Advanced Age and Multiple Comorbidities as Important Factors in Predicting Poor Prognosis in Herpes Zoster Ophthalmicus

Asuman Orhan Varoğlu 1, Aysenur Avarisli 1

1. Department of Neurology, Istanbul Medeniyet University, Istanbul, TUR

Corresponding author: Asuman Orhan Varoğlu, asumanorhan69@gmail.com

Abstract

The varicella-zoster virus (VZV) infection results in varicella (chickenpox) and is generally seen in immunocompromised persons. VZV virus remains latent in the ophthalmic branch in the trigeminal ganglion. When reactivated, herpes zoster ophthalmicus (HZO) develops and sometimes leads to chronic ocular complications, among which cranial nerve palsies are rarely seen. Though the third cranial nerve is most frequently involved, the fourth and sixth nerves may also be involved in some cases. Treatment includes systemic antiviral therapy and steroid administration. The prognosis is generally good when treatment is executed. Improvement can also be observed without treatment. In this article, we would like to highlight two such cases in which these two cranial nerves got involved following an episode of HZO. One is a 67-year-old female patient having diabetes mellitus (DM), hypertension (HT), and coronary heart disease with fourth and sixth cranial nerve complete palsy. The other is a 76-year-old male patient with HT, DM, and heart failure with only sixth cranial nerve complete palsy. Despite adequate treatment, both patients had a poor prognosis. Advanced age and the presence of multiple comorbidities are important factors in predicting poor prognosis in HZO cases.

Introduction

Herpes zoster ophthalmicus (HZO) is a condition that is characterized by inflammation of the sensory fibers of the ophthalmic branch of the trigeminal nerve. The most common complications of varicella zoster are gastroenterological infections, cranial nerve palsies, myelitis, meningitis, and stroke [1]. In HZO, the incidence of extraocular muscle paralysis ranges from 7% to 31%; however, most cases can be overlooked, as visual acuity is reduced in the affected eye and diplopia is seen in extreme gaze [2]. While the oculomotor nerve is more affected, the abducens and trochlear nerves are less affected. In HZO, extraocular muscle paralysis sometimes develops at the same time as the rash develops, and sometimes more than four weeks after the rash develops; however, it usually occurs two to four weeks after the development of the rash [3]. Extraocular muscle paralysis is usually seen in elderly patients with a benign prognosis [1]. Here, unlike the literature, we present two cases of persistent extraocular muscle complete paralysis in elderly patients despite adequate treatment.

Case Presentation

Case 1

A 67-year-old female patient visited our center with diplopia and pain in the right half of her face for five days, and blisters on her scalp and forehead for a day. She had a medical history of diabetes mellitus (DM), coronary artery disease, and hypertension (HT). The right trochlear and abducens complete paralysis were present in the patient’s neurological examination (Figures 1a, 1b). Vision loss was not detected, but diplopia was present in the patient upon evaluation by an ophthalmologist. The patient, after consultation with the dermatology department, was diagnosed with HZO. Contrast-enhanced cranial MRI was unremarkable. Lumbar puncture (LP) analysis was within the normal limit. The patient’s well-controlled DM resulted in a hemoglobin A1c (HbA1c) value of 5.6 mmol/mol Hb. The patient was administered methylprednisolone 1mg/kg/day orally and acyclovir 2,400mg/day intravenously for a 14-day period. Follow-ups were performed for six months in regular outpatient clinic control. No improvement was observed in the patient’s extraocular muscle complete paralysis and diplopia during this follow-up.
Case 2

A 76-year-old male patient visited our outpatient clinic because of persistent redness, swelling, and blistering around his right eye for four days. He had a history of HT, DM, and heart failure. Neurological examination showed a limitation of the right eye to move outward (Figures 2a, 2b). Vision loss was not detected, but diplopia was present in the patient upon evaluation by an ophthalmologist. The patient, after consultation with the dermatology department, was diagnosed with ophthalmic shingles. The patient had poor glycemic control and the HbA1c value was 8.4 mmol/mol Hb. Cranial MRI was is unremarkable. The patient, after other possible causes were excluded, was diagnosed with HZO with abducens complete paralysis. Acyclovir was administered intravenously 3000 mg/day for three days, and acyclovir treatment was stopped due to the development of nephropathy secondary to acyclovir treatment. Methylprednisolone was not included in the treatment of the patient with uncontrolled DM. In this patient, when renal functions normalized, brivudine 125 mg/day was administered in consultation with the infectious diseases doctor. Follow-ups were performed for six months in the regular outpatient clinic. Neurological examination showed no improvement was observed in the patient’s extraocular complete paralysis and diplopia during this follow-up.

Discussion

Herpes zoster usually occurs through the reactivation of varicella-zoster virus in the thoracic and cranial sensory ganglia. When activated in the ophthalmic branch originating from the trigeminal nerve, this condition is called HZO, which occurs in approximately 10% to 25% of herpes zoster cases [1]. HZO occurs at a higher rate than encountered by the normal population, especially in the case of immune-compromised and elderly patients [4]. However, HZO-associated extraocular complete paralysis is uncommon. Isolated trochlear and/or abducens nerve involvement is rare, and therefore it can be easily overlooked during examination [1]. Orbital apex syndrome with combined cranial nerve involvement characterized by dysfunction of the trigeminal nerve ophthalmic branch, oculomotor, trochlear, abducens nerve, and optic nerve has been reported in the literature [5]. Except for orbital apex syndrome, the involvement of the fourth and sixth cranial nerves at the same time is rare. While trochlear and abducens nerves were held together in one of our cases, isolated abducens nerve involvement was observed in the other case. In the literature review, it has been reported that ocular motor paresis of a patient with fourth and sixth cranial nerve involvement improved in approximately two months with treatment [4,6]. Unlike this report, no improvement was observed in extraocular paralysis despite treatment in our cases. When HZO develops, our aims must involve reducing the severity of acute and chronic pain, facilitating rapid recovery, and
improving despite adequate treatment in the case of patients with advanced age and multiple comorbidities. Although we paid attention to these, we presented two cases of HZO with poor prognosis and involvement of fourth and sixth cranial nerves palsy. In the presence of extraocular muscle paralysis associated with HZO, which is generally known to have a good prognosis, it should be considered that eye movement may not improve despite adequate treatment in the case of patients with advanced age and multiple comorbid diseases.

Conclusions
Extraocular movements should be carefully examined in patients with HZO. Other possible causes of extraocular muscle palsy should be excluded in etiology, and treatment should be started immediately. Although we paid attention to these, we presented two cases of HZO with poor prognosis and involvement of fourth and sixth cranial nerves palsy. In the presence of extraocular muscle paralysis associated with HZO, which is generally known to have a good prognosis, it should be considered that eye movement may not improve despite adequate treatment in the case of patients with advanced age and multiple comorbid diseases.

Additional Information
Disclosures
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