CASE REPORT

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A Case Study of Psoriasis Vulgaris After COVID-19 Vaccination in Saudi Arabia

Hassan Alwafi,[1] Nedaa Alsulaimani,[2] Mohammed E. Almalki,[2] Asma Mohammad Banjar,[3] Reham Abdullah Alamri,[4] Danya Alwafi,[5] Anan S. Jarab,[6,7,8] Asaleh El-Qasem,[9] Yosra J. Alhartani,[10] Abdallah Y. Naser[10]

[1]Pharmacology and Toxicology Department, Faculty of Medicine, Umm Al Qura University, Makkah, Saudi Arabia
[2]Department of Medicine and Surgery, Faculty of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia
[3]Faculty of Pharmacy, Umm Al Qura University, Makkah, Saudi Arabia
[4]Department of Clinical Nutrition, Faculty of Applied Medical Sciences, Umm Al-Qura University, Makkah, Saudi Arabia
[5]Department of Dermatology, Al-Noor Specialist Hospital, Ministry of Health, Makkah, Saudi Arabia
[6]College of Pharmacy, Al Ain University, Abu Dhabi, United Arab Emirates
[7]AAU Health and Biomedical Research Center, Al Ain University, Abu Dhabi, United Arab Emirates
[8]Department of Clinical Pharmacy, Faculty of Pharmacy, Jordan University of Science and Technology, Irbid, Jordan
[9]Faculty of Pharmacy, University of Jordan, Amman, Jordan
[10]Department of Applied Pharmaceutical Sciences and Clinical Pharmacy, Faculty of Pharmacy, Isra University, Amman, Jordan

Abstract

Since the COVID-19 vaccines have been approved, worldwide reports of adverse events have been reported. Although a few cases of Psoriasis vulgaris have been reported after COVID-10 vaccination, there is currently limited evidence to establish a direct relationship between the vaccine and this condition. A 27-year-old Saudi woman, previously healthy and had no medical issues, reported skin lesions on her lower legs, which she noticed ten (10) days after receiving the first dose of the Pfizer COVID-19 vaccine. The patient had no prior history of such lesions or any family history of psoriasis. Joint pain was not observed. A diagnosis of psoriasis vulgaris was made, and the patient was treated with Daivobet® cream, urea cream 10%, and full-body NB-UVB light therapy three times a week for up to two months. The patient's condition improved partially. This report presents the first known case of psoriasis vulgaris after the COVID-19 vaccine in the Middle East. Further research is needed to fully understand this connection. The study emphasizes the significance of a thorough medical history and evaluation for precise diagnosis and treatment.

Keywords: COVID-19, drug-related side effects and adverse reactions, SARS-CoV-2, vaccines, vulgaris

Introduction

Psoriasis is a chronic, inflammatory skin condition caused by the immune system. This condition can significantly negatively impact a patient's overall quality of life.[1] The WHO classified this disease as a non-curable, chronic disease with no typical clinical presentation in 2016.[2] There are several clinical classifications of psoriasis, and different subtypes include plaque, flexural, guttate, pustular, and erythrodermic. Plaque psoriasis is the most widespread type of psoriasis, which is distinguished by well-defined salmon pink plaques with silvery-white scale, sometimes in an asymmetrical pattern, and affecting the extensor surfaces, notably the elbows and knees, trunk, and scalp.[3] Skin scaling is the most common symptom of psoriasis, followed by itching and erythema. Fatigue, swelling, burning, and bleeding are also reported in some cases.[4] Psoriasis can affect people of any age, and there is no significant difference in the prevalence or incidence of psoriasis between males and females.[5] The prevalence of psoriasis varies across countries, and its rate ranges from 0.33% to 0.6% in different races, estimated to be around 125 million people worldwide.[6]

Corresponding Author:
Dr. Hassan Alwafi
Pharmacology and Toxicology Department, Faculty of Medicine, Umm Al Qura University, Makkah, Saudi Arabia
Email: hhwafi@uqu.edu.sa

In Saudi Arabia, the prevalence of psoriasis is 5.7%.[7] Individuals with psoriasis are reported to be more likely to have obesity, cardiovascular disease, non-alcoholic fatty liver disease, diabetes, and metabolic syndrome than the general population.[8] In addition, mental health issues, including anxiety and depression, are higher among patients with psoriasis than in the general population.[9]

It is widely believed that psoriasis results from genetic and environmental factors. Various triggers, such as stress, skin injuries, infections, medications, or vaccination, can exacerbate the condition.[10,11] The relationship between vaccines and psoriasis onset or flare-up has been described previously, including psoriasis triggered by influenza (H1N1), pneumococcal pneumonia, tetanus-diphtheria, and yellow fever vaccines.[11,12]

