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Bullous Pemphigoid Suspected to Be Caused by COVID-19 Vaccine: A Case Report

Cut P. Hazlianda [1*], Rinda C. Risanti [1]

[1] *Department of Dermatology and Venereology, Faculty of Medicine, Universitas Sumatera Utara / Prof. dr. Chairuddin Panusunan Lubis Hospital, Medan, Indonesia*

***Corresponding Author**: Cut P. Hazlianda, Email: cut.putri@usu.ac.id

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ABSTRACT

Introduction: Bullous pemphigoid (BP) is the most common autoimmune subepidermal blistering disease caused by autoantibodies against hemidesmosomal proteins, BP180 and BP230. Although usually idiopathic, BP has increasingly been reported following COVID-19 vaccination, and early recognition of this association is clinically important.

Case Description: A 64-year-old man developed widespread tense bullae over erythematous skin with pruritus and pain, sparing the face, two days after the first dose of an inactivated (Sinovac) COVID-19 vaccine. He had no history of drug or food allergy, prior skin disease, or relevant comorbidities. Dermatological examination revealed multiple tense bullae with papular and vesicular lesions over erythematous macules and plaques on the extremities and trunk, with erosions, excoriations, and crusts; Nikolsky's sign was negative. Histopathology demonstrated subepidermal bullae with acanthosis and an inflammatory infiltrate rich in eosinophils, lymphocytes, and neutrophils, confirming BP suspected to be vaccine-induced. The patient was treated with systemic and topical corticosteroids, oral antibiotics, antihistamines, and supportive care. After one week, the lesions improved markedly, with no new bullae, and corticosteroids were gradually tapered.

Conclusion: Bullous pemphigoid may develop shortly after COVID-19 vaccination. Although a causal relationship cannot be firmly established, clinicians should remain aware of this potential association, particularly in elderly patients presenting with new-onset blistering eruptions after vaccination, as early recognition enables prompt management and favorable outcomes.

Keywords

Autoimmune Blistering Disease, Bullous Pemphigoid, COVID-19 Vaccine, Cutaneous Adverse Reaction, Pemphigoid

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INTRODUCTION

Bullous pemphigoid is mediated by autoantibodies that react with hemidesmosomal proteins BP180 and BP230, triggering an inflammatory cascade that ultimately leads to blister formation [1]. Although most cases are considered idiopathic, several precipitating factors have been described in the literature, including ultraviolet light, radiation, drugs, and physical trauma. In addition, cases of BP developing after vaccine injection have recently been reported, with variable latency periods, most often less than one month. The mechanism by which the COVID-19 vaccine induces BP has not been thoroughly investigated yet. Autoimmune mechanisms following SARS-CoV-2 infection may be related to molecular mimicry [2]. However, vaccination can activate B- and T-cell immunity, triggering an autoimmune response in genetically predisposed individuals [3].

The diagnosis of BP suspected to be caused by COVID-19 vaccination is based on history and clinical examination; histological analysis of a biopsy taken from a lesional area showing subepidermal bullae together

with acanthosis and inflammatory cells, and immunofluorescence are required to support the diagnosis [4]. Direct immunofluorescence of perilesional tissue in bullous pemphigoid shows a linear pattern of immunoglobulin G and C3 deposition along the epidermal–dermal junction. Treatment is guided by several factors, including disease severity and comorbidities. Patients with localized BP can often be successfully treated with topical corticosteroids alone, whereas patients with more extensive disease are usually treated with oral prednisone. High-potency topical corticosteroids result in significant systemic absorption and can therefore exert both local and systemic effects [1].

CASE DESCRIPTION

A 64-year-old man presented with tense blisters over erythematous skin, accompanied by pain and itching over the entire body, except for the face, beginning five days earlier. There was no history of oral mucosal erosion in the patient. Two days before the lesions appeared, the patient received the first dose of the Sinovac Biofarma COVID-19 vaccine intramuscularly in the left arm, without any itching or erythematous reaction at the injection site. There was no history of food or drug allergy or previous skin diseases.

