Clinical and Experimental Dermatology and Therapies

OPEN ACCESS

Sabic A, et al. Clin Exp Dermatol Ther 8: 207.

www.doi.org/10.29011/2575-8268.100207

www.gavinpublishers.com

GAVIN PUBLISHERS

Case Reports

Complete Recovery of Herpes Zoster-Associated Isolated Oculomotor Nerve Palsy without Systemic Steroids

Alma Sabic*, Alexandra Fritz, Robert Müllegger

Department of Dermatology, State Hospital Wiener Neustadt, Austria

***Corresponding author**: Alma Sabic, MD Corvinusring 3-5AT-2700, Wiener Neustadt, Austria

Citation: Sabic A, Fritz A, Mullegger R, (2023) Complete Recovery of Herpes Zoster-Associated Isolated Oculomotor Nerve Palsy without Systemic Steroids. Clin Exp Dermatol Ther 8: 207. DOI:10.29011/2575-8268.100207

Received Date: 15 May 2023; **Accepted Date:** 24 May 2023; **Published Date:** 29 May 2023

Key Points

Question

What ist the role of systemic steroids in the treatment of herpes zoster-associated oculomotor nerve palsy?

Findings

ONP was present in 5/259 (1,9%) patients. Treatment consisted of intravenous aciclovir for 7-21 days at a daily dosage of 5-10mg/kg body weight. Complete resolution of ONP was achieved within 10-120 days without systemic corticosteroids.

Meaning

The routine use of steroids does not appear to be mandatory in the treatment of herpes zoster-associated oculomotor nerve palsy.

Abstract

Backgrounds: Ophthalmoplegia is an infrequent complication of Herpes zoster ophthalmicus (HZO) that is caused by involvement of the oculomotor and/or the abducens-, and trochlear nerves. The use of corticosteroids has been of inconsistent effect. **Objectives:** To describe the incidence, clinical characteristics, and outcome of ONP after treatment with aciclovir in a consecutive series of patients with HZO. **Materials and Methods:** Between January 2014 and December 2022, 259 patients with HZO were treated at the Department of Dermatology, Federal Hospital, Wiener Neustadt, Austria. ONP was present in 5/259 (1,9%) patients. The computerized charts of these five patients were scrutinized for all clinical data, comorbidities, therapy and course.

Results: The mean age of the 5 patients (f:m = 3:2) was 76.6 years. The skin lesions of herpes zoster (HZ) were limited to the dermatome of the ophthalmic nerve in all patients. The clinical appearance was stereotypical of HZ. ONP was ipsilateral and complete (i.e. total internal and external ophthalmoplegia) and it developed within few days after the start of the skin lesions. Moderate to severe pain was present in all five patients. Treatment consisted of intravenous aciclovir for 7-21 days at a daily dosage of 5-10mg/kg body weight without systemic corticosteroids. Complete resolution of ONP was achieved within 10-120 days. **Conclusion:** ONP is a rare complication of HZO with a good prognosis with standard treatment with nucleoside analogues. The routine use of steroids does not appear to be mandatory.

Keywords: Herpes zoster ophthalmicus; Oculomotor nerve palsy; Complication; Therapy; Glucocorticosteroids

Abbreviations: HZ: Herpes zoster, VZV: Varicella-zoster virus , HZO: Herpes zoster ophthalmicus , ONP: Oculomotor nerve palsy

