factors (anti-TNFs) and interleukin-1 receptor antagonists (IL-1RAs), have been used to treat refractory PG effectively.[1,2] Considering the response to COVID-19 vaccination may be reduced while receiving systemic immunomodulatory therapies, systemic corticosteroids at a prednisone-equivalent dose of ≥20 mg/day, methotrexate and mycophenolate mofetil are recommended to be hold for 1–2 weeks in patients undergoing COVID-19 vaccination, while anti-TNFs or IL-1RAs may be alternative options with less interfering the antibody titers.[7]

We reported a case of PG following COVID-19 vaccination, which posed a diagnostic challenge. The present case highlights the characteristic manifestations of haemorrhagic bullous PG, which is both an uncommon clinical variant of PG and a rare cutaneous reaction to COVID-19 vaccine. Early recognition and adequate immunomodulants treatment often yield a favourable prognosis.

Acknowledgement

The patient in this manuscript has given written informed consent to publication of his case details.

Funding sources

None declared.

Conflict of interest

None declared.

Data availability statement

Data available on request from the authors.

Y.-T. Hung,[1,2] W.-H. Chung,[1,2,3] T.-F. Tsai,[1,2] C.-B. Chen[1,2,3,*]

[1]Department of Dermatology, Chang Gung Memorial Hospital, Linkou, Taipei, and Keelung branches, Taoyuan, Taiwan, [2]Drug Hypersensitivity Clinical and Research Center, Chang Gung Memorial Hospital, Linkou branch, Taoyuan, Taiwan, [3]College of Medicine, Chang Gung University, Taoyuan, Taiwan

*Correspondence: C.-B. Chen. E-mail: chunbing.chen@gmail.com

References

1 Ruocco E, Sangiuliano S, Gravina AG, Miranda A, Nicoletti G. Pyoderma gangrenosum: an updated review. *J Eur Acad Dermatol Venereol* 2009; **23**: 1008–1017.

2 Alavi A, French LE, Davis MD, Brassard A, Kirsner RS. Pyoderma gangrenosum: an update on pathophysiology, diagnosis and treatment. *Am J Clin Dermatol* 2017; **18**: 355–372.

3 Altunay IK, Sezgin SA, Ileri U *et al.* Atypical hemorrhagic bullous pyoderma gangrenosum. *Int J Dermatol* 2001; **40**: 327–329.

4 McMahon DE, Kovarik CL, Damsky W *et al.* Clinical and pathologic correlation of cutaneous COVID-19 vaccine reactions including V-REPP: a registry-based study. *J Am Acad Dermatol* 2022; **86**: 113–121.

5 Majid I, Mearaj S. Sweet syndrome after Oxford-AstraZeneca COVID-19 vaccine (AZD1222) in an elderly female. *Dermatol Ther* 2021; **34**: e15146e15146.

6 Syed K, Chaudhary H, Balu B. Pyoderma gangrenosum following COVID-19 infection. *J Community Hosp Intern Med Perspect* 2021; **11**: 601–603.

7 Lee CH, Huang YH, Chu CY. Taiwan dermatological association recommendations for coronavirus disease of 2019 vaccination in patients treated with immunotherapeutics. *Dermatol Sin* 2021; **39**: 169–174.

DOI: 10.1111/jdv.18132

Two cases of axillary lymphadenopathy diagnosed as diffuse large B-cell lymphoma developed shortly after BNT162b2 COVID-19 vaccination

Dear Editor,

We describe two patients with diffuse large B-cell lymphoma (DLBCL), which developed as axillary lymphadenopathy after BNT162b2 COVID-19 vaccination.

Case 1 was a 67-year-old Japanese man who visited Tokyo-kita Medical Center complaining of a 6.0-cm subcutaneous mass in the left axilla 2 weeks after the second BNT162b2 vaccination. Tenderness and a palpable lymph node (LN) in the left axilla were noted 1 day after the first BNT162b2 vaccination. Computed tomography revealed an enlarged LN in the left axilla (Fig. 1a), and it was suspected as a reactive lymphadenopathy. However, the nodule became bigger and was accompanied with redness of the surrounding skin. Hence, biopsy specimens were taken from the swollen LN and erythematous skin (Fig. 1b). Histopathological examination revealed a diffuse infiltration of large, atypical lymphocytes with centroblast and immunoblast in the LN (Fig. 1c) and the skin. The large, atypical lymphocytes were stained strongly with CD20, BCL2 and MUM-1/IRF4 (Fig. 1d–f) and were negative for CD3. The Ki-67 positivity was over 80%. He was diagnosed with DLBCL, and R-CHOP (rituximab plus cyclophosphamide, doxorubicin, vincristine and prednisone) regimen was initiated, resulting in the shrinkage of the LN.