Several COVID-19 vaccines have recently proven their effectiveness and safety in trials; some vaccines have been authorized to be used to prevent COVID-19 infection.[13] COVID-19 side effects have been reported, with pain at the injection and headaches as some of the common ones.[14,15] However, rare adverse events, including cutaneous side effects related to the COVID-19 vaccine, have also been reported, including the exacerbation of psoriasis plaque.[16] While data on the safety of COVID-19 vaccines in patients with psoriasis is limited, previous studies reporting flare-ups and new onsets of psoriasis after the COVID-19 vaccination have been reported.[16,17] According to the Center for Disease Control (CDC) Vaccine Adverse Events Reporting System (VAERS) data, the occurrence of psoriasis after the administration of the COVID-19 vaccines is around 244 cases of a total of 207,302 COVID-19 vaccine adverse effects (0.11%).[18] Reports on the flare-up and new onset of psoriasis post-COVID-19 vaccination in the Middle East and Saudi Arabia are limited. Therefore, this study aimed to present the case of a female patient who developed psoriasis vulgaris after receiving COVID-19 vaccination.

Case

A 27-year-old female patient from Saudi Arabia with no previous health issues reported skin lesions on her lower legs about 10 days after receiving the first dose of the Pfizer COVID-19 vaccine. The patient's condition worsened over time, with the emergence of scalier beefy red lesions that spread to her trunk and caused itching. The patient had no family history of psoriasis or similar lesions and did not experience joint pain on physical examination. Blanchable erythematous papules and plaques with silvery-white dry scaling of various sizes were present on her trunk, legs, and hands (Figure 1).

Some of her nails had pitting, but her joints were not affected (Figure 2). Blood test results were normal. Punch Skin biopsy revealed focal parakeratosis with entrapped neutrophils.

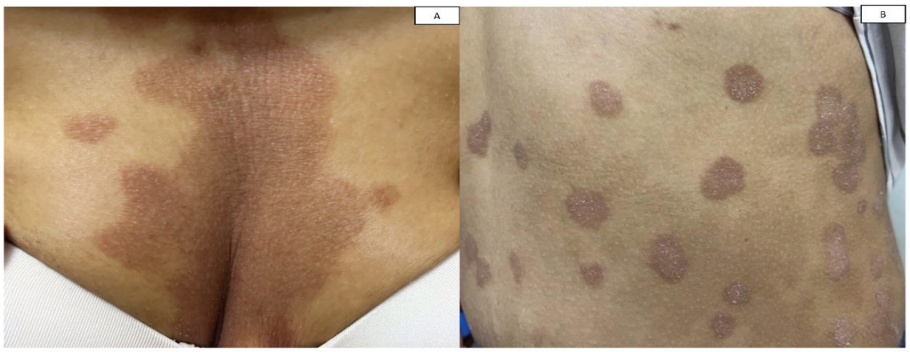

Figure 1 Several Blanchable and Well-Defined Borders Papules and Plaques are Observed on the (A) Chest, (B) Abdomen, And (C) Leg. These areas also have dry, silvery-white scaling of various sizes. The patient has developed clearly defined papules and plaques with redness and dry scaling on their upper extremities. Nail pitting (D) has been observed on some of the fingernails

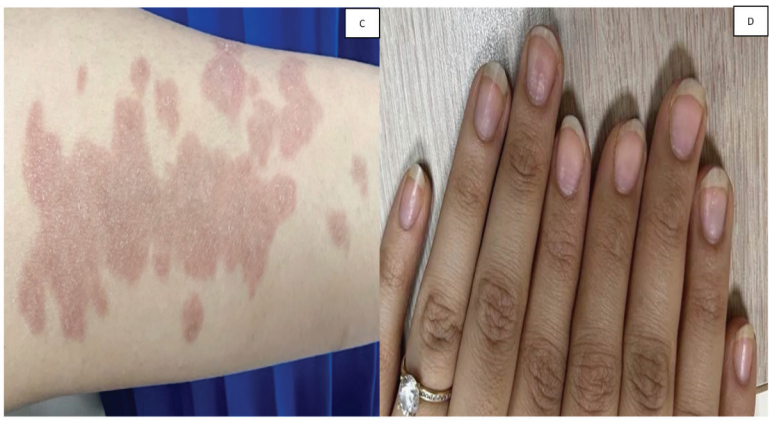

Figure 2 Well-defined Erythematous Papules snd Plaques With Dry Scaling sre Found Over the Upper Extremities (c); Nail Pitting Appears in Some of the Patient's Fingernails (d)

The patient was diagnosed with plaque psoriasis and was treated with Daivobet® cream and urea cream 10%. Full-body narrowband ultraviolet B (NB-UVB) light therapy was administered three times a week for up to two months. The patient reported a partial resolution of psoriasis during her outpatient clinic visits, with most of the lesions disappearing.

Discussion

This report describes a case of a 27-year-old Saudi female patient, previously healthy and free from any medical complaints, with a chief complaint of skin lesions on her lower legs after receiving the first dose of Pfizer COVID-19 vaccine. Later the patient was diagnosed with psoriasis vulgaris. It is imperative to thoroughly analyze this case report due to the insight it provides into a potentially uncommon adverse event that may occur subsequent to receiving the COVID-19 vaccination. Comprehending such incidents is critical for healthcare professionals in order to promptly identify and manage analogous cases. Moreover, it underscores the significance of surveillance and communication regarding adverse events in order to bolster the safety of vaccines and instill public trust in vaccination initiatives.