Introduction

Herpes zoster ophthalmicus (HZO) is defined as a neurocutaneous inflammation in the dermatome served by the ophthalmic division of the trigeminal nerve that is caused by the reactivation of the varicella-zoster virus (VZV) in the trigeminal ganglion. It accounts for up to 20% of all herpes zoster (HZ) cases. Pain is prevalent in all stages of HZO, with postherpetic neuralgia affecting 5-30% of particularly elderly patients [1,2]. Involvement of the eye compounds HZO in at least 50% [1]. It comprises conjunctivitis and anterior uveitis (together accounting for three quarters of cases), stromal keratitis, scleritis/episcleritis, retinal necrosis, and optic neuritis [3]. Opthalmoplegia is an infrequent complication in the acute stage of HZO. It is most often caused by (isolated) involvement of the oculomotor nerve, with about 50 published cases [4-6], followed by the abducens and the trochlear nerve [7]. Exceptionally, more than one nerve is affected. Paralysis is partial or complete and ipsilateral to the skin lesions, although bilateral or contralateral cases may occur [7]. Ophthalmoplegia is not significantly associated with immunosuppression [9]. We present a series of five patients with oculomotor nerve palsy (ONP) out of a collective of 259 HZO patients, who all recovered completely with nucleoside analogues only without systemic steroid treatment.

Methods

Between January 2014 and December 2022, 259 consecutive in-patients with HZO were treated at the Department of Dermatology, Federal Hospital, Wiener Neustadt, Austria. The retrospective analysis of those patients revealed the diagnosis of ONP in 5/259 (1,9%) patients. The computerized charts of these five patients were scrutinized for all clinical data, comorbidities, therapy and course.

Results

Two hundred and fifty-nine cases with HZO were given inpatient treatment between January 2014 and December 2022 at the Department of Dermatology, Federal Hospital Wiener Neustadt, Austria. Five of them (1,9%), all with comorbidities, but none with immunosuppression, suffered from ONP (Table 1). Three patients were female; the mean age was 76.6 years. The skin lesions of HZ were limited to the dermatome of the first division of the trigeminal nerve (ophthalmic nerve) in all patients with no predilection of one side. The clinical appearance was stereotypical of HZ, with necrotic lesions in the two oldest patients. ONP was ipsilateral and complete (i.e. total internal and external ophthalmoplegia) in all five patients, resulting in ocular down- and outward deviation with double-vision, ptosis, and mydriasis (Figure 1A and 1B; Figure 2A and 2B). It developed within few days after the start of the skin lesions. In addition to conjunctivitis in all patients, further ocular manifestations were observed in two patients. Moderate to severe pain was present in all five patients and had to be treated with a combination of at least two medications. Additional extracutaneous complications were not present. Treatment consisted of intravenous aciclovir for 7-21 days at a daily dosage of 5-10mg/kg body weight. Complete resolution of ONP was achieved within 10-120 days.

Patient Nr.	Age (Years)	Sex	Site of herpes zoster	Dermatological findings	Time between Herpes zoster and oculomotor nerve palsy (Days)	Initial Pain (VAS); Analgetic Therapy	Further complications	Aciclovir-Therapy	Duration of oculomotor nerve palsy (Days)	Comorbidities
1	74	m	V/1, right	moderate	10	4.5 GAB, MET	None	5mg/kg, 7 days 10mg/kg, 7 days	60	
2	86	f	V/1, right	necrotizing	5	6.5 GAB, MET, PAR	Keratitis iritis	5mg/kg, 5 days 10mg/kg, 11 days	120	St.p. stroke 08/2016 St.p. myocardial infarction Atrial fibrillation Arterial hypertension Bronchial asthma
3	70	m	V/1, left	moderate, papular	11	6.5 PAR, MET	Anterior uveitis	5mg/kg, 7 days	10	Arterial hypertension Diabetes mellitus Type II
4	76	f	V/1, left	moderate	7	7 GAB, PAR, MET, KET, PRE	None	5mg/kg, 21 days	21	Arterial hypertension Hypothyroidism
5	77	f	V/1, left	necrotizing	7	7.5 PAR, GAB, TRAM, KET	None	5mg/kg, 10 days	42	Arterial hypertension Bronchial asthma Hypothyroidism Atrial fibrillation

Abbreviations: V/1, dermatome of the first branch of the trigeminal nerve, VAS, visual analogue scale; GAB, gabapentin; MET, metamizole; PAR, paracetamol; KET, ketamine; PRE, pregabalin; TRAM, tramadol

Table 1: Clinical characteristics and therapy of 5 patients with herpes zoster ophthalmicus with oculomotor nerve palsy.

