or symptoms on review of systems. The PCR results had since returned positive for VZV. Although Tzanck preparation was not performed on the facial lesions, the clinical morphology findings were consistent with that of VZV, and the patient was started on oral valacyclovir, 1,000 mg 3 times a day for 7 days, with resolution of the chest and facial papules. The patient remained free of lesions 6 weeks after initial presentation, without any symptoms of postherpetic neuralgia.

DISCUSSION
Recently, home microneedling devices have become commercially available and marketed for
skin rejuvenation, scar treatments, and acne.\(^2,7\) Although these devices may include instructions to avoid use on areas of infected skin, patients may not recognize when infection is present as demonstrated in this case.

Besides infection risk, common side effects of home microneedling include pinprick bleeding and erythema.\(^8\) Allergic granulomatous reactions have been noted after microneedling at professional spas.\(^9\) Systemic hypersensitivity to topical agents introduced by microneedling devices have also been reported.\(^10\)

This case is timely in that regulatory guidelines for microneedling are currently evolving. The US Food and Drug Administration issued a draft guidance document in September 2017 on regulatory considerations of microneedling devices.\(^7\) Guidelines for infection control are limited. Methods to clean home microneedling devices range from washing the devices in hot tap water to use of enzyme-based cleansers,\(^6\) which may not adequately protect against pathogens. Whether blood-borne pathogens can be transmitted between individuals when micro-needling devices are shared is unclear but seems a critical potential concern. Dermatologists can play an important role in educating patients about home microneedling systems and their potential risks and benefits.

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