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Non-Eosinophilic Panniculitis in a Case of COVID-19 Infection

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Clinical image description

COVID-19 is characterized in some patients by a strong dysregulation of the host's immune system, which lead to an exaggerated hyperinflammatory response [1,2]. About 20% of patients develop severe manifestations and 5-10% require mechanical ventilation and admission to an Intensive Care Unit (ICU) [1,3]. As the pandemic progresses and the number of cases increases, other symptoms besides the respiratory ones have become relevant. Dermatological symptoms are not an exception [4,5].

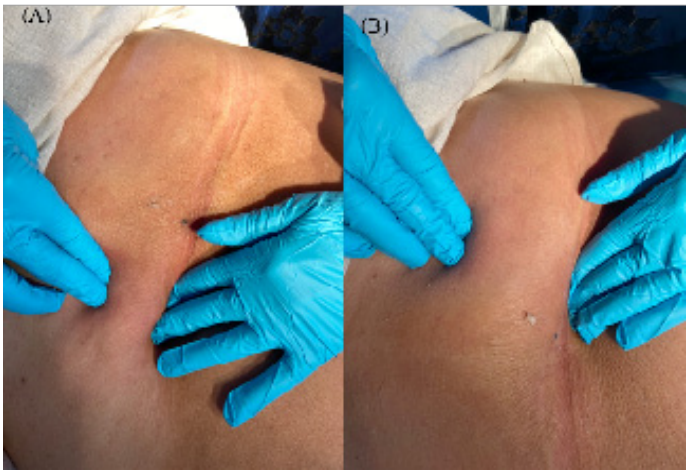

Figure 1: Visual observation of the subcutaneous indurations corresponding to the post-COVID-19 panniculitis after discharge form the ICU.

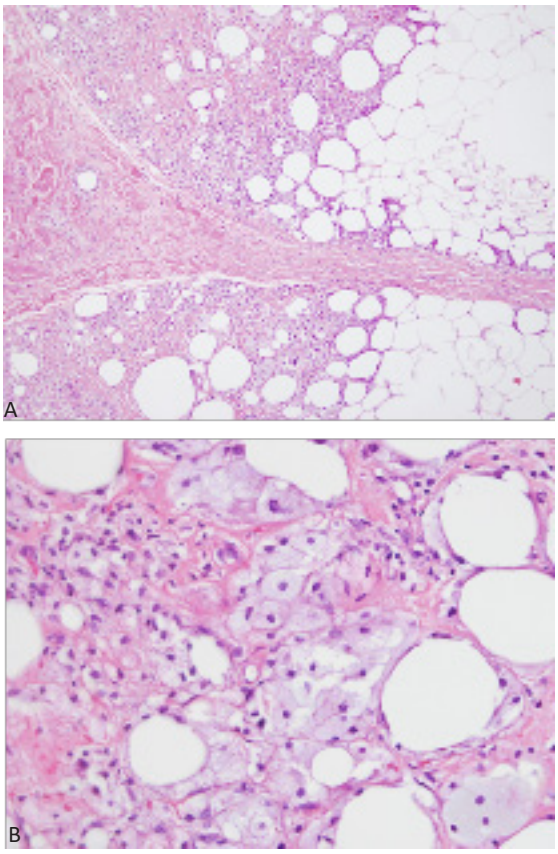

Figure 2: Panel A. Lobular panniculitis with an inflammatory infiltrate composed of lymphocytes and histiocytes. Hematoxylin-eosin stain, x100. Panel B. Fat lipophagic necrosis with collections of foamy macrophages and fat pseudocysts. Hematoxylin-eosin stain, x400.

