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Clinical Image

Skin reactions after injection of COVID-19 vaccine: four clinical image

Running Title: COVID-19 vaccines

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Figure 1. Development of skin eruption after injection of the second dose of COVID-19 Sinopharm vaccine in a 70-year-old man

Figure 2. Development of skin eruptions after injection of the second dose of AstraZeneca vaccine in a 77-years-old man

Figure 3. Development of skin eruptions after injection of the second dose of AstraZeneca vaccine in a 70-year-old man

Figure 4. Development of itchy skin eruptions in the leg of a 50-year-old woman after injection of AstraZeneca vaccine

Keywords: COVID-19 vaccines; Dermatitis; Hypersensitivity

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Introduction

Vaccines are essential public health tools with desirable safety profiles and preventative effects. Historically, vaccines play an indispensable role in reducing infectious diseases in populations. We expect COVID-19 vaccines to bear similar positive effects on human health worldwide (1).

Although severe allergic reactions to vaccines are rare (2), physicians and healthcare staff need to know and consider their mechanisms and severe consequences for clinical management to provide the safest possible care for people receiving the vaccine (٣). Much as SARS-COV-2 mainly affects the respiratory, gastrointestinal, and nervous systems, it may cause heterogeneous signs and symptoms in different scenarios and clinical manifestations (4, 5).

In this study, we report four cases of skin reactions following the COVID-19 vaccine (Figure 1-4). We hope this report will add a drop to the ocean of information expected to be collected around COVID-19 vaccines' impact on human populations.

Imaging Findings

As to the first case, we report a dermatologic complication in a 70-year-old man who presented to the medical center with skin eruptions two weeks after receiving the second dose of the COVID-19 Sinopharm vaccine. These eruptions were not fabricated or falsified by the patient or another person, and there was no primary or secondary gain.

This case had not received any other medicine. He had no recent history of biting nor any record of such eruptions. The dermatologist also suggested the possibility of red wind waste (**Figure 1**).

The second case was a 70-year-old man who developed eruptions on his back and waist two weeks after receiving the AstraZeneca vaccine; he also stated that these eruptions weren't associated with pruritus and had no history of such lesions. Based on a dermatologist's diagnosis, eruptions were chronic, and the disease was identified as possibly cherry-angioma.

These eruptions are likely inherited and can be assumed to have been caused by a vaccine (**Figure 2**).

A third case is a 77-year-old man with a history of hypertension who had developed eruptions on his back and waist two days after receiving the second dose of the AstraZeneca vaccine. The patient expressed that the eruptions were not itchy and showed no other symptoms. This case had no history of such eruptions; these lesions had appeared after injection of the vaccine. Due to the possibility of coagulation disorder in the patient, we referred the case to an internal medicine specialist. As the dermatologist suggested, if the eruptions proved to be chronic, they could probably be the sign of cherry-angioma. However, the incidence of this complication following vaccination is significant and requires further research and evidence (**Figure 3**).

The fourth case is a 50-year-old woman who developed itchy skin lesions on her leg one week after receiving the AstraZeneca vaccine. Experiments revealed platelet counts of 285,000/mm3 and ESR = 21 mm/h. The dermatologist ruled out the possibility of

petechiae and purpura for the type of eruptions. Finally, an internist described these eruptions as a vaccine-induced rash and prescribed prednisolone for the patient (**Figure 4**). It, however, remains to be known whether these eruptions can be attributed to vaccine injection. It is only possible to explain these eruptions as the possible complication of the vaccine injection. Therefore, to put forth a definite suggestion, we need far more accurate information and reports in this regard.

The vital signs of all four patients were normal and stable, i.e., they did not show to be malignant.

Conclusion

The purpose behind presenting these four cases as forms of the clinical image is to illustrate only a prior and late relationship between the injection of the COVID-19 vaccine and the development of such eruptions. Therefore, further detailed examination and treatment of these eruptions rely on more extensive information, reports, and specific laboratory examinations. Moreover, predicated on a dermatologist's suggestion, the presence of shingles can be considered a possibility. Examining and presenting these cases also help clarify the possible side effects of vaccines produced for emerging diseases such as COVID-19. Because COVID-19 reduces cell-mediated immunity (6), it can also escalate the risk of Herpes Zoster (H.Z.). Although the exact cause is yet to be known, immune regulation from attenuated live vaccines and reduced reactivity from inactivated vaccines may effectively reactivate H.Z. (7, 8). We, therefore, need more detailed information and epidemiological studies to address the possible link between vaccination and the activation of herpes virus infections.

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