

Herpes zoster after COVID-19 disease

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ABSTRACT

COVID-19 infection can affect immune system functions. Although age is seen as a major factor for the development of Herpes Zoster (HZ), immunosuppression or disease-related immune system dysfunction can progress with the reactivation of Varicella Zoster Virus (VZV). A 57-year-old male patient presented with painful lesions on his body after COVID-19 infection and was diagnosed with HZ. The patient was admitted to the algology outpatient clinic due to Postherpetic Neuralgia (PHN) 4 months after the onset of the rash. Our aim is to draw attention to the possibility of HZ and PHN development after COVID-19 infection.

Keywords: COVID-19, herpes zoster, postherpetic neuralgia, neuropathic pain

INTRODUCTION

Herpes Zoster (HZ) or Shingles occur with the reactivation of the latent Varicella Zoster Virus (VZV) (1,2). Although reactivation usually occurs with a decrease in age-dependent cell-mediated immunity, it can also be the result of immunosuppressive therapy or disease (1). Radiation, trauma, stress and some drugs may also be triggers, but there is no conclusive evidence (3). HZ can cause acute pain, postherpetic neuralgia (PHN), neurological, visual or visceral complications (4).

The COVID-19 pandemic has created a serious stress environment. In addition to skin diseases in which stress plays an important role, such as psoriasis, alopecia areata and chronic urticaria, an increase in HZ cases admitted to the dermatology clinic has been reported. However, the increase in the frequency of HZ should not be associated only with stress (5). There is even an opinion that argues that the presence of HZ may be a COVID-19 indicator (5,6).

T cell dysfunction may occur in coronavirus disease, and the patient may develop lymphopenia, increased lymphocyte apoptosis, and impaired lymphopoiesis. Depending on this, VZV reactivation may occur (1).

In this case, we aimed to raise awareness of the possible relationship between COVID-19 and HZ by presenting a patient who developed Zona Zoster after COVID-19 infection and then applied to the algology outpatient clinic due to Postherpetic Neuralgia complication.

CASE REPORT

A 57-year-old male patient with no known disease applied to the emergency service with complaints of fever, chills and

shivering for 1 day. The combined nose and throat swab of the patient was positive for SARS-CoV 2 PCR test. The patient was discharged with a prescription. On the 6th day of his illness, the patient applied to the emergency service again due to exacerbation of his symptoms, respiratory distress and cough. The patient had elevated C-reactive protein (CRP) and ferritin, lymphopenia ($0.7 \times 10^9/L$), and neutrophilia ($14.4 \times 10^9/L$). In the thoracic computed tomography (CT), there were scattered ground-glass densities and streaks in both lungs (**Figure 1**).

The patient was discharged from the hospital 6 days later. 3 days after discharge, vesicular rashes accompanied by burning and pain complaints appeared in the area corresponding to the left side T10 and T11 dermatomal regions. The patient was admitted to the hospital again and was diagnosed with Zona Zoster (**Photo 1**).

The patient applied to our algology outpatient clinic with complaints of ongoing pain and burning 4 months after the onset of the rash. His NRS (numerical rating scale) score was 8. In the examination of the patient, slight discoloration on the skin and allodynia on the skin matching the left T 10-11 dermatomal area were detected. Tramadol 200 mg/day and gabapentin 1200 mg/day were prescribed to the patient. The patient's complaints did not resolve with medical treatment. Thoracic interlaminar epidural steroid injection (80 mg triamcinolone + 3 ml 0.5% bupivacaine + 5 ml physiological saline=10 ml total) was administered to the patient in the operating room under fluoroscopy. There were no complications. The patient was discharged 1 hour after the procedure. When the patient came to the follow-up after 1 week, NRS was evaluated as 5. Thoracic erector spina block (ESPB) was planned for the patient. The ultrasonography (USG) probe was placed on the left T11 vertebral spinous process, the probe was moved

laterally and the transverse process and erector spina muscle were distinguished, and 20 cc of 0.125% bupivacaine was administered with a 22 gauge needle. The patient stated that the pain subsided up to 72 hours after the procedure. The same process was scheduled again.

DISCUSSION

HZ occurs with the activation of the latent VZV in the cranial nerve or dorsal root ganglion. VZV causes neural damage by migrating along the sensory nerve and typically produces a unilateral multiple, painful vesicular rash in the dermatome it affects (3,6). Three or more dermatomes may be involved in immunocompromised individuals (6).

It has been suggested that COVID-19 infection is associated with a decrease in lymphocytes, monocytes and eosinophils. Studies have shown that CD4+ T, CD8+ T, B cells and natural killer (NK) cells are decreased (6). Dysfunction of CD8+ T and NK cells together with increased NK cell receptor (NKG2A) expression leads to a decrease in antiviral immunity (7). T cells act on cell-mediated immunity. COVID-19 may reduce the cell-mediated immune response (8). It was observed that lymphopenia was more severe and neutrophil and white blood cell counts were higher in patients who died during follow-up compared to those who survived. In addition to cell death due to activation, SARS-CoV 2 can cause lymphopenia and impaired antiviral response by directly affecting lymphocytes, especially T cells (6). In addition, COVID-19 infection may coexist with other viral infections (5).

