



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



LETTER - CLINICAL

Recurrence of controlled mycosis fungoides after SARS-CoV-2 infection[☆]

Éderson Valei Lopes Oliveira ^{a,*}, Lígia M. Landell ^{b,c}, Cacilda da Silva Souza ^a

^a Division of Dermatology, Department of Internal Medicine, Ribeirão Preto Faculty of Medicine, Universidade de São Paulo, Ribeirão Preto, SP, Brazil

^b Department of Pathology and Forensic Medicine, Ribeirão Preto Faculty of Medicine, Universidade de São Paulo, Ribeirão Preto, SP, Brazil

^c Laboratory of Pathology Prof. Dr. Humberto de Queiroz, Ribeirão Preto, SP, Brazil

Received 18 April 2022; accepted 9 June 2022

Dear Editor,

Infection caused by Coronavirus 2 (*Betacoronavirus* genus), responsible for the COVID-19 pandemic, can potentially cause severe acute respiratory syndrome (SARS), affect other organs, and trigger autoimmune events as a result of the cytokine storm.^{1,2} Among cutaneous T-cell lymphomas (CTCLs), mycosis fungoides (MF) and Sézary syndrome (SS) are the most common. MF has an indolent course, slow progression, and rarely attains a cure.^{1,3} The report describes the recurrence of controlled MF after SARS-CoV-2 infection and highlights the potential immunogenic effects of the virus as a trigger in CTCLs.

A 62-year-old woman diagnosed with MF of two years evolution was controlled after phototherapy with 8-methoxypsoralen and Ultraviolet A (PUVA), followed by UVB (narrow band). Two weeks after household contact with

COVID-19, she developed a maculopapular rash (Fig. 1). After 15 days, the condition persisted, with mild pruritus in areas with erythema and fine desquamation, where reduction or flattening of the papules occurred, which developed after two months into parchment-like plaques on the trunk, abdomen and limbs (Fig. 2). There were no mucosal lesions, palpable ganglia in the different assessed chains, and systemic signs/symptoms. Among the requested tests, a positive nasal swab for SARS-CoV-2A by immunofluorescence (detection of CoV-2 nucleoproteins) was observed (COI: 94.40; COI-Cutoff Index < 1: non-reactive); D-dimer elevation (1,876 ng/mL; positive > 500 ng/mL); non-reactive serologies for human T lymphotropic viruses 1 and 2; and chest X-ray within the normal range. Skin histopathology showed lymphocytic exocytosis and cellular atypia in the epidermis (Fig. 3a-b), whereas immunohistochemistry showed the predominance of TCD4 lymphocytes and loss of expression of TCD7 lymphocytes (Fig. 3c-d). Clinical staging was established at Ib (T2bN0M0B0).

The role of environmental factors and infectious agents as triggers or promoters of the development of CTCL is not yet fully established. Moreover, autoimmune disorders can generate a favorable environment for the risk of CTCL. Theories about the pathogenesis of MF and SS include

[☆] Study conducted at the Private Practice and Hospital das Clínicas, Ribeirão Preto Faculty of Medicine, Universidade de São Paulo, Ribeirão Preto, SP, Brazil.

* Corresponding author.

E-mail: edersonvalei@yahoo.com.br (É.V. Oliveira).

<https://doi.org/10.1016/j.abd.2022.06.001>

0365-0596/© 2022 Published by Elsevier España, S.L.U. on behalf of Sociedade Brasileira de Dermatologia. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