Our patient was a 55-years old Caucasian female, obese, and with no other relevant clinical history. She was diagnosed with bilateral pneumonia by SARS-CoV-2 infection confirmed by RT-PCR and required hospital admission. Two days later, due to the worsening of the respiratory situation, the patient was transferred to the ICU, where she stayed for ten days, five of which she received pronated mechanical ventilation. After discharge form the ICU, the patient presented skin induration at the level of the epigastrium and the hypochondrium, for which the assessment of the dermatology service was required (Figure 1, panels A and B). A deep-skin biopsy was performed. Histological analysis showed a lobular panniculitis with lymphocytes and abundant histiocytes (Figure 2A). Focal point of lipophagic necrosis were present, with fat pseudocysts and foamy macrophages (Figure 2B). With these findings, the final diagnostic was non-eosinophilic traumatic panniculitis secondary to infection by SARS-CoV-2.

The patient was discharge six days after leaving the ICU and the dermatologic symptoms were resolved in within a month of her hospital release.

Discussion

To our knowledge, the case presented here is the first to show traumatic cutaneous panniculitis associated to COVID-19 infection. Though mesenteric panniculitis is a relatively common, cutaneous panniculitis is a rare entity which needs to be confirmed by a deep-skin biopsy to rule our other skin and subcutaneous lesions [6,7]. Its diagnostic may be challenging both for both the clinician and the dermatopathologist. Traumatic panniculitis refers to changes in the subcutaneous fat due to physical or chemical agents [7]. It can manifest as indurated lesions with inflammatory signs or subcutaneous nodules unrelated to the intensity of the traumatic injury that produce them [6,7]. The histological picture includes fat microcysts surrounded by histiocytes, foamy cells and inflammatory cells, presented usually as lobular panniculitis with lipophagic fat necrosis [7,8]. It is usually a self-limiting disorder that requires only symptomatic treatment and a conservative approach.

In the case presented here, patient's lesions were clinically oriented to cutaneous panniculitis, and the results of the biopsies confirmed the diagnosis. As in so many occasions, the skin manifestations are a reflection of an internal disease, such as the coronavirus infection. However, the cutaneous manifestations of COVID-19 disease are yet poorly characterized [4,9]. Still, as the pandemic progresses, dermatologists began to describe different cutaneous manifestation related to the infection [5,9,10]. A nationwide case collection survey carried out in Spain with 375 patients described five clinical patterns related to COVID-19, associated with different patient demographics, timing, and prognosis [4]. An unusual and distinctive skin rash has been described in a COVID-19 patient [10]. Moreover, a retrospective analysis in Italy revealed that 18 out of 88 COVID-19 patients (20.4%) developed cutaneous manifestations, with no apparent correlations with disease's severity [9]. However, in our review of skin manifestations related to COVID-19, we did not find any reference to traumatic panniculitis. To our knowledge, there is only one reported case of eosinophilic panniculitis associated, in the absence of other possible triggers, to SARS-CoV-2 infection [5].

The physiopathological mechanisms underlaying the dermatologic manifestations during COVID-19 infection are still unknown. An excessive production of cytokine has been proposed

as a possible pathogenic mechanism, specifically IL-4 and IL-5 [5], since an elevated proinflammatory cytokines is a hallmark of the disease [1,3]. Nevertheless, we cannot rule out in our case that the patient might have been able to develop the subcutaneous lesions as a consequence of a long stay in the prone decubitus position, which would be indirectly related to the infection. Therefore, gathering information is important and more publications are needed to better understand the skin involvement in COVID-19. Description and classification of cutaneous manifestation associated with this disease may help clinicians to recognized cases with few symptoms. Moreover, the information obtained can be useful to understand the pathogenesis of the infection and determine the most effective treatment [4,5]. However, the usefulness of dermatologic patterns for COVID-19 diagnosis should be confirmed in clinical use.

Conclusion

Our case is the first to report a diagnosed non-eosinophilic panniculitis secondary to infection by SARS-CoV-2. It is striking that we do not find any reference in the literature given the current pandemic situation that has caused the admittance of thousands of patients worldwide to an ICU. Therefore, we may be facing a problem that goes unnoticed and that is frequently underdiagnosed.

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Conflict of interest

All authors have no conflicts of interest to declare with respect to the research, authorship, and/or publication of this article.

Patients consent

Pictures and clinical data are published with patient's informed consent.

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