Received: 15 September 2020 | Revised: 21 November 2020 | Accepted: 3 December 2020

DOI: 10.1111/dth.14656

DERMATOLOGIC THERAPY WILEY

LETTER

Challenges in the treatment of a patient with toxic epidermal necrolysis associated with COVID-19: A case report

Dear Editor,

In December 2019, a new coronavirus emerged in China and rapidly spread.[1] Currently, the outcome of COVID-19 patients treated with immunosuppression drugs is still unknown. Here, we report a 30-year-old woman, who was diagnosed with toxic epidermal necrolysis (TEN) and COVID-19 concurrently. The simultaneous treatment of these conditions was a major clinical challenge. Her chronic headache started 2 years ago. She had used phenobarbital and topiramate for headache over the past 2 weeks. She presented to our hospital with mucosal involvement, and the necrolytic epidermal detachment on the upper extremities and the back was started 1 day ago. Her generalized erythematous rashes were started 3 days ago (Figure 1). The patient's Score of Toxic Epidermal Necrosis (SCORTEN) was 4.

The positive findings of the laboratory tests were ALT (144 U/L), AST (81 U/L), and serum LDH level was 919 (U/L). Her WBC count had decreased to 3200/μL on the third day. Treatment was initiated with 50 mg/day of prednisolone and 3 g/kg of intravenous immunoglobulin (IVIG) for 4 days. On the third day, the lesions progressed with the development of detachments on the trunk and lower extremities. Forty percent of the body area was involved. We decided to add cyclosporine (4 mg/kg) to the regimen, based on our successful experience of treating TEN patients. We confirmed COVID-19 infection twice, by using the polymerase chain reaction (PCR) assay.

The patient had been febrile (39°C-40°C) for 7 days, but she had not any respiratory symptoms. Her chest computerized tomography scan was normal. We had to consider both diseases. Based on the SCORTEN, we continued the administration of prednisolone and cyclosporine. On the fifth day, the progression of lesions was terminated.

Generally, TEN is a life-threatening severe cutaneous drug reaction. The mortality rate of this condition varies, based on SCORTEN.[2]

In the Japanese study, the most common drugs for TEN were caused by phenobarbital,[3] and in the Switzerland study, there were no cases of TEN among patients who used topiramate.[4] Due to the concurrent initiation of both drugs, we cannot determine the exact cause of the drug. But according to studies, phenobarbital might play a greater role in causing disease.

On the other hand, COVID-19 produces an inflammatory environment that may reduce the threshold of drug reactions and may predispose the COVID patients to TEN.

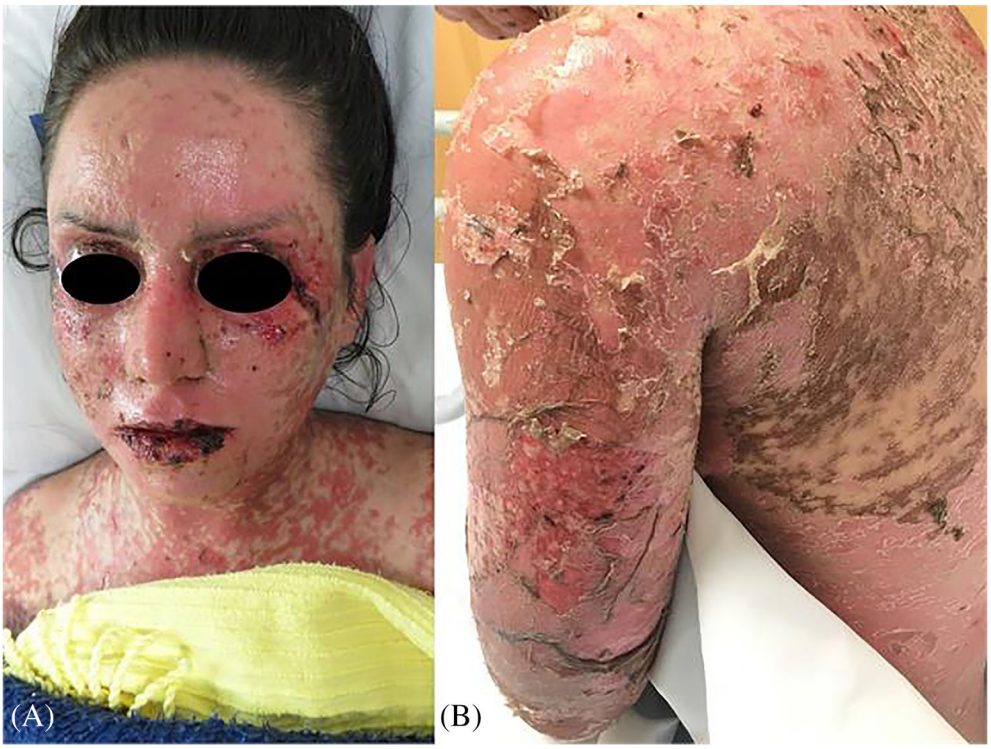

FIGURE 1 Bilateral conjunctivitis, hemorrhagic crusting of the lips, and the necrolytic epidermal detachment was observed on the upper extremities and the back

It was very challenging for us to decide whether to discontinue the immunosuppressive drugs due to the risk of COVID-19 progression or to continue the medications to prevent the development of cutaneous detachments, which could lead to a higher mortality rate.

Immunosuppressed patients are not at an increased risk for severe disorder compared with the general people.[5] It has been shown that some immunosuppressive or immunomodulatory drugs like dexamethasone, suppress an overwhelming cytokine storm in COVID-19, which is the most important cause of lung injury.[6] Besides, there is some evidence that cyclosporine can block coronavirus replication by targeting cyclophilins, which are essential in viral replication.[7] Consequently, we decided to continue cyclosporine administration, and the results were satisfactory. Not only COVID-19 did not progress, but also the patient's fever and general condition improved. Cyclosporine may be effective in the treatment of COVID-19 infection, as recommended in some studies base on theoretical and laboratory investigation,[7,8] but further studies are needed to confirm this effect.

In conclusion, we reported the case of a patient with COVID-19 and TEN, who required immunosuppressive drugs, with the potential to aggravate the infection. However, cyclosporine was administered considering its antiviral effects, and the outcomes of both COVID-19 and TEN were reported to be excellent.

ACKNOWLEDGMENT

The patient has given written informed consent to the publication of her information.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

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

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