Case 2 was an 80-year-old Japanese woman who visited the University of Yamanashi Hospital due to an enlarging nodule in her left axilla 1 day after the second BNT162b2 vaccination. The nodule appeared 2 days after the first vaccination. Ultrasonography detected a 4.1-cm round mass with blood flow (Fig. 2a), which was suggestive of lymphadenopathy. Two months after the first consultation, the nodule gradually enlarged, and computed tomography revealed a 6.0-cm mass in the left axilla (Fig. 2b) and another 2.8-cm mass in the left mesentery. A biopsy of the nodule in the left axilla (Fig. 2c) demonstrated a sheet-like diffuse infiltration of atypical lymphocytes (Fig. 2d). The atypical cells were positive for CD20 (Fig. 2e), BCL6 and BCL2 and negative for CD3 and MUM-1/IRF4. The Ki-67 positivity was over 90%. A diagnosis of germinal centre B-cell

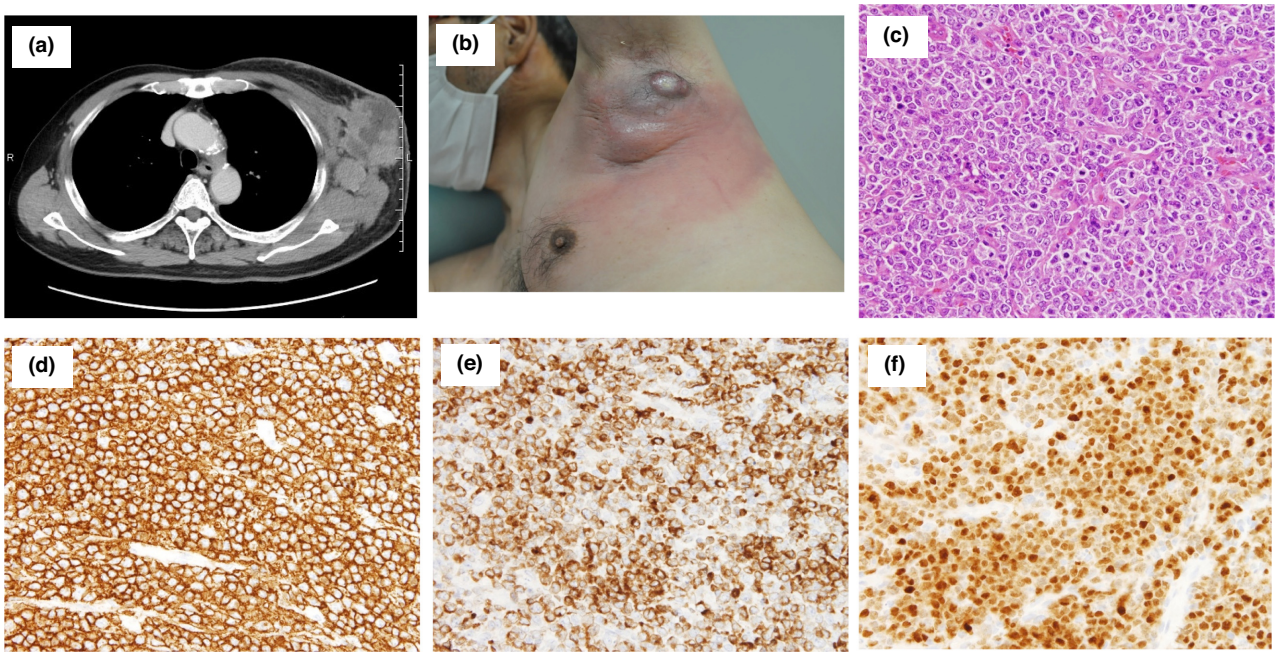

Figure 1 Clinical and histopathological characteristics of case 1. (a) CT image revealed enlarged mass in the left axilla. (b) A clinical image of the case 1 at the biopsy was presented. (c) An image of Haematoxylin and Eosin staining was shown (×200). (d–f) Images of immunohistochemical staining for CD20 (d × 100), BCL-2 (e × 100) and MUM1/IRF4 (f × 100) were shown.