Our patient did not have any known immunosuppressive status, use of immunosuppressive drugs, or malignancy, apart from the risk factors of age and recent COVID-19 disease. Aging is considered a risk factor for HZ. The incidence increases especially after the age of 50 and reaches the highest rate above the age of 65 (1,6,7). In studies, it has been reported that VZV reactivation is generally observed in the first 1-2 weeks of COVID-19 infection (1). HZ may occur with lymphopenia before or after the onset of COVID-19 symptoms (9). Our patient developed HZ within two weeks of the onset of COVID-19 symptoms.

Our patient applied to the algology outpatient clinic with the complaint of persistent pain in the 4th month of HZ rash. Postherpetic neuralgia (PHN) is the most common complication of HZ (4). Although the traditional definition is that the pain lasts for more than 1 month after the healing of the HZ rash, there may be different definitions as a concept of time (10). It is also described as pain in dermatomal areas that persists for at least 90 days after the rash (4). The pain is described as burning or electric shock, it is neuropathic and paroxysmal. It is seen in 20% of HZ cases, and 80% of the patients are 50 years or older (4). COVID-19 often causes neurological complications by invading the nervous system directly or through a postviral immune reaction. Chronic neuropathic pain may develop as a complication of COVID-19, or exacerbation or worsening of neurological status may occur in those with pre-existing chronic neuropathic pain (11). Although HZ is usually a self-limiting disease, in the presence of COVID-19 infection, it is necessary to start antiviral treatment as early as possible and to extend the treatment period compared to normal (9).

If medical treatment is insufficient in the treatment of PHN, interventional procedures for analgesia can be planned. We performed thoracic epidural steroid injection in our patient

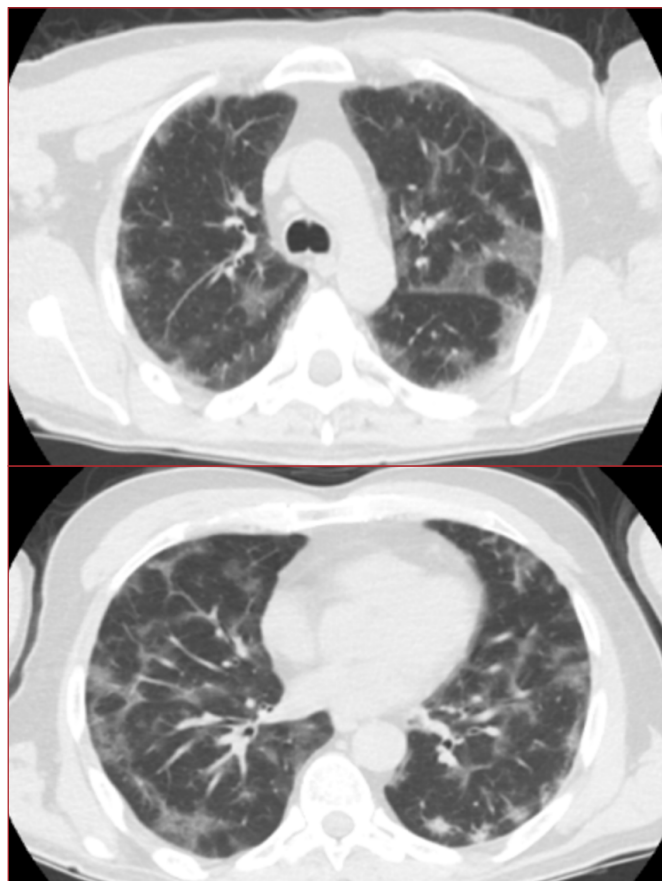


Figure 1. Thorax CT Sections of the Patient



Photo 1. Rashes in T10 – T11 Dermatome Areas

when adequate pain palliation could not be achieved with medical treatment. However, when there was no adequate response, we applied thoracic ESPB. Forero et al. ESPB is a new interfascial technique used for chronic and postoperative pain in the thoracoabdominal region (12). In addition to severe acute herpes zoster pain, it can also be used in combination with oral pregabalin and tramadol for long-term pain (13). When the local anesthetic is injected into the erector spinae plane, it spreads to the paravertebral area. It can affect 7-8 dermatomes according to the applied place and the dose of the drug. Effective analgesia can be provided up to 24-48 hours with a single application (14). In our patient, it was evaluated as effective up to 72 hours after the procedure. ESPB can also be preferred because of its easy application and low complication risk (14).

CONCLUSION

COVID-19 disease, which causes major respiratory problems, can cause immune system dysfunction in the person by affecting the cell-mediated immune response. This suppression of the immune system may present as shingles with VZV reactivation. With its effects on the nervous system, COVID-19 may predispose to the development of PHN after shingles. Larger studies are needed to determine the relationship between COVID-19 and HZ. As clinicians, we should be alert to the risk of HZ in COVID-19 disease.

ETHICAL DECLARATIONS

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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