

## MPXV Transmission at a Tattoo Parlor

**TO THE EDITOR:** From July 6 to 19, 2022, a total of 21 persons were infected by monkeypox (recently renamed mpox) virus (MPXV) that was likely to have been transmitted by means of piercing or tattooing at the same parlor in Cadiz, Spain (Table S1 in the Supplementary Appendix, available with the full text of this letter at NEJM.org). During this period, 21 of 58 customers (36%) at the tattoo parlor became infected (Fig. S1).

Of the 21 infected patients, 14 (67%) were female and 9 (43%) were younger than 18 years of age. The median age of the patients was 26 years (interquartile range, 16 to 38). The patients had no history of recent high-risk sexual activity (e.g., sex without a barrier method of contraception or with multiple partners), travel to areas where mpox is endemic, or close contact with MPXV-infected persons.

Clinical features started with painful regional inflammatory lymphadenopathy, with onset a median of 7 days (interquartile range, 6 to 9) after the piercing or tattooing. All the patients subsequently had local cutaneous inflammation on approximately day 9 (interquartile range, 7 to 11). Physical examination showed cutaneous necrosis in the area of the piercing or tattoo and surrounding umbilicated pustules with an underlying edematous and erythematous plaque (Fig. 1). Subsequently, 14 patients had a systemic cutaneous rash with scattered erythematous papules and nonclustered umbilicated pustules over erythematous macules on the trunk, head, and limbs. Polymerase-chain-reaction testing of pustule exudates confirmed the diagnoses.

The first case was diagnosed on July 19. Health authorities were notified, and the tattoo parlor was closed and investigated on the following day. Of the 16 piercing- or tattooing-related items in the parlor that were tested, 15 were positive for MPXV (Table S2). The patients, close contacts of the patients, and the other 37 customers of the tattoo parlor were traced daily for the next 21 days. A secondary transmission in a patient's mother was detected. No severe complications of MPXV infection developed, and no infected patients were hospitalized. A total of 23 close contacts were vaccinated. Mpox did not develop in any of the parlor staff, and the index case remains unknown.

### Figure 1 (facing page). Perichondritis and Cutaneous Inflammation on Piercings and Tattoo Site.

Cutaneous necrosis at the area of the piercing or tattoo and surrounding umbilicated pustules with an underlying edematous and erythematous plaque are seen in photographs of patients who had undergone piercing or tattooing and become infected with the mpox virus (MPXV) (Panels A through D). Papulopustules appeared in clusters, sometimes with scalloped edges reminiscent of herpesvirus infections. However, unlike herpes lesions, these pustules were solid in content (pseudopustules). Panel E shows skin-disseminated lesions of scattered erythematous papules and nonclustered umbilicated pustules over erythematous macules. Disseminated lesions, which are usually described as monomorphic, may appear in different evolutionary stages, giving a "starry sky" appearance. Panel F shows more detail of a nonclustered umbilicated pustule over an erythematous macule.

The current mpox outbreak has spread internationally in 2022, sparking concern worldwide.<sup>1</sup> We describe cases of MPXV transmission that were likely to have occurred by means of direct inoculation from piercing and tattooing; such transmission has been observed with other poxviruses, such as *Molluscum contagiosum*.<sup>2</sup> Clinically, our patients resembled patients who were infected by means of zoonotic invasive exposure.<sup>3</sup> It is notable that regional lymphadenopathy at disease onset was observed in our patients. To date, sexual transmission of MPXV has been the most common mode of transmission, with men who have sex with men being disproportionately affected.<sup>4,5</sup> In contrast, the cases in our report mostly involved female patients. MPXV may develop new networks of transmission, with epidemiologic changes of the disease.

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Disclosure forms provided by the authors are available with the full text of this letter at NEJM.org.

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1. World Health Organization. WHO Director-General declares the ongoing monkeypox outbreak a Public Health Emergency of International Concern. July 23, 2022 (<https://www.who.int/europe/news/item/23-07-2022-who-director-general-declares-the-ongoing-monkeypox-outbreak-a-public-health-event-of-international-concern>).
2. Blasco-Morente G, Naranjo-Díaz MJ, Pérez-López I, Martínez-López A, Garrido-Colmenero C. Molluscum contagiosum over

tattooed skin. *Sultan Qaboos Univ Med J* 2016;16(2):e257-e258.

3. Reynolds MG, Yorita KL, Kuehnert MJ, et al. Clinical manifestations of human monkeypox influenced by route of infection. *J Infect Dis* 2006;194:773-80.
4. Thornhill JP, Barkati S, Walmsley S, et al. Monkeypox virus infection in humans across 16 countries — April–June 2022. *N Engl J Med* 2022;387:679-91.
5. World Health Organization. Perceptions of monkeypox from those most at risk: men who have sex with men having multiple sexual partners. August 26, 2022 (<https://www.who.int/europe/news/item/26-08-2022-perceptions-of-monkeypox-from-those-most-at-risk--men-who-have-sex-with-men-having-multiple-sexual-partners>).

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## Trial of Intravenous Immune Globulin in Dermatomyositis

**TO THE EDITOR:** The placebo-controlled, phase 3 trial of intravenous immune globulin (IVIG) in patients with dermatomyositis that was conducted by Aggarwal et al. (Oct. 6 issue)<sup>1</sup> represents an important advance. It is unfortunate that the trial excluded patients with skin-predominant disease, including those with muscle disease that had resolved. This group comprised more than 20% of patients in a population-based study.<sup>2</sup> In the trial, it is clear that IVIG treatment was effective for skin disease, given the clinically significant improvement observed in the score on the Cutaneous Dermatomyositis Disease Area and Severity Index (CDASI), a validated tool that captures meaningful changes in the severity of cutaneous dermatomyositis.<sup>3,4</sup>

Because the 2021 Food and Drug Administration (FDA) approval of IVIG for the treatment of dermatomyositis was based on this trial, some patients with skin-predominant disease are now having difficulty obtaining insurance coverage for IVIG therapy. The availability of the CDASI as a reliable skin-related measure may encourage the FDA to accept the use of this validated tool that captured improvement in cutaneous disease in this phase 3 trial and in a previous phase 2 trial.<sup>5</sup> Trials that use validated skin outcomes such as the CDASI are needed to allow for the inclusion of this important subgroup of patients with dermatomyositis who have intense and disabling pruritus, disfiguring skin disease, and emotional effects from the dermatologic aspects of dermatomyositis.

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1. Aggarwal R, Charles-Schoeman C, Schessl J, et al. Trial of intravenous immune globulin in dermatomyositis. *N Engl J Med* 2022;387:1264-78.
2. Bendewald MJ, Wetter DA, Li X, Davis MDP. Incidence of dermatomyositis and clinically amyopathic dermatomyositis: a population-based study in Olmsted County, Minnesota. *Arch Dermatol* 2010;146:26-30.
3. Yassae M, Fiorentino D, Okawa J, et al. Modification of the Cutaneous Dermatomyositis Disease Area and Severity Index, an outcome instrument. *Br J Dermatol* 2010;162:669-73.
4. Ahmed S, Chakka S, Concha J, Krain R, Feng R, Werth VP. Evaluating important change in cutaneous disease activity as an efficacy measure for clinical trials in dermatomyositis. *Br J Dermatol* 2020;182:949-54.
5. Werth VP, Hejazi E, Pena SM, et al. Safety and efficacy of lenabasum, a cannabinoid receptor type 2 agonist, in patients with dermatomyositis with refractory skin disease: a randomized clinical trial. *J Invest Dermatol* 2022;142(10):2651-2659.e1.