In this case report, we diagnosed an adult patient with de novo psoriasis vulgaris. The condition appeared ten (10) days after receiving COVID-19 vaccine. Psoriasis cases resurfacing after immunization have been documented, despite the rare occurence. Previous studies have reported psoriasis symptoms in people aged 65 to 89 following COVID-19 vaccination (Table 1).[16,17,19]

These studies suggest that aging may contribute to a weakened immune system, leading to susceptibility to inflammation and infectious diseases as the protective immunity deteriorates over time. [20] However, this present study represents the first case report of de novo psoriasis in adult non-psoriatic patients following COVID-19 vaccination in Saudi Arabia. In this study, the brand of the vaccine received Pfizer. However, other studies reported different brands of COVID-19 vaccine, including Pfizer, AstraZeneca vaccine, and mRNA-1273 vaccines. Unlike most other reported studies, in the case of this study, the patient's symptoms started to appear after the first dose of the vaccine. The patient was diagnosed with a new onset of psoriasis, like previous studies conducted in India, Vietnam, and the United States. However, due to geographical differences, there is not enough evidence to suggest a correlation between the vaccine and any skin condition. Psoriasis is an immune-mediated inflammatory skin disease affected by several triggers comprising a combination of immune, genetic, and environmental factors.[3,21] Accordingly, the Pfizer COVID-19 vaccine, which targets the immune system, has an associated potential trigger with the new onset of psoriasis, as reported in three previous studies.[12,17,19] Unfortunately, there is no well-understood pathophysiology for new-onset psoriasis following vaccination. However, the increase of interleukin-6 (IL-6) and T-helper17 (Th17) cells after COVID-19 mRNA vaccinations has been shown to play an essential role in the pathogenesis of the disease [22]. Similarly,

Table 1 Summary of Cases Reported in the Literature Review

Study	Nagrani et al.[16] (2022)	Wei et al.[14] (2022)	Tran et al.[17] (2021)	
No. patients	1	1	2	
Gender	Male	Male	Male	Female
Age	65	89	51	68
Type of vaccines	Oxford-AstraZeneca /Covishield)	mRNA-1273 vaccine	AZD1222 vaccine	mRNA-1273 vaccine
Vaccine shot to observe symptoms	2	2	1	3
Days of onset	10	24	7	30
Physical finding	scaly erythematous papules and plaques over the trunk and extremities	Scalp, torso, arms, legs 60% BSA.	blanchable erythematous demarcated papules and plaques with silvery-white dry scaling were found on his scalp, legs, and hands. Some of his nails had onycholysis and subungual hyperkeratosis	erythematous demarcated papules and plaques and scaling on trunk and extremities with mild onycholysis
Type of lesions	new-onset of plaque psoriasis	new-onset of plaque psoriasis	new-onset of plaque psoriasis	new-onset of plaque psoriasis
Treatment	Apremilast (10 mg on a day one, increased to 30 mg twice daily by day 7), antihistamines and emollients	Ixekizumab Acitretin 25 mg.	Topical calcipotriol/ betamethasone antihistamines.	
History of COVID	Unknown	No	No	No
Medical history	No	No	Hypertension was a 35-pack-year smoker, and drank alcohol occasionally	Hypertension

previous studies show a significant increase in the production of IL-6 and, in turn, the cellular development of Th17 following BCG, tetanus-diphtheria, and influenza vaccines.[23] In addition, a prominent study area showed that innate and adaptive immune systems are thought to be at the root of the psoriasis pathogenesis.[24] It shows a complicated interaction between dendritic cells, T cells, and keratinocytes, which explains the underlying cause of psoriasis, with the IL-23/Th17 axis being the central driver of immune activation, chronic inflammation, and keratinocyte proliferation.[25]

Based on the severity classification of the patient's psoriasis, it is considered a mild to moderate case. The chosen treatment options include Daivobet® cream, which is a topical corticosteroid (betamethasone dipropionate 0.5 mg/g), combined with a topical vitamin D3 analog (calcipotriol 50 µg/g) for four (4) weeks. Additionally, applying urea cream 10% as a moisturizer and undergoing a full-body NB-UVB light therapy three times a week for up to 2 months is recommended. However, there are currently no recommendations for treating psoriasis that appears specifically after COVID-19 vaccination.

Sharing information about COVID-19

vaccination and its impact on dermatological features across regions is paramount. Our observations indicate psoriasis may be a potential clinical manifestation following the COVID-19 vaccine. Nevertheless, the limited data availability for this association necessitates further research for comprehensive exploration of this condition. Further research is crucial to gain a comprehensive understanding of the potential risks and contradictions associated with the COVID-19 vaccine.

In conclusion, the first known case report of psoriasis vulgaris occurring after receiving the COVID-19 vaccine in the Middle East is presented in this case study. Further investigation is necessary to determine any potential connection. This study emphasizes the significance of a comprehensive medical history and assessment for precise diagnosis and treatment.

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