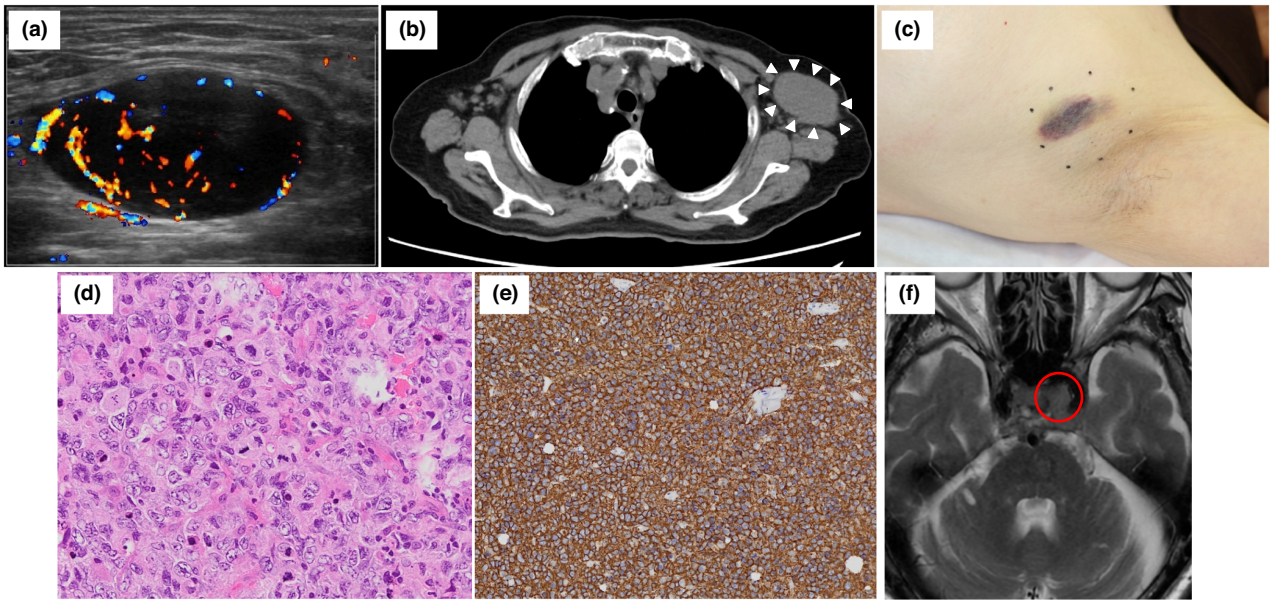

Figure 2 Clinical and histopathological characteristics of case 2. (a) An image of ultrasound sonography at the initial consultation was presented. (b) CT image revealed enlarged mass in the left axilla. (c) A clinical image of the case 2 at the biopsy was presented. (d and e) Images of Haematoxylin and Eosin staining (d × 200) and immunohistochemical staining for CD20 (e × 100) were shown. (f) An MRI image of a tumour in the left cavernous sinus was shown.

DLBCL was made. The patient complained of diplopia and left eyelid ptosis 8 days after the biopsy. Magnetic resonance imaging detected a small tumour, a suspicious DLBCL lesion, in the left cavernous sinus (Fig. 2f). The dose-attenuated CHOP regimen with standard dose of rituximab was initiated. Besides, radiotherapy (40 Gy) targeting the brain nodule was performed. Through combined modality therapy, the nodules in the left axilla and left cavernous sinus disappeared.

