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CASE REPORT / *OLGU SUNUMU*

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Concurrent Management of a Patient with Toxic Epidermal Necrolysis and Coronavirus Disease-19: A Case Presentation

Toksik Epidermal Nekroliz ve Koronavirüs Hastalığı-2019'un Birlikte Seyrettiği Bir Hastanın Eş Zamanlı Yönetimi: Bir Olgu Sunumu

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ABSTRACT Toxic epidermal necrolysis (TEN) is a serious cutaneous adverse reaction with high mortality rate. The severe acute respiratory syndrome-coronavirus-2 virus disease represented a global pandemic known as coronavirus disease-2019 (COVID-19), without exact cure up to date. The usage of immunosuppressive drugs during COVID-19 infection is a major clinical challenge; however, it seems inevitable in rare cases. Here we aimed to report a patient, who was treated concomitantly for TEN and COVID-19 with a good clinical outcome by reviewing the existing literature.

Keywords: Toxic epidermal necrolysis, COVID-19, critical care

ÖZ Toksik epidermal nekroliz (TEN) yüksek mortalite ile seyreden ciddi bir kutanöz advers reaksiyondur. Şiddetli akut solunum sendromu-koronavirüs-2 virüsü tüm dünyayı etkisi altına alan bir pandemiye koronavirüs hastalığı-2019 (COVID-19) neden olmuş ve günümüze kadar kesin bir tedavi ortaya konamamıştır. COVID-19 tedavisinde immünosüpresif ilaçların kullanılması bir tartışma konusu olmakla beraber nadir olgularda kullanımı kaçınılmazdır. Burada, TEN ve COVID-19'un eş zamanlı tedavi edilerek iyi sonuç alınan bir hastanın mevcut literatürler eşliğinde sunulması amaçlanmıştır.

Anahtar Kelimeler: Toksik epidermal nekroliz, COVID-19, yoğun bakım

Introduction

Toxic epidermal necrolysis (TEN) is a rare immune-mediated disease defined as severe cutaneous adverse reaction presenting with typical erythematous maculopapular rashes and usually induced by drugs, infections, or idiosyncratic reactions. Non-steroidal anti-inflammatory drugs, sulfonamides, and anticonvulsants are among the most commonly implicated drugs that can cause TEN (1). The incidence of the disease is reported about 0.4-1.2 cases/million person-years (2). The widely used scoring system is score of toxic epidermal necrosis (SCORTEN) severity of illness score to evaluate the risk of in-hospital death in these patients which ranges between 3-90% (3). During the pandemic, the increasing reports of skin lesions in patients with coronavirus disease-2019 (COVID-19) make the differential diagnosis difficult and establish a treatment challenge (4). Here we presented a 23-year-old man of Turkmen origin with a wide-spread erythematous eruption diagnosed as TEN and COVID-19 concurrently. Written informed consent was obtained from the patient for the publication of this case report and accompanying images.

Case Report

This case had a history of fever, fatigue, headache for one week and taken ibuprofen and paracetamol at home. A few days later, erythematous lesions started from the upper region of the body and he was admitted to a hospital.

He was treated with methylprednisolone and cetirizine, however, the lesions spread to the face and entire body surface. At the presentation in our hospital, there wasa generalized erythematous maculopapular rash was a SCORTEN of 1 (Figure 1). Imaging and clinical presentation were not consistent with COVID-19 infection. The patient was initially admitted to the burn intensive care unit and treated with intravenous fluids, nutritional support, electrolyte replacement, and intravenous immune globulin therapy (IVIG). A nasopharyngeal swab taken within 24 hours was positive for COVID-19 by real-time reverse transcription-polymerase chain reaction assay, so the patient was transferred to the specialized intensive care unit for the COVID-19 patients. On admission, laboratory findings revealed leucocytosis [11,200/uL (4.8-10.8)], lymphopenia [0.5 10^3/µL (1.3-2)] hyponatremia [130 mmol/L (136-146)], hypocalcemia [7.0 mg/dL (8.4-10.6)], hypoalbuminemia [21 g/L (35-52)], elevated C-reactive protein [31.7 mg/L (0-3.5)], serum creatine kinase [219 U/L (0-145)], D-dimer (1,750 µg/L), and ferritin [1,050 µg/L (11.4-464)]. In addition to supportive treatment, methylprednisolone and IVIG treatment were sustained. Favipiravir was included in a dose of 1.800 mg orally twice daily on the first day followed by 800 mg orally twice daily. Conventional oxygen therapy was applied via a face mask and the results of arterial blood gas analysis remained stable. A punch skin biopsy confirmed the diagnosis of TEN. Wound care was provided by topical compression of rifampicin soaked sterile gauze. Intravenous meropenem was initiated in a combination with teicoplanin as empirical antibiotherapy. On the third day, the patient had remarkable skin regeneration with progressive epidermal detachment and spontaneous reepithelization. He was discharged to the pandemic clinic in a stable condition to complete COVID-19 treatment and the antibiotherapy on the 6th day of his intensive care unit admission.

Figure 1. The figure shows the patient presented with a widespread erythematous maculopapular rash

Discussion

This case emphasized the importance of early diagnosis, appropriate treatment, and meticulous wound care in the management of TEN. We performed a literature search using the terms "toxic epidermal necrolysis", "severe acute respiratory syndrome-coronavirus-2" and "COVID-19 infection". There is a limited number of case reports concerning TEN and COVID-19 infection concurrently (5-8). The inflammatory process induced by COVID-19 infection reduces the threshold of drug reaction and predispose the COVID-19 positive patients to TEN (6). The treatment of TEN is usually supportive and IVIG is the most preferred treatment of choice. IVIG contains highly purified immunoglobulins (mostly IgG) and plays a major role in modulating immunity (9). IVIG also inhibits the T-cell activation and decreases the level of IL-6 and TNF-α which are the mainstay of cytokine storm seen in COVID-19 (10). Although the use of IVIG for the treatment of COVID-19 is a promising issue, further clinical researches are essential to assess the safety profile of IVIG in patients with COVID-19 (11). A recent meta-analysis indicated that physicians would encounter various dermatological entities such as primary specific virus-induced, virus-associated drug-induced dermatoses, or secondary cutaneous involvement during the COVID-19 pandemic. Increasing the knowledge about the correct diagnosis and appropriate treatment is the major point of the management of these patients (12). In our case, the initial diagnosis was based on a history of drug exposure with typical clinical manifestations and skin involvement of more than 30% of body surface area. We confirmed the diagnosis with skin punch biopsy and provided a rapid attenuation of both TEN and COVID-19 with successful management. IVIG may have a role in the treatment of COVID-19 simultaneously; however, it needs to prove its certainty.

Ethics

Informed Consent: Written informed consent was obtained from the patient for the publication of this case report and accompanying images.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: B.Ç., M.O., S.Y., Concept: B.Ç., E.B., Design: B.Ç., Data Collection or Processing: B.Ç., M.O., Analysis or Interpretation: B.Ç., K.T.S., Literature Search: B.Ç., Writing: B.Ç.

Conflict of Interest: No conflict of interest was declared by the authors.

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