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Increased Incidence of Shingles Status Post (s/p) Covid 19 in Immunocompetent Patient: Case Report

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Abstract

Shingles is a painful skin condition caused by the reactivation of the chickenpox virus, which can pose a greater risk to the elderly and those with a weakened immune system. In adults, the most common risk factors are advanced age, stress, other infections (such as AIDS or COVID-19), and immunosuppression. HZ reactivation has recently been observed following vaccination with COVID-19. Different clinical stages with variable clinical manifestations characterize the disease. Some of the symptoms carry a greater risk of complications than others. Postherpetic neuralgia, a chronic pain disease, is one of the most common possible complications. HZ vasculitis is linked to mortality and morbidity. gastrointestinal and renal complications have been reported. Early intervention with acyclovir or brivudine is the cornerstone of therapy. There are second-line treatments available. Management of pain is essential. Vaccination is a protective measure against shingles, and it can be administered alongside the COVID-19 vaccine. Healthy older individuals have access to two HZV vaccines for secondary prophylaxis: a live attenuated VZV vaccine and a recombinant adjuvanted VZV glycoprotein E subunit vaccine. A fully Covid-19 vaccinated patient was treated for Shingles which he received after he recovered from Covid-19. Our case study and recent research indicate a link between COVID-19 and shingles.

Introduction

Both infection with coronavirus disease 2019 (COVID-19) and vaccination have been linked to a variety of peculiar skin alterations [1]. Knowledge of the dermatological manifestations associated with SARS-CoV-2 aids in the diagnosis of COVID-19 in patients with skin lesions associated with respiratory symptoms or in those who are asymptomatic [2]. The clinical spectrum of cutaneous manifestations observed in COVID-19 patients is both complex and heterogeneous. Currently, there are five main categories of skin lesions: acral lesions, vesicular rashes, urticarial rashes, maculopapular rashes, and livedoid and necrotic lesions [3]. Shingles is a vesicular rash that emerges in a specific

dermatome pattern when the varicella zoster virus is reactivated. The virus can remain dormant in the body after chickenpox and cause shingles when the immune system weakens. People who develop herpes zoster (HZ) during the pandemic can test positive for the COVID-19 virus [4]. While COVID-19 is known to have an impact on the immune system and can increase the risk of shingles, limited reports support an association between shingles and COVID-19. HZ could also serve as an indicator of latent COVID-19 infection. Infection with COVID-19 can cause changes in leukocyte levels, resulting in reduced cell counts, mainly CD4+T cells, CD8+T cells, B cells, and natural killer cells [5]. As a symptom or complication of COVID-19, dermal lesions continue to manifest daily. Additionally, SARS-COV2 causes a hyperinflammatory state, and the resulting immune dysregulation is believed to be a potential cause of reactivation [6]. Immunocompromised individuals and those with HIV are more likely to develop necrotic zoster [4]. Complications such as nerve pain and keratitis can arise. This article discusses an uncommon presentation of shingles on an immunocompromised patient due to COVID-19 and explores clinical management approaches.

The Case

A 40-year-old male presented to his primary care physician with a 3-day history of very painful vesicular rash on the left side of chest, fatigue, and weakness. The surrounding area of the vesicular eruption was flared and tender to touch. All other causes like history of psychological stress, immunodeficiency malignancy, and immunosuppressive drug use were excluded in this patient. No previous history of similar lesions was reported, and the patient did not remember the occurrence of chickenpox in his childhood. At the time of presentation, he gave 9 out of 10 points to pain. The patient was recovered from covid-19 a month back and was fully vaccinated against COVID-19. Based on the history and clinical presentation of the lesions, diagnosis of herpes zoster (HZ) was concluded. He was given Valtrex, Gabapentin, and Tramadol. After 10 days of antiviral treatment, there was resolution in the symptoms and the lesions were decreasing. Valtrex helped the patient in crusting of the vesicular lesions within 10 days. With complete cessation of cough and fever on the 18th day, RT-PCR for COVID-19 was repeated again which was negative and the lesions of HZ had disappeared too. Considering the risk of HZ flare-up, corticosteroids were avoided in the treatment of COVID-19. The pain persisted for 6 months and required long term use of gabapentin. This condition is called post-herpetic neuralgia (PHN).