There was no family history of the same skin disorder, and no comorbidities, such as diabetes mellitus, heart disease, or hypertension, were identified. Dermatological examination revealed multiple tense bullae accompanied by multiple papular and vesicular lesions over erythematous macules and plaques on the antebrachii, brachii, manus, thoracic, abdominal, and cruris regions of the body. Erosions, excoriations, crusts, and pus were also observed (Figure 1). The Nikolsky sign was negative. Histopathological examination revealed subepidermal bullae with acanthosis accompanied by inflammatory cells, including lymphocytes, eosinophils, and neutrophils (Figure 2). The patient was diagnosed with bullous pemphigoid, which was suspected to be caused by the COVID-19 vaccine.

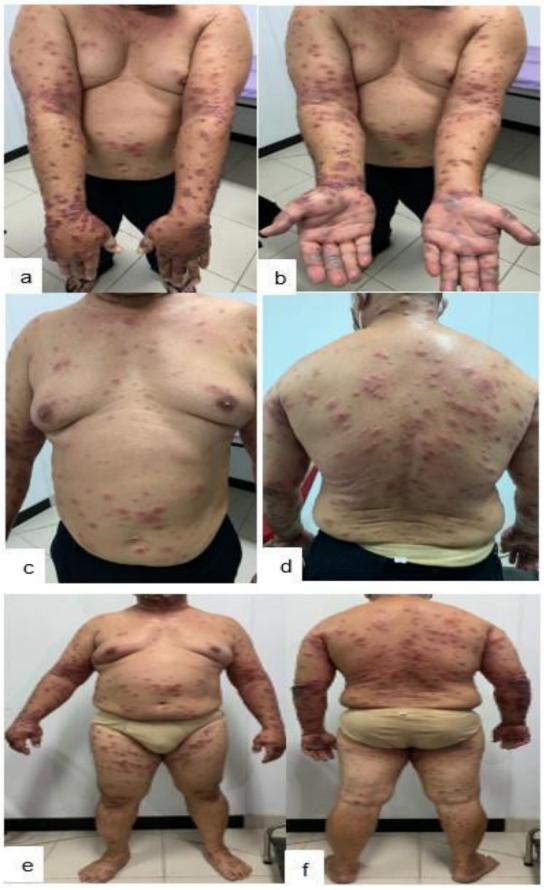

Figure 1. (a–f) Multiple tense bullae accompanied by multiple papular and vesicular lesions over erythematous macules and plaques on the antebrachii, brachii, manus, thoracic, abdominal, and cruris regions, erosions, excoriations, crusts, and pus were also observed.

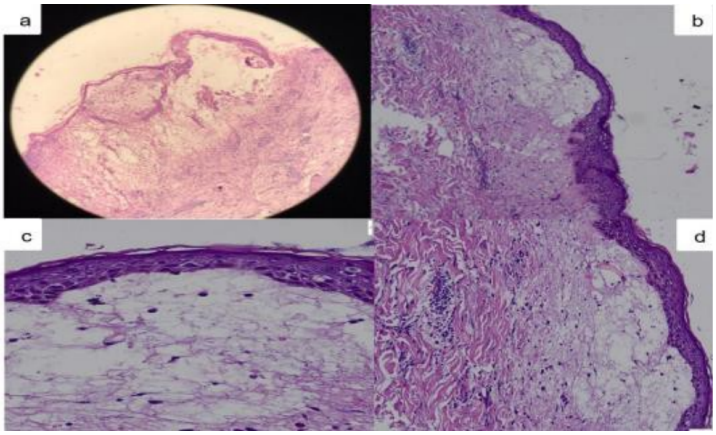

Figure 2. (a) Histopathology showing subepidermal bullae with inflammatory cell infiltration containing eosinophils in the superficial dermis (hematoxylin–eosin, original magnification ×100). (b, c) Subepidermal bullae with acanthosis accompanied by inflammatory cells, such as lymphocytes, eosinophils, and neutrophils. (d) A layer of inflammatory cells; the subepidermal layer is composed of fibrous connective tissue and collagen.

