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LETTER TO THE EDITOR

Oxford-AstraZeneca COVID-19 vaccine-induced acute localized exanthematous pustulosis

Dear Editor,

A 43-year-old woman with medical histories of hyperlipidemia and chronic urticaria received the first dose of the Oxford-AstraZeneca COVID-19 vaccine (AZD1222 vaccine). Two days later, pruritic skin rashes developed at the vaccine injection site of the left arm, and gradually expanded to left upper arm and left chest. On physical examination, the patient had erythematous, edematous plaques with scattered, non-follicular pustules over her left upper arm and left chest (Figure 1a–c). She had a fever on the day after vaccination. She denied any other medication exposure or contact history other than the vaccination. Laboratory test showed a white blood cell count of $11.35 \times 10^3/mm^3$ with 89.4% neutrophils. Pathology from skin biopsy revealed subcorneal pustules, basal layer vacuolation, epidermal spongiosis, papillary dermal edema, and superficial perivascular mixed cell infiltration with eosinophils (Figure 1d,e). In addition, numerous intravascular neutrophils were noted (Figure 1f), which may indicate acute chemotaxis. Based on the clinical history, skin presentations, and pathology findings, the patient was diagnosed with AZD1222 vaccine-induced acute localized exanthematous pustulosis (ALEP). We prescribed topical fluocinonide cream, oral antihistamine and oral prednisolone 30 mg/day for one week and tapered prednisolone to 20 mg/day in the second week. The pustules disappeared with desquamation within 5 days and skin lesions subsided in 2 weeks.

ALEP is a localized variant of acute generalized exanthematous pustulosis (AGEP) with around 35 case reports. ALEP/AGEP is a well-known cutaneous adverse effect caused mostly by certain medications. The EuroSCAR study has proposed a scoring system for AGEP diagnosis by clinical morphology, course, and histopathologic features.[1] In our case, the patient reached a score of 9, which indicating a definite diagnosis of AGEP. However, due to rather localized lesions, ALEP is a more suitable diagnosis.

Reports on vaccine-induced ALEP/AGEP are limited. Previous case reports include four cases of AGEP, induced by the measles–mumps–rubella, diphtheria–pertussis–tetanus, and pneumococcal

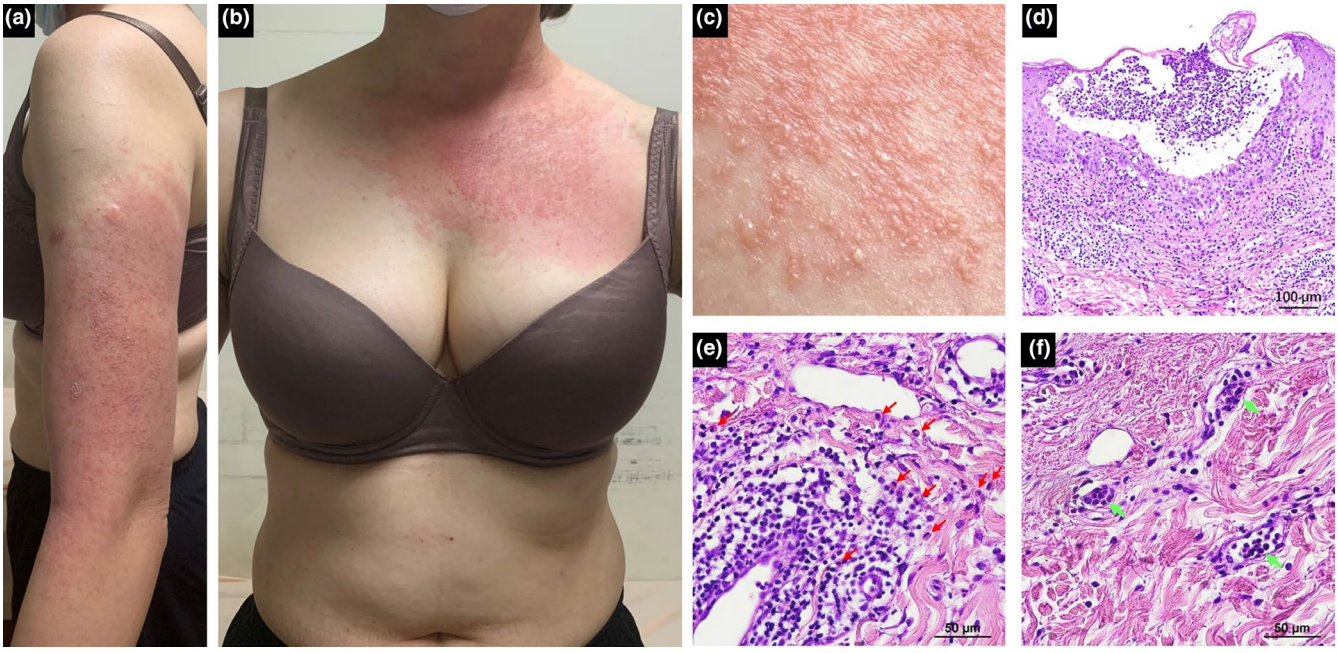

FIGURE 1 Clinical and pathological features of the Oxford-AstraZeneca COVID-19 vaccine (AZD1222 vaccine)-induced acute localized exanthematous pustulosis (ALEP). (a–c) Erythematous and edematous plaques with scattered and confluent pustules over the left upper arm and ipsilateral chest. (d, e) Subcorneal pustules with basal layer vacuolation, epidermal spongiosis, papillary dermal edema, and superficial perivascular mixed cell infiltration with eosinophils (red arrows) (d, 200×; e, 400×); (f) Numerous intravascular neutrophils (green arrows) are present. (400×)

vaccines in an American child;[2] influenza vaccine in a pregnant Japanese woman;[3] tetanus toxoid vaccine in an Indian patient;[4] and AZD1222 vaccine in a Korean woman.[5]

Current consensus for AGEP pathogenesis is drug-specific T-cell-mediated neutrophilic inflammation. These T cells produce increased amount of CXCL8, a neutrophilic cytokine, leading to the neutrophils chemotaxis.[1] ALEP may have a similar pathophysiology. The pathology finding of intravascular neutrophils in our case provides sufficient evidence of chemotaxis in the course of ALEP. However, the mechanisms of localized distribution of the lesions are still uncertain.

The treatment of our case is based on typical AGEP treatment. Short-term systemic corticosteroids, oral antihistamines, and topical corticosteroids were effective for symptom relief. The patient was deemed not suitable for the second dose AZD1222 vaccination and should have another brand of COVID-19 vaccine.

To our knowledge, we report the first case of AZD1222 vaccine-induced ALEP. Accompanied with the Korean's case,[5] current reports of AZD1222 vaccine-induced ALEP/AGEP are both women and of Asian descent. While the COVID-19 vaccinated population is increasing globally, more AZD1222 vaccine-induced ALEP/AGEP cases may be reported. Despite favorable prognosis, AGEP sometimes results in mortality. Therefore, reports of any COVID-19 vaccine-induced severe cutaneous adverse effects are of great necessity.

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The patient in this manuscript have given informed consent to publication of her case details.

CONFLICT OF INTEREST

None declared.

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