Test	Current Result	Units	Reference Interval
WBC	6.0	10E3/uL	3.4-10.8
RBC	5.45	10E6/uL	4.14-5.80
Hemoglobin	14.3	g/dL	13.0-17.7
Hematocrit	45.3	%	37.5-51.0
MCV	83	fL	79-97
MCH	26.2	pg	26.6-33.0
MCHC	31.6	g/dL	31.5-35.7
RDW	14.3	%	11.6-15.4
Platelets	308	10E3/uL	150-450
Neutrophils	49	%	Not Estab.
Lymphs	40	%	Not Estab.
Monocytes	8	%	Not Estab.
Eos	2	%	Not Estab.
Basos	1	%	Not Estab.
Neutrophils (Absolute)	3.0	10E3/uL	1.4-7.0
Lymphs (Absolute)	2.4	10E3/uL	0.7-3.1
Monocytes (Absolute)	0.5	10E3/uL	0.1-0.9
Eos (Absolute)	0.1	10E3/uL	0.0-0.4
Baso (Absolute)	0.0	10E3/uL	0.0-0.2
Immature Granulocytes	0	%	Not Estab.
Immature Grans (Abs)	0.0	10E3/uL	0.0-0.1

Test	Current Result	Units	Reference Interval
Glucose	79	mg/dL	65-99
BUN	9	mg/dL	6-24
Creatinine	0.69	mg/dL	0.76-1.27
eGFR	118	mL/min/1.73	>59
BUN/Creatinine Ratio	13		9-20
Sodium	143	mmol/L	134-144
Potassium	5.2	mmol/L	3.5-5.2
Chloride	105	mmol/L	96-106
Carbon Dioxide, Total	23	mmol/L	20-29
Calcium	10.2	mg/dL	8.7-10.2
Protein, Total	7.6	g/dL	6.0-8.5
Albumin	5.0	g/dL	4.0-5.0
Globulin, Total	2.6	g/dL	1.5-4.5
A/G Ratio	1.9		1.2-2.2

Discussion

More than 200 million individuals have been infected with severe acute respiratory disease virus 2 (SARS-CoV-2) or COVID-19, resulting in more than 4.3 million deaths worldwide as of 13th August 2021 [7]. Patients with COVID-19 may be at risk for developing herpes zoster as a consequence of increased psychological stress, as COVID-19 survivors can experience significant psychological stress [4]. Herpes zoster can develop in anyone who has had a natural infection with wild-type varicella-zoster virus (VZV) or a varicella vaccination. Vaccinated children have a lower risk of developing herpes zoster than children who were infected with uncontrolled varicella. The majority of individuals only experience a single episode in their lifetimes, but multiple episodes are possible [8]. COVID-19 affects various systems, such as the respiratory, gastrointestinal, and neurological systems, and it may also involve the skin [9, 10]. Herpes zoster (HZ), a skin condition resulting from the same virus that causes chickenpox, presents as a rash with blistering eruptions in the area served by the affected nerve [11]. The occurrence of HZ rises with age and can be triggered by immunosuppressive therapy, immunosenescence, or trauma [12]. COVID-19 reduces lymphocyte counts, CD3+, CD4+, and CD8+ T cells, resulting in decreased human cell-mediated immunity, which may elevate the risk of HZ [13]. The cause for this is unclear, but immunomodulation following live attenuated vaccines and attenuated alloreactivity induced by inactivated vaccines could be contributing factors [14, 15]. Herpes zoster reactivation has been observed in patients who have received inactivated hepatitis A, influenza, rabies, and Japanese encephalitis vaccines [16]. A live, attenuated vaccine that boosts the immunity to VZV and reduces the risk of HZ is now available and is recommended for adults older than 60 years of age. It has been known to reduce the incidence of HZ and PHN [17]. Even after so many recent advances in PHN treatment methods, it persists in a large number of patients, affecting their daily activities and lowering their quality of life. Anticonvulsants, antidepressants, topical lidocaine, topical capsaicin, and other options are the most common treatments for PHN [18]. Varicella-zoster infection can also result in acute retinal necrosis, according to Rothova et al [19]. Immune reconstitution inflammatory syndrome (IRIS), a paradoxical exacerbation of preexisting illness masked by the host's restored capacity to trigger an inflammatory response after the initiation of ART, may be analogous to vaccine-induced reactivation of HZ [20].

Conclusion

It is possible that COVID-19 could impact immunity and lead to reactivation of latent viruses, as well as increase the likelihood of opportunistic infections and subsequent complications. HZ is an important co-morbidity associated with COVID-19 which could severely affect the quality of life. Due to the paucity of data regarding HZ in COVID-19 with no established guidelines to treat the condition it serves as an important part of literature and future research. Currently, analgesics and antivirals are the mainstays of treatment. Thus, further research is advised to delve into this correlation.

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