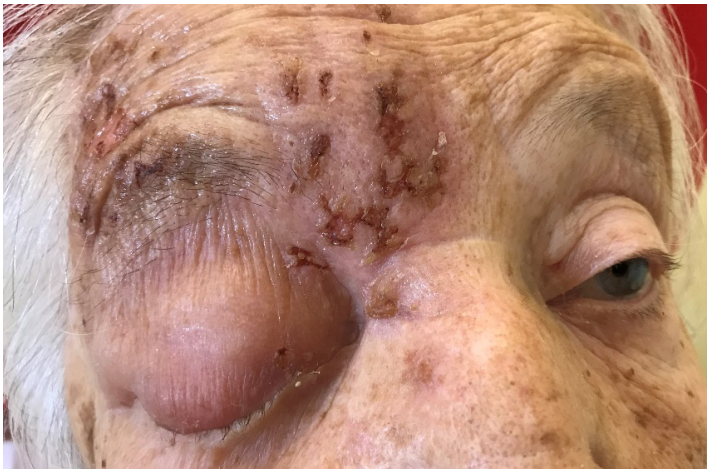

Figure 1A: 86-year old female (patient 2) with necrotizing herpes zoster ophthalmicus with ocular motor nerve palsy (shown are ptosis and down- and outward deviation of the bulb of the right eye).

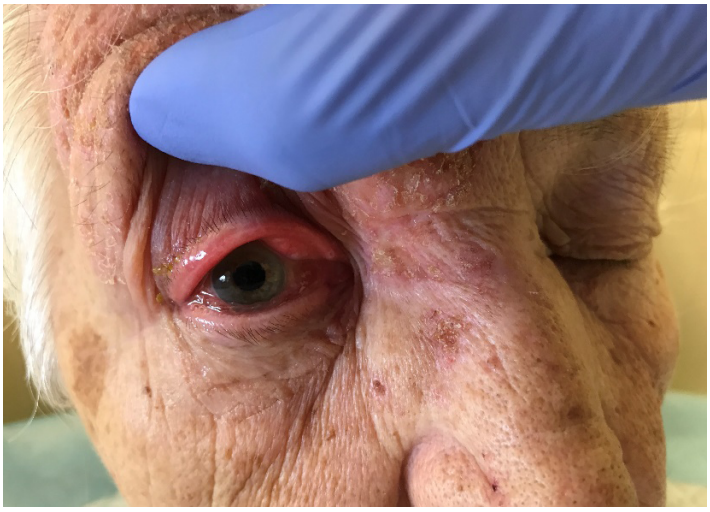

Figure 1B: 86-year old female (patient 2) with necrotizing herpes zoster ophthalmicus with ocular motor nerve palsy (shown are mydriasis and conjunctivitis).

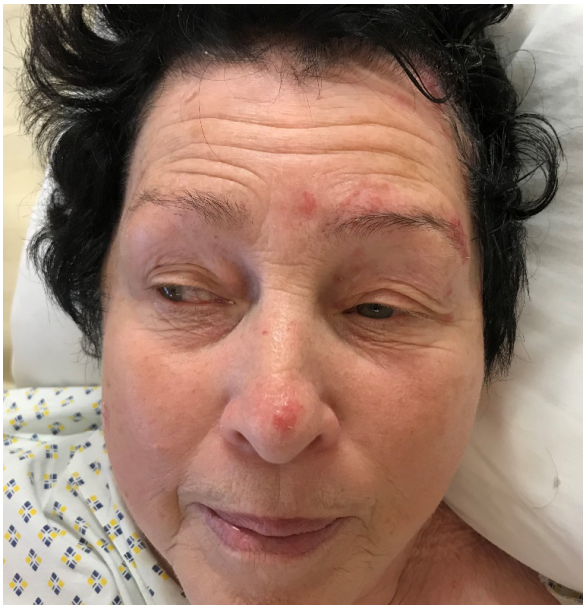

Figure 2A: 76-year old female (patient 4) with herpes zoster ophthalmicus with ocular motor nerve palsy of the left eye. Shown is the weakness of ipsilateral adduction of the affected eye on gaze movement to the right.

