Varicella Zoster Precipitating a case of Covid-19 Myelitis

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Case Report

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Abstract

Covid-19 disease has plethora of clinical manifestations. There have been certain viral coinfection and presence of autoimmunity in Covid-19 disease. The predominant neurological manifestations of Covid-19 disease reported are encephalopathy, anosmia, headache, bell's palsy, Guillain barre syndrome, acute transverse myelitis, acute demyelinating encephalomyelitis and strokes. In this illustration we presented an 11-year-old girl suffering from Covid-19 illness, presented with acute transverse myelitis along with Varicella-zoster co-infection substantiated by cerebrospinal fluid PCR positivity. There is a scarce literature of coexistence of varicella-zoster co-infection triggering myelitis in Covid-19 illness.

Introduction

Covid-19 pandemic has shown multivariate presentation involving immune dysregulation. [1,2] Neurological and cardiovascular complications are increasing worldwide. [3,4,5] There is scarce literature of varicella-zoster coinfection precipitating myelitis in Covid-19 illness.

Case Description

The 11-year-old girl with cough and high-grade fever for six days, presented with acute-onset gradually-progressive tingling sensation and numbness in lower limbs after three days of fever. Two days later, she felt weakness in both lower limbs (heaviness), initially proximally and then distally over 24 hours with urinary incontinence.

There is no history of headache, altered sensorium, seizures, blurred vision, diplopia, difficulty chewing, speaking or swallowing. She had no significant past history. She was neither vaccinated to Covid-19 nor suffered from Covid-19 illness previously. Her general examination was normal. Nervous system examination showed normal mental functions and cranial nerve examination, including fundus. Motor examination revealed spastic lower limbs, symmetric 3/5 power, hyporeflexia and extensor plantars. Sensory examination showed diminished pain, touch, temperature, vibration below T10-segment with intact joint position sensation. Rest of examination including gynaecological was unremarkable. Her laboratorial evaluation revealed normocytic-normochromic anemia, with normal leucocyte and platelet count, glucose, renal, liver, thyroid, electrolytes, vitamin B12 and D3 levels with negative serological tests for HIV, Hepatitis-B, Hepatitis-C with high titers of Covid-19 antibody (67.99 COI). CSF examination was normal with positive varicella-zoster PCR status, negative for Gram stain, fungal stain, CBNAAT, cryptococcal antigen, Japanese encephalitis, Epstein barr virus, Enterovirus, Herpes Simplex-1 virus, Covid-19 PCR. Her visual evoked potential (VEP) showed bilateral prolonged P-100 latencies, and limb nerve conduction study was normal. Her spinal imaging revealed longitudinally extensive transverse myelitis (LETM) in cervical spinal segment C4-C8 with normal brain and orbital imaging (Figure-1). She was negative for NMO-MOG antibodies. She was treated with pulse methylprednisolone, acyclovir and supportive neuropathic drugs (pregabalin). She improved drastically and was discharged with power of

4+/5 in lower limbs, minimal sensory disturbance, and complete bladder recovery. At two months of follow-up, she had a Modified Rankin Scale of 1.

Discussion

The rarity of our case was the concurrent Varicella-zoster coinfection without skin changes precipitating LETM amidst Covid-19 illness. [6] Such coexistence is rarely observed in Covid-19 illness. Myelitis is observed globally in Covid-19 illness and post-Covid-19 vaccination. [7,8,9,10,11] Blackburn and Wang proposed molecular mimicry, bystander activation, epitope spreading, and polyclonal B-cell activation as mechanisms of post-infectious neurological disorders. [12]

Varicella-zoster virus (VZV) is an icosahedral double-stranded DNA virus infecting humans, multiplies in lungs, travels via nerves to remain inert in ganglia. [13] Years later, it reactivates to cause neurological illness like herpes zoster(shingles), chronic pain(post-herpetic neuralgia), meningoencephalitis, cerebellitis, isolated or multiple cranial neuropathies, Ramsay Hunt syndrome, vasculopathy, myelopathy and chronic radicular pain without rash (zoster sine herpete)[14,15,16] The coexistence of varicella-zoster in Covid-19 illness precipitating myelitis is worth reporting. The exact pathogenesis of such type of myelitis needs to be further determined.

Conclusion

Covid-19 illness has plethora of immune-mediated manifestations. The diagnosis of Varicella-Zoster myelitis without rash is a challenge. Co-infection of Varicella-zoster can occur in Covid-19 disease. Treatable causes of myelitis should be searched even in presence of Covid-19. The exact immunological mechanism of such involvement needs further exploration.

Declarations

Written, informed consent was taken from the patient/parents/legal guardians/next of kin for reporting this case.

The work has been approved by the appropriate ethical committees related to the institution(s) in which it was performed and that subjects gave informed consent to the work.

Conflicts of interest: None

Support or funding by any drug company: None

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I as a principal author will take full responsibility for the data, the analyses and interpretation, and the conduct of the research; that I had full access to all of the data; and that I had the right to publish any and all data, separate and apart from the attitudes of the sponsor.

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Figures

Figure 1

(1a) Magnetic resonance imaging study of the spine which revealed longitudinally extensive transverse myelitis in cervico-thoracic region,(1b) axial section depicted cord hyperintensities