The patient was treated with oral methylprednisolone 56 mg per day in divided doses (20 mg–20 mg–16 mg), erythromycin 250 mg four times daily, ranitidine 150 mg twice daily, cetirizine 10 mg once daily, and 0.9% NaCl compresses for 15 minutes every 5 hours, and topical fusidic acid and desoximetasone 0.25% twice daily. After one week of therapy, the skin condition improved, with no new vesicles or bullae, and itching and pain subsided. Dermatological examination revealed erythematous macules, erosions, excoriations, and crusts in the manus, antebrachii, bilateral brachii, anterior–posterior thoracic, abdominal, and bilateral cruris regions (Figure 3). The patient was then treated with oral methylprednisolone (20 mg–16 mg–16 mg), oral ranitidine 150 mg twice daily, 0.9% NaCl compresses for 15 minutes every 5 hours, and topical fusidic acid and desoximetasone 0.25% twice daily. Oral methylprednisolone was subsequently tapered by 5–10 mg each week in line with the clinical improvement.

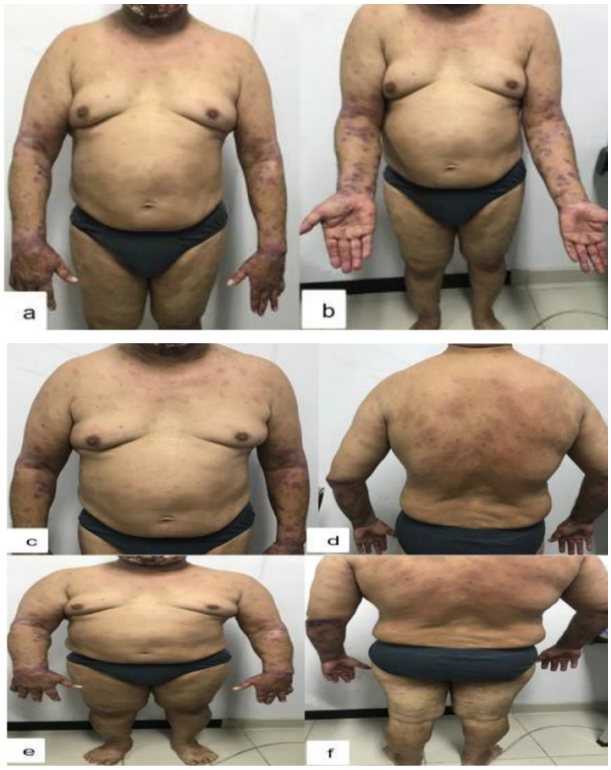

Figure 3. (a–f) After one week of therapy, erythematous macules, erosions, excoriations, and crusts on the manus, antebrachii, bilateral brachii, anterior–posterior thoracic, abdominal, and bilateral cruris regions, with no new bullae were observed.

DISCUSSION

The temporal relationship between COVID-19 vaccination and bullous pemphigoid onset in this patient suggests a possible vaccine-related trigger for the disease. Similar cases have been reported, showing clinical and histopathological features comparable to those of idiopathic bullous pemphigoid [5]. Proposed mechanisms include molecular mimicry between the SARS-CoV-2 spike protein and components of the dermal–epidermal junction, as well as immune activation following vaccination, which may drive predisposed individuals toward autoimmunity [6]. An Italian multicenter study documented BP cases arising within one month of COVID-19 vaccination, highlighting a potential link [4].

The treatment of vaccine-associated BP is similar to that of idiopathic BP. Localized cases respond well to high-potency topical corticosteroids, whereas systemic corticosteroids are the treatment of choice for widespread involvement [1]. Elderly patients must be monitored closely, and their exposure to corticosteroids should be minimized as much as possible, given the risks of diabetes, osteoporosis, and infection [2]. Our patient showed rapid clinical improvement with systemic corticosteroids combined with topical therapy and antibiotics, similar to the outcomes reported in other cases of vaccine-associated BP [6].

CONCLUSION

Bullous pemphigoid can occur shortly after COVID-19 vaccination. Although a causal relationship cannot be definitively established, clinicians should be aware of this potential association, particularly in elderly patients presenting with new-onset post-vaccination blistering eruptions.

DECLARATIONS

None

CONSENT FOR PUBLICATION

The Authors agree to be published in the Journal of Society Medicine.

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The authors declare no conflicts of interest in this case report.

AUTHORS' CONTRIBUTIONS

C.P.H. was responsible for the study concept and design, patient management, data acquisition, and drafting of the manuscript. R.C.R. contributed to data interpretation, literature review, and critical revision of the manuscript for important intellectual content. Both authors read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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