Correspondence

Herpes zoster ophthalmicus in COVID-19 patients

Dear Editor,

Herpes zoster ophthalmicus (HZO) is an uncommon variant of herpes zoster (HZ) that affects the ophthalmic division of the trigeminal nerve. It presents with crops of vesicles on an erythematous base and dermatomal pain distribution, in addition to ocular manifestations such as conjunctivitis, uveitis, episcleritis, keratitis, and retinitis. Risk factors for reactivation of varicella zoster virus (VZV) include old age, immunocompromised conditions such as autoimmune diseases, and chronic diseases such as diabetes mellitus.[1]

Several skin manifestations have been reported in COVID-19 patients, including HZ.[2] To the best of our knowledge, HZO has not been previously reported in COVID-19 patients. Herein, we present four cases of HZO in two children and two young adults infected with this pandemic disease.

The age of our patients ranged from 7 to 42 years with a mean of 21.5 years. All the patients reported a previous episode of chickenpox at a younger age. At the onset of HZO presentation, the patients were immunocompetent and had mild to moderate COVID-19 disease manifestations, including fever, malaise, bone aches, sore throat, dry cough, diarrhea, and loss of taste. The disease was confirmed using a nasopharyngeal smear test, and a complete blood count revealed mild/moderate lymphopenia with a mean of 0.904 $\times$ 10^3/ul (normal value: 1.5–4 $\times$ 10^3/ul for adults, 1.5– $\times$ 10^3/ul for children). The patients received supportive and symptomatic treatment for COVID-19 and did not require hospitalization. The mean time between the onset of COVID-19 disease and HZO diagnosis was 4.5 days (Table 1).

Herpes zoster ophthalmicus is rarely reported in childhood, particularly in immunocompetent children. Most of the reported cases are related to varicella infection acquired during the first year of life or intrauterine and children with immunosuppression.[3] Therefore, it was quite interesting to diagnose HZO at this young age (7 and 9 years) (Figure 1a).

Given the absence of any of the previously mentioned predisposing factors for reactivation of VZV, it seems that COVID-19 infection, as an acute illness with its associated physical and emotional stress, might represent the triggering factor for the development of HZO in our patients.

Another possible explanation of VZV reactivation with COVID-19 may be related to the decrease in the total lymphocytic count in these patients. Lymphopenia occurs as a result of direct infection of lymphocytes with SARS-CoV-2, the activation-induced cell death, and the impairment to antiviral responses.[4] Our patients showed mild/moderate lymphopenia that is usually associated with rapid recovery.

Ocular complications that may result in visual loss are considered the most serious complications of HZO.[3] Although all of the presented patients showed positive Hutchinson sign and had variable degrees of eye affection, no impairment of visual acuity was observed in any of them. Timely diagnosis and prompt antiviral treatment are critical in reducing visual

Table 1 Herpes zoster ophthalmicus in COVID-19 patients

Patient	Sex	Age (years)	COVID-19 manifestations	Onset of HZO in relation to COVID-19	Ocular presentations*	Lymphocytic count at HZO onset**	Systemic antiviral
1	Male	42	Fever, dry cough, sore throat, bone aches, and malaise	4 days after COVID-19 manifestations	Blepharitis, conjunctivitis, and mild keratitis	0.853 10^3/ul	Acyclovir 800 mg 5 times/day/7 days
2	Female	7	Mild symptoms with fever, malaise, and dry cough	5 days after COVID-19 manifestations	Blepharitis and conjunctivitis	0.953 10^3/ul	Acyclovir 20 mg/kg/ 5 times/day/ 7 days
3	Male	28	Fever, dry cough, bone aches, and loss of taste	5 days after COVID −19 manifestations	Blepharitis, episcleritis, and conjunctivitis	0.925 10^3/ul	Acyclovir 800 mg 5 times/day/ 7 days
4	Male	9	Mild symptoms with fever, diarrhea, and dry cough	4 days after COVID-19 manifestations	Blepharitis with lid edema and conjunctivitis	0.885 10^3/uL	Acyclovir 20 mg/kg/ 5 times/day/ 7 days

HZO: Herpes zoster ophthalmicus.

*Topical acyclovir 3% eye ointment and topical prednisolone acetate 1% eye drops were used in all patients.

**Reference value: 1.5–4 x 10^3/uL for adults, 1.5–7 x 10^3/uL for children.

Figure 1 Typical herpes zoster ophthalmicus in a 9-year-old, COVID-19 positive male child. a. At presentation. b. After 1 week of systemic acyclovir 20 mg/kg/ 5 times daily

morbidity, and this was the case in our patients who received systemic and topical acyclovir and topical prednisolone acetate 1% eye drops (Figure 1b). Neither ocular complications nor postherpetic neuralgia was observed in any of our patients.

Systemic steroids have been used by some authors to reduce the long-term incidence of postherpetic neuralgia or ocular complications. In patients with severe manifestations of COVID-19, systemic steroids are used to decrease the host inflammatory responses that may lead to acute lung injury and adult respiratory distress syndrome. However, the risk associated with secondary infection and delayed viral clearance may outweigh steroid benefits in mildly affected patients.[5] Because our patients presented with mild to moderate COVID-19 and the use of systemic steroids in HZO is a controversial issue,[3] we decided not to use systemic steroids.

In conclusion, cutaneous manifestations of COVID-19 disease are continuously emerging. HZO might be a complication to or an indicator of COVID-19 infection, particularly in young, immunocompetent patients.

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