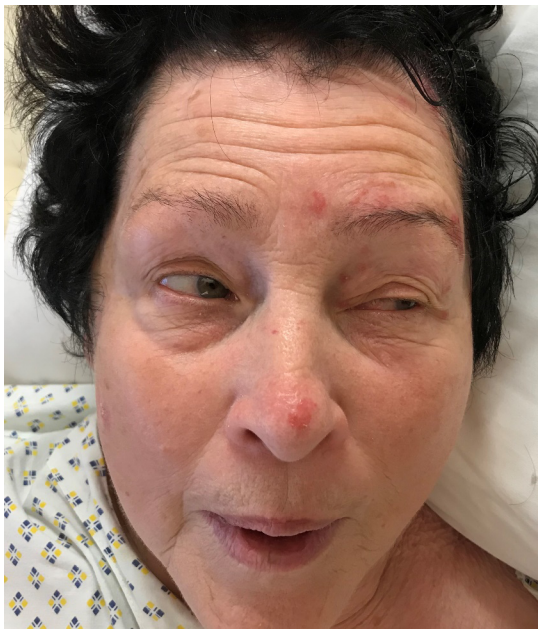

Figure 2B: 76-year old female (patient 4) with herpes zoster ophthalmicus with ocular motor nerve palsy of the left eye. The abduction of the affected eye on gaze movement to the left is unimpaired.

Discussion

To date, the pathogenesis of ophthalmoplegia in HZO is speculative. Hypotheses include trigeminal inflammation that spreads to extraocular muscles at certain anatomical sites such as the superior orbital fissure, the cavernous sinus, or the Anulus tendineus communis. A direct cytopathic effect of VZV on cranial nerves controlling eye movement, an occlusive vasculitis, or myositis with consecutive muscle- and nerve damage were also discussed [9].

So far, ONP has been described in about 50 cases, of which only four were published in the dermatologic literature [5-8]. For example, in a study on 330 patients with various cranial nerve affections in HZ, only one patient had ONP (incidence 0.3%) [11]. Haargaard et al. have described three cases of ONP (2.7%) in a series of 110 patients with HZO, seen between 1999-2005 [12]. Additional descriptions refer to single case reports and smaller case series [13,14]. This study represents the most comprehensive and first specific dermatologic case series of ONP in HZO. The figure of only 1,9% of 259 patients with HZO underlines the low incidence of this complication. ONP in previous publications affected primarily elderly and occurred shortly after the start of skin lesions in most patients, although simultaneous or previous appearance have been described in a quarter of patients. A combined affection of the abducens and the trochlear nerve have been mentioned in 20 patients in a review covering the period of 1948-2008 [9]. An additional case in a 78-year old lady has been published only recently [8]. ONP mostly begins within two weeks after the start of skin lesions. Our findings extend on the clinical details of ONP in HZO and shows for the first time the association with moderate to severe neuropathic pain in all patients.

Therapy and course of HZO with ONP are incompletely delineated in the literature. It can be extracted that most patients were treated with oral and/or intravenous aciclovir or valaciclovir. Steroids were applied orally or intravenously in various doses not exceeding 24 weeks. ONP resolved within a maximum of 18 months under this therapy [1,14]. In a meta-analysis, Li et al. attribute steroids a supportive role in the remission of HZO-associated ophthalmoplegia, as the chance of complete recovery was 25% (9/36) in patients who received corticosteroids versus 7.1% (1/14) in those without steroid treatment [15].

However, there is no recommendation for a regular addition of corticosteroids to nucleoside analogues for cases of HZO with ONP mentioned in current European and American guidelines so far [16-18]. In line, our observations suggest that the routine use of corticosteroids is not mandatory, specifically in isolated ONP. The patients in our series experienced complete clearance in no more than four months with intravenous aciclovir monotherapy at a routine dosage for 1-3 weeks.