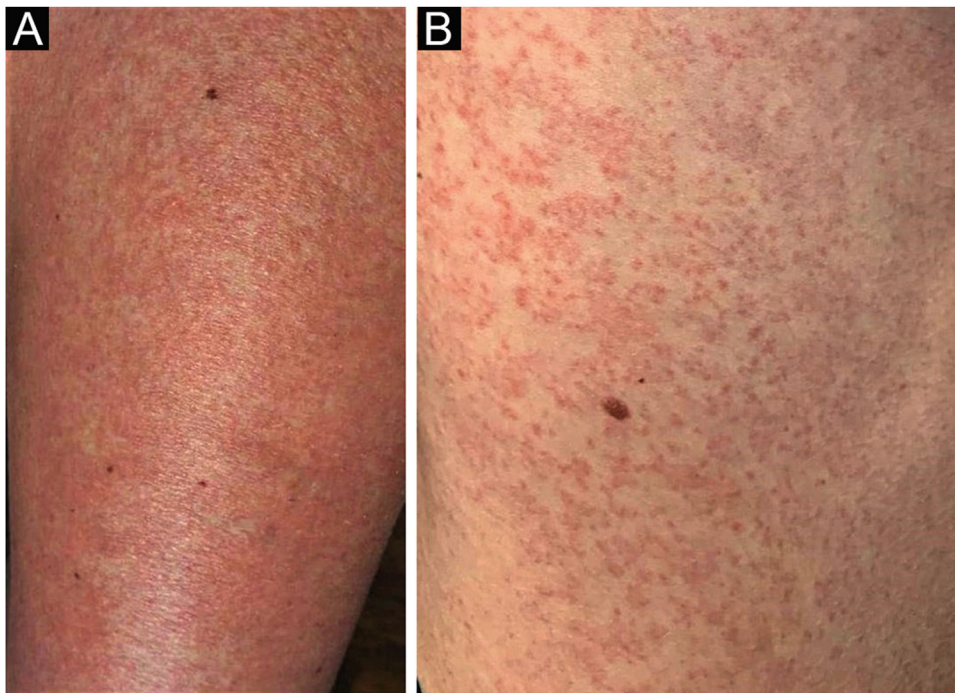


Figure 1 (a) Diffuse erythema and papules on the left thigh; (b) In detail, erythematous-brown follicular papules over erythema on the lateral-posterior aspect of the left trunk.



Figure 2 (a) Finely desquamative, parchment-like erythematous-brown plaques on the distal third of the left thigh and knee; (b) and on the right scapular region, after 2 months.

increased Th2 activity, and reduced Th1 activity, the anti-tumor cytotoxic response of CD8 lymphocytes, the dendritic cell population, and the production of interleukin-12 and interferon-alpha.^{2,4}

The immunological dysregulation present in COVID-19 favors the reduction of the functional activity of regulatory T lymphocytes and an imbalance in the production of cytokines, in addition to the elevation of C-reactive protein and D-dimer serum levels.⁵ In addition, the molecular