This is the first case report of DLBCL developed shortly after BNT162b2 vaccination, although the recurrence of remitted T-cell lymphoma cases has been reported.[1,2] Reactive lymphadenopathy after COVID-19 vaccination has been repeatedly reported; hence, both cases were initially suspected as temporal LN swelling. The influence of vaccination on the development of DLBCL is uncertain. BNT162b2 vaccines have been reported to induce a cytokine signature featuring IL-15, IFN-γ, CXCL10 and IL-6.[3] On the contrary, the elevation of these cytokines was observed in the sera of patients with pretreated DLBCL,[4] suggesting some roles of these cytokines in the growth or survival of DLBCL. Thus, it might be conceivable that pre-existing or subclinical DLBCL may rapidly grow in a specific condition induced by BNT162b2 vaccination. Nevertheless, the precise mechanism regulating the induction of DLBCL by this vaccination must await further investigations, including interaction between lymphoma cells and tumour microenvironment, genetic instability and so on.[5,6]

In conclusion, DLBCL may rapidly grow after BNT162b2 vaccination. Dermatologists should pay attention to enlarging LNs or mass near the injection site of BNT162b2 vaccine. This case report might become an emergent alert for the candidates receiving anti-COVID-19 vaccination.

Acknowledgement

The patients in this manuscript have given written informed consent to the publication of their case details.

Conflicts of interest

None declared.

Funding sources

None.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

M. Mizutani,[1] H. Mitsui,[2,*] T. Amano,[3] Y. Ogawa,[2] N. Deguchi,[2] S. Shimada,[2] A. Miwa,[4] T. Kawamura,[2] Y. Ogido[1]

[1]Department of Dermatology, Tokyo-kita Medical Center, Kita-ku, Japan, [2]Department of Dermatology, Faculty of Medicine, University of Yamanashi, Chuo, Japan, [3]Department of Pathology, Tokyo-kita Medical Center, Kita-ku, Japan, [4]Department of Hematology, Tokyo-kita Medical Center, Kita-ku, Japan

*Correspondence: H. Mitsui. E-mail: hmitsui@yamanashi.ac.jp

REFERENCES

1 Panou E, Nikolaou V, Marinos L *et al*. Recurrence of cutaneous T-cell lymphoma (CTCL) post viral vector COVID-19 vaccination. *J Eur Acad Dermatol Venereol* 2022; **36**: e91–e93.
2 Goldman S, Bron D, Tousseyn T *et al*. Rapid progression of Angioimmunoblastic T cell lymphoma following BNT162b2 mRNA vaccine booster shot: a case report. *Front Med (Lausanne)* 2021; **8**: 798095.
3 Bergamaschi C, Terpos E, Rosati M *et al*. Systemic IL-15, IFN-g, and IP-10/CXCL10 signature associated with effective immune response to SARS-CoV-2 in BNT162b2 mRNA vaccine recipients. *Cell Rep* 2021; **36**: 109504.
4 Charbonneau B, Maurer MJ, Ansell SM *et al*. Pretreatment circulating serum cytokines associated with follicular and diffuse large B-cell lymphoma: a clinic-based case-control study. *Cytokine* 2012; **60**: 882–889.
5 Phelan JD, Young RM, Webster DE *et al*. A multiprotein supercomplex controlling oncogenic signalling in lymphoma. *Nature* 2018; **560**: 387–391.
6 Pasqualucci L, Dalla-Favera R. Genetics of diffuse large B-cell lymphoma. *Blood* 2018; **131**: 2307–2319.

DOI: 10.1111/jdv.18136

Skin cancer and COVID-19: was the diagnosis safeguarded by teledermatology? a study on 1229 cases

Editor

During COVID-19 pandemic, dermatology practices are shifting to teledermatology (TD).[1,2] The objective of our study is to assess the effect of the first *vs* second COVID-19 waves on skin cancer (SC) requests *via* TD.

The study was conducted in a dermatology department, characterized by a store-and-forward TD between health care professionals (HCPs) and dermatologists. All TD requests during the first (March and April 2020) and second (October and November 2020) COVID-19 waves in France were retrieved and compared with the corresponding period in 2019. Collected data included the provenance and diagnoses of patients. The provenance was divided into institutions [long-term care facilities (LTCF) and hospitals] and non-institutions (private physician clinics). Diagnoses of patients were divided into SC, inflammatory dermatoses, infectious dermatoses, cutaneous drug adverse reactions and 'other' diagnoses. The proportions of these diagnoses during both COVID waves in 2020 were compared with the corresponding months in 2019. For SC diagnoses, institution and non-institutions requests during both waves were also compared with the same period in 2019.