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## LETTER TO EDITOR

### De novo psoriasis induced by ChAdOx1-S COVID 19 vaccine<sup>☆</sup>

**Keywords** Psoriasis; COVID-19 vaccine; Pharmacovigilance; Adverse drug reaction; Adverse events following immunization; ChAdOx1-S COVID 19 vaccine

#### Abbreviations

COVID-19 coronavirus disease 2019  
IFN- $\gamma$  interferon- $\gamma$   
TNF- $\gamma$  tumor necrosis factor- $\gamma$

#### Introduction

Psoriasis is a chronic, immunologically mediated, inflammatory skin condition. It is characterized by erythematous, indurated scaly plaques, with predilection of extensor surfaces, the scalp and the nails. It may be caused by infection, stress or physical trauma. Some drugs were involved in causing psoriasis such as beta-blockers, lithium, synthetic anti-malarial drugs and recently treatments using monoclonal antibodies [1]. Coronavirus disease 2019 (COVID-19) vaccines have recently been linked to worsening of pre-existing psoriasis [2]. We report a very rare case of new onset of psoriasis following Oxford/AstraZeneca ChAdOx1-S COVID-19 vaccine. This report was notified in October 2021 to the National Center Chalbi Belkahia of Pharmacovigilance and registered with the file number 5263/2022.

#### Case report

A 58-year-old female patient, treated since 2019 by sodic levothyroxin at the dose of 100  $\mu$ g per day for hypothyroidism, received on August 7<sup>th</sup>, 2021, her first dose (0.5 mL) of Vaxzevria<sup>®</sup> (ChAdOx1-S COVID-19 vaccine). On August 17<sup>th</sup>, 2021, she presented to the emergency department because of an erythematous eruption on her limbs.

Dermatological examination revealed erythematous skin with yellow crusts on the limbs and scaly, desquamative plaques over the upper and lower limbs, corresponding to plaque type psoriasis (Fig. 1). Some of her nails had onycholysis and no other mucosal membrane or palmo-plantar involvement was noted. No other organs were affected. The



**Figure 1.** Lesions of psoriasis on the abdomen.

bacterial skin swab was negative. Her blood test results were normal and histological findings confirmed psoriasis by detecting intermittent parakeratosis, absence of the granular layer, elongation of the dermal papillae, dermal lymphocytic infiltrate, as well as dilated blood vessels.

The patient denied any other drug intake, any previous infections or stress. The patient was neither an alcohol user nor a smoker. There was no familial predisposition to psoriasis. There was also no previous history of skin irritation.

Hence, based on the history and clinical findings, she was diagnosed with psoriasis onset with the COVID-19 vaccine. The patient was treated by local ointment containing an association of betametasone and calcipotriol (50  $\mu$ g/0.5 mg/g) once daily, resulting in a significant resolution of the skin eruption within one month.

The patient was invited to have her second dose. She received her second dose of COVID-19 vaccine with the same type (ChAdOx1-S COVID 19 vaccine). Psoriasis lesions did not recur after a follow up of 6 months later.

#### Discussion

In this case, the causality assessment of COVID-19 vaccine was valued as I2 (C1S2) because of a compatible delay of 10 days after the first dose, a favorable outcome after the vaccination, the absence of recurrence after the second dose and the findings of skin biopsy [3]. The causality assessment of sodic levothyroxin was not retained because of the favorable outcome despite its pursuit.

<sup>☆</sup> This case has been declared on October 2021 to the National Pharmacovigilance Center Chalbi Belkahia (Tunis, Tunisia) under the number 5263/2022.

**Table 1** Reported cases of de novo psoriasis induced by ChAdOx1-S COVID-19 vaccine.

Cases	Reference	Age	Gender	Delay of onset (day)	Dose number of ChAdOx1-COVID19 vaccine	Evolution
1	[2]	51	Male	7	First	More lesions appeared and spread after the second and third dose Responded well to treatment with apremilast, anti-histamines, and emollients. Third dose was not mentioned
2	[4]	65	Male	10	Second	
3	[5]	66	Female	21	First	No consequences to the skin after the second dose
Our case		58	Female	10	First	Psoriasis lesions did not recur after the second dose of the same vaccin

COVID-19: coronavirus disease 2019.

New-onset of psoriasis has rarely been reported after vaccination with ChAdOx1-S COVID-19 vaccine [2,4]. Only three cases of *de novo* psoriasis induced by the ChAdOx1-S COVID-19 vaccine have been described in the literature worldwide [4–6][2,4,5] (Table 1). The delay of appearance of the psoriasis ranged from 7 days to 21 days after the first or the second dose of the vaccine. The age varied from 23 to 66 years. The evolution was marked by the exacerbation of the psoriasis after the second and the third dose in one case [2]. In one case, no relapse of the psoriasis was detected following the second dose of the AstraZeneca vaccine, like our case [5].

Psoriasis is characterized by a Th1-type LT CD4 + response producing high levels of tumor necrosis factor- $\gamma$  (TNF- $\gamma$ ) and interferon- $\gamma$  (IFN- $\gamma$ ) [4]. The mechanism of new-onset psoriasis after COVID-19 vaccine remains unclear. For mRNA COVID-19 vaccines, clinical trials have elicited that levels of IL-2, IL-12, tumor necrosis factor (TNF)- $\gamma$  and interferon (IFN)- $\gamma$  may increase after vaccination [6]. For ChAdOx1-S COVID-19 vaccine, it was suggested that a single dose of the vaccine increases on day 14 the production of TNF- $\gamma$  and IFN- $\gamma$ , which are important cytokines involved in the pathophysiology of psoriasis [4].

### Conclusion

This case reported possible de novo psoriasis after ChAdOx1-S COVID-19 vaccine. The possibility to continue or to change the type or to completely stop the vaccine remains unclear and controversial.

### Disclosure of interest

The authors declare that they have no competing interest.

### References

- [1] Balak DM, Hajdarbegovic E. Drug-induced psoriasis: clinical perspectives. *Psoriasis: Targets and Therapy* 2017;7:87–94.
- [2] Tran TNA, Nguyen TTP, Pham NN, Pham NTU, Vu TTP, Nguyen HT. New onset of psoriasis following COVID-19 vaccination. *Dermatol Ther* 2022;18:e15590.
- [3] Montastruc JL. Pharmacovigilance and drug safety: Fair prescribing and clinical research. *Therapies* 2022;77:261–3.
- [4] Nagrani P, Jindal R, Goyal D. Onset/flare of psoriasis following the ChAdOx1 nCoV-19 Corona virus vaccine (Oxford-AstraZeneca/Covishield): report of two cases. *Dermatol Ther* 2021;34:e15085.
- [5] Elamin S, Hinds F, Tolland J. De novo generalized pustular psoriasis following Oxford-AstraZeneca COVID-19 vaccine. *Clin Exp Dermatol* 2022;47:153.
- [6] Pesque D, Lopez-Trujillo E, Marcantonio O, Gimenez-Arnau AM, Pujol RM. New-onset and exacerbations of psoriasis after mRNA COVID-19 vaccines: two sides of the same coin? *J Eur Acad Dermatol Venereol* 2022;36:e80–1.

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