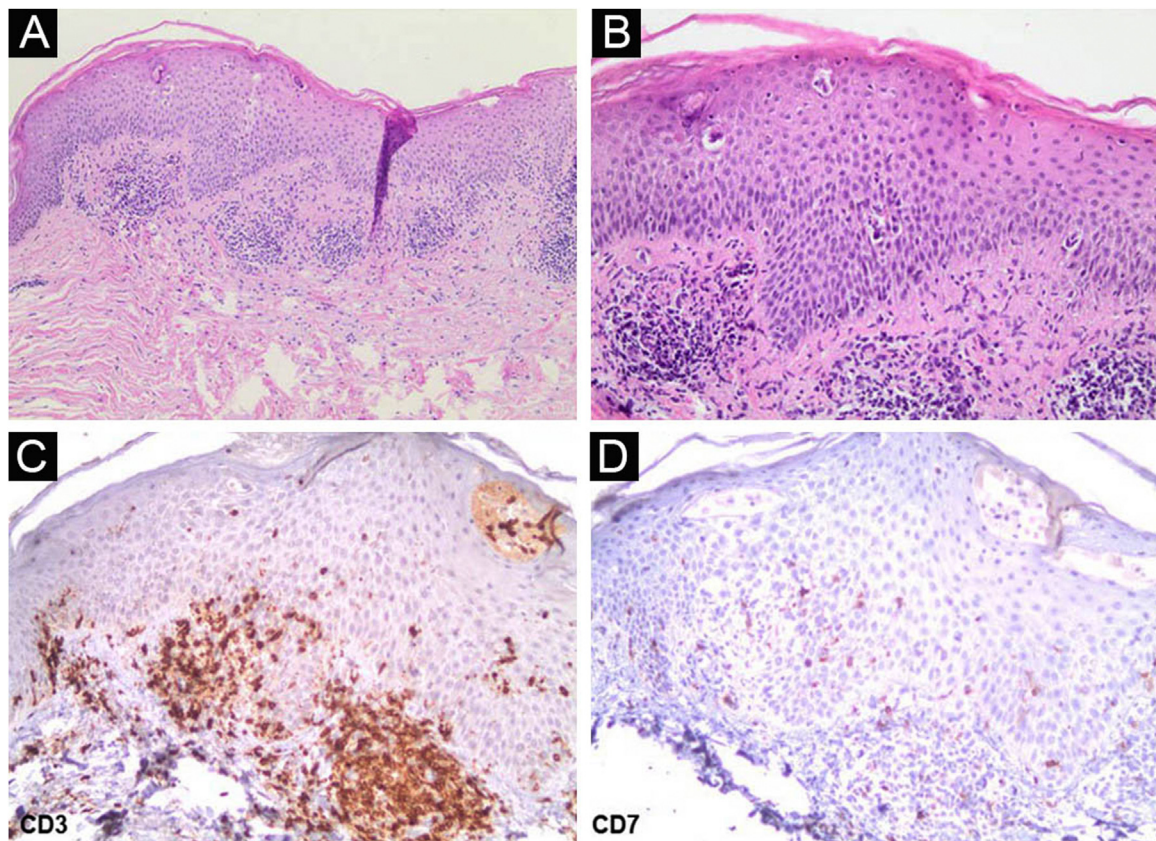


Figure 3 (a) Interstitial and superficial perivascular infiltrate of atypical lymphocytes, with lymphocyte exocytosis (Hematoxylin & eosin, $\times 100$); (b) In detail, atypical cellular infiltrate in the epidermis (Hematoxylin & eosin, $\times 400$); (c) On immunohistochemistry, CD3 positivity in T-lymphocytes ($\times 400$); (d) Low expression of CD7 in T-lymphocytes ($\times 400$).

mimicry between SARS-CoV-2 and human proteins favors the production of autoantibodies in genetically predisposed patients, causing exacerbation or emergence of autoimmune/autoinflammatory diseases, such as: Guillain-Barré syndrome, Kawasaki disease, immune thrombocytopenic purpura, antiphospholipid antibodies, thrombosis and, potentially, lupus erythematosus, systemic sclerosis, and pemphigus vulgaris.⁴

Although most patients with indolent or controlled CTCLs are not predisposed to viral infections, conditions at risk for infection and severe symptoms of COVID-19 are considered: aggressive or advanced CTCLs, ongoing immunosuppressive therapy, lymphopenia, chronic organ failure, coexisting comorbidities, advanced age.²

This unprecedented report of previously controlled MF, with exuberant and sudden cutaneous recurrence after SARS-CoV-2 infection, indicates viral immunogenic mechanisms as potential triggers of immune dysregulation in CTCLs.

Financial support

None declared.

Authors' contributions

Éderson Valei Lopes de Oliveira: design and planning of the case study; data collection, or analysis and interpretation of

data; writing of the article or critical review of the intellectual content; collection, analysis and interpretation of data; intellectual participation in the propaedeutic and/or therapeutic conduct of the studied case; critical review of the literature; approval of the final version of the manuscript.

Ligia Magnani Landell: collection, analysis and interpretation of data; intellectual participation in the propaedeutic conduct of the studied case; approval of the final version of the manuscript.

Cacilda da Silva Souza: design and planning of the study; analysis and interpretation of data; writing of the article or critical review of the intellectual content; collection, analysis and interpretation of data; critical review of the literature; approval of the final version of the manuscript.

Conflicts of interest

None declared.

References

1. Mateeva V, Patsatsi A. Management of primary cutaneous lymphomas during the COVID-19 pandemic. *Clin Dermatol.* 2021;39:64-75.

2. Elmasry MF, Youssef R, Elbendry A, Helmy K, Abdelkader HA. Cutaneous lymphomas and COVID-19: What is known so far? *Dermatol Ther.* 2021;34:e14463.
3. Sanches JA, Cury-Martins J, Abreu RM, Miyashiro D, Pereira J. Mycosis fungoides and Sézary syndrome: focus on the current treatment scenario. *An Bras Dermatol.* 2021;96:458–71.
4. Ehrenfeld M, Tincani A, Andreoli L, Cattalini M, Greenbaum A, Kandunc D, et al. Covid-19 and autoimmunity. *Autoimmun Rev.* 2020;19:102597.
5. Aarestrup FM. COVID-19 immunopathology and its clinical implications. *Arq Asma Alerg Imunol.* 2020;4:172–80.