Conclusion

In conclusion, ONP is a rare complication of HZO with a good prognosis with standard treatment with nucleoside analogues. The routine use of steroids does not appear to be mandatory.

References

1. Kedar S, Jayagopal LN, Berger JR (2019) Neurological and ophthalmological manifestations of varicella zoster virus. J Neurooptholmol 39: 220-231.
2. Sanjay S, Huang P, Lavanya R (2011) Herpes zoster ophthalmicus. Curr Treat Options Neurol 13: 79-91.
3. Szeto SKH, Chan TCY, Wong RLM, Ng ALK, Li EYM, et al. (2017) Prevalence of ocular manifestations and visual outcomes in patients with herpes zoster ophthalmicus. Cornea 36: 338-342.
4. Daswani M, Bhosale N, Shah VM (2017) Rare case of herpes zoster ophthalmicus with orbital myositis, oculomotor nerve palsy and anterior uveitis. Indian J Dermatol Venereol Leprol. 83: 365-367.
5. Schoenlaub P, Grange P, Nasica X, Guillaume JC (1997) Oculomotor nerve paralysis with complete ptosis in herpes zoster ophthalmicus: 2 cases. Ann Dermatol Venereol 124: 401-403.
6. Im M, Kim BJ, Seo YJ, Park JK, Lee JH (2007) Complete ophthalmoplegia after herpes zoster. Clin Exp Dermatol 32: 162-4.
7. Alrasheed K, Jfri A, Massie R (2019) Herpes zoster ophthalmicus with unilateral sixth nerve palsy. Can J Neurol Sci 47:273-274.
8. Low KL, Nurul-Ain M, Che Hamzah J, Wan Hitam WH (2022) Simultaneous Oculomotor and Trochlear Nerve Palsy in Herpes Zoster Ophthalmicus. Cureus.14: e30755.
9. Sanjay S, Chan EW, Gopal L, Hegde SR, Chnag BCM (2009) Complete unilateral ophthalmoplegia in herpes zoster ophthalmicus. J Neuroophthalmol 29: 325-337.
10. Lavin PJM, Younkin SG, Kori SH (1984) The pathology of ophthalmoplegia in herpes zoster ophthalmicus. Neuro-Ophthalmology 4: 75-80.
11. Tsau PW, Liao MF, Hsu JL, Hsu HC, Peng CH, et al. (2020) Clinical presentations and outcome studies of cranial nerve involvement in herpes zoster infection: A retrospective single-center analysis. J Clin Med 9: 946.
12. Haargaard B, Lund-Andersen H, Milea D (2008) Central nervous system involvement after herpes zoster ophthalmicus. Acta Ophthalmol 86: 806-809.
13. Harthan JS, Borgman CJ (2013) Herpes zoster ophthalmicus-induced oculomotor nerve palsy. J Optom 6: 60-65.
14. Hakim W, Sherman R, Rezk T, Pannu K (2012) An acute case of herpes zoster ophthalmicus with ophthalmoplegia. Case Rep Ophthalmol Med 953910:1-3.
15. Li A, Tandon A, Dinkin M, Oliveira C (2021) The use of systemic steroids in the treatment of herpes zoster ophthalmicus-related ophthalmoplegia: Case report and case meta-analysis. Am J Ophthalmol 223: 241-245.

16. Werner RN, Nikkels AF, Marinovic B, Schafer M, Czarnecka-Operacz M, et al. (2017) European consensus-based (S2k) Guideline on the Management of Herpes Zoster- guided by the European Dermatology Forum (EDF) in cooperation with the European Academy of Dermatology and Venerology (EADV), Part 2: Treatment. J Eur Acad Dermatol Venereol 31: 20-29.

17. Saguil A, Shawn K, Michael M, Lauters R (2017) Herpes zoster and Postherpetic Neuralgia: Prevention and Management. Am Fam Physician 96: 656-663.

18. Dworkin RH, Johnson RW, Breuer J, Gnann JW, Levin MJ, et al. (2007) Recommendations for the Management of Herpes Zoster. Clin Infect Dis 44: S1-26.