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## Concurrent Herpes Zoster and Psoriasis After mRNA COVID-19 Vaccine (BNT162b2): A Case Report

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### Dear Editor,

With the increase in coronavirus disease-2019 (COVID-19) vaccination rates, different cutaneous side effects of vaccines are encountered. These reactions are generally mild and do not constitute an obstacle to vaccination. While reactions such as local injection site reactions, urticaria, morbilliform rash are more common due to mRNA COVID-19 vaccines (BNT162b2, mRNA-1,273); pernio/chilblains, cosmetic filling reactions, zoster, herpes simplex exacerbations, and pityriasis rosea-like reactions have also been observed [1]. Newly diagnosed psoriasis cases after mRNA COVID-19 vaccine have been reported rarely [2]. An article has recently been published reporting three cases of psoriasis exacerbated after mRNA vaccine [3]. As far as we could scan, there is no case of both herpes zoster (HZ) and psoriasis development in the same patient after mRNA vaccination. Here, we present a case of simultaneous development of HZ and psoriasis after mRNA COVID-19 vaccine. Informed consent form was obtained from the patient for this study.

A 62-year-old male patient presented with painful wounds on the right side of his torso and dandruff wounds on his hands and arms. The patient had no previously known additional disease and did not have any medication that he used regularly. In his detailed anamnesis, it was understood that the patient had the first dose of mRNA COVID-19 vaccine (BNT162b2) two weeks ago and his



**Figure 1.** Psoriatic plaques on the dorsal surface of both hands, forearms, and elbow extensor surfaces (a,b,c). Erythematous vesicles and crusted center papules in the area compatible with the T-8 dermatome (d,e)



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complaints started about three days after the vaccine. Before his complaints started, the patient had no history of infection, drug therapy, emotional stress, or physical trauma. Dermatological examination revealed psoriatic plaques on the dorsal surface of both hands, forearms, and elbow extensor surfaces (Figure 1a,b,c), and erythematous vesicles and crusted center papules were found in the area compatible with the T-8 dermatome on the right half of the body (Figure 1d,e). Lesions on the trunk were compatible with HZ, and lesions on the extremities were compatible with psoriasis. For HZ, valacyclovir 1 g tablet three times a day, topical steroid cream and urea-based moisturizers were recommended for psoriasis lesions.

It has been reported that vaccines such as hepatitis A, influenza, rabies, and Japanese encephalitis trigger HZ. Recently, HZ cases have been reported after vaccination within creasing COVID-19 vaccination rates. Our case had new onset psoriasis concurrent with HZ. Psoriasis is a multifactorial disease in which genetic and environmental factors play a role. The innate and adaptive immune system plays a role in the pathogenesis. Dendritic cells and type-I interferon (IFN) produced by them play an active role in innate immunity, and Th-1 and Th-17 and tumor necrosis factor (TNF)-alpha, IL-23, IL-17 play an active role in adaptive immunity. Onset or exacerbations of psoriasis have rarely been reported after some vaccines (influenza and tetanus-diphtheria) [3,4]. Reported cases of psoriasis occur immediately after vaccination and are usually in the form of guttate psoriasis [3,4]. It has been determined that more than half of HZ cases due to COVID-19 vaccines occur in the first five days after vaccination, and most of them occur within two weeks [5]. In our case, plaque psoriasis and HZ appeared within a few days after vaccination, which was consistent with the literature. In clinical studies form RNA COVID-19 vaccines, it has been shown that IL-2, IL-12, TNF-alpha and IFN-gamma levels increase after vaccination [6]. In experiments performed in mouse models, it has been shown that there is an increased Th-1 and Th-17 immune response after influenza vaccination [7]. These studies show that the immune response after vaccination may trigger psoriasis. The relationship between mRNA COVID-19 vaccines and varicella-zoster virus (VZV) reactivation is thought to be mediated by the toll like receptor-3, 7 of innate immunity [8]. COVID-19 vaccination can activate T and B cell immunity by leading to the production of type-I IFNs and other inflammatory cytokines, and negatively affect antigen expression and cause VZV reactivation [9]. The coexistence of these two diseases in our patient indicates that there may be a common immune pathogenesis.

## Ethics

**Ethics Informed Consent:** Informed consent form was obtained from the patient for this study.

**Peer-review:** Internally peer-reviewed.

## Authorship Contributions

Concept: S.A., D.T., N.A., Design: S.A., D.T., N.A., Data Collection or Processing: S.A., D.T., N.A., Analysis or Interpretation: S.A., D.T., N.A., Literature Search: S.A., D.T., Writing: S.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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