Abirami Shavani[1,2], Adil Hussein[1,2], Wan-Hazabbah WH[1,2,*]

[1]Department of Ophthalmology, School of Medical Sciences, Health Campus Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

[2]Hospital Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

Received 18 July 2017.
Revised 17 Oct 2017.
Accepted 21 Nov 2017.
Published Online 22 Dec 2017

*Corresponding author:
Wan Hazabbah Wan Hitam
E-mail: hazabbah@usm.my

Herpes Zoster Ophthalmicus, Persistent Hyphema and Orbital Apex Syndrome; a Blinding Combination

Abstract— To report a rare case of an elderly gentleman who presented with herpes zoster ophthalmicus, complicated with persistent hyphema and orbital apex syndrome. A 75-year-old Malay gentleman presented with left herpes zoster ophthalmicus that was complicated with complete ophthalmoplegia and ptosis. He developed total hyphema in the affected eye with a secondary elevated intraocular pressure after a week. He was treated with oral acyclovir and topical corticosteroids. However, the total hyphema persisted that required an anterior chamber washout surgery. Herpes Zoster Ophthalmicus complicated with persistent hyphema and orbital apex syndrome is rare and very challenging to manage. Radiological imaging is important to exclude other causes of OAS. It is recommended to treat HZO with systemic acyclovir for a longer duration in view of ocular and neurological involvement.

Keywords – Herpes Zoster Ophthalmicus, Hyphema, Orbital Apex Syndrome

1 INTRODUCTION

Varicella zoster virus (VZV) is an exclusively human α-herpesvirus [1]. Primarily, VZV causes varicella infection. This virus then remains dormant in the sensory ganglia and may be reactivated later in life. Reactivation of this virus causes secondary infection known as herpes zoster (HZ). The VZV-specific cell-mediated immunity declines with age, giving a higher risk in the incidence and complications of HZ in patients above 50 years old [2]. The risk of developing HZ is 25% and doubles to 50% in those aged above 80 years old in the general immunocompetent population [2].

Herpes zoster ophthalmicus (HZO) is a reactivation of a latent VZV in the trigeminal ganglion, involving the ophthalmic division of the trigeminal nerve (V1). Orbital apex syndrome (OAS) and hyphema are rare complications of this disease [3].

We reported a rare case of herpes zoster ophthalmicus complicated with persistent hyphema and orbital apex syndrome in an elderly gentleman.

2 CASE REPORT

A 75-year-old gentleman, hypertensive patient, presented with left painful red eye associated with swelling for 1 week with escalation of pain intensity over 3 days. He developed patchy, crusty skin lesions over the left forehead that was associated with pruritus and pain 3 days prior to presentation. He had loss of appetite. He had no precipitating factor leading to the onset of symptoms. These lesions were also found over the left eyelid up to the tip of his nose (Hutchinson's sign). He also had complete ptosis of the affected eye with ophthalmoplegia on presentation.

Visual acuity in the right eye was 20/40 with presence of cataract. Left eye vision was only perception to light. Relative afferent pupillary defect (RAPD) was present in the left eye. There were crusty lesions with area of scarring also found over the left eyelid extending up to the tip of his nose (Hutchingson's sign) (Figure 1). Slit lamp examination revealed congested conjunctiva with presence of cells3+ based on the Standardization of Uveitis Nomenclature (SUN) classification. It was a non-granulomatous uveitis with keratic precipitates. His irides was round with no posterior synechaie formation. Funduscopy of both eyes showed normal optic disc and retina. There was complete ptosis of the left eye with limited eye movement in all gazes (Figure 1). The left intraocular pressure (IOP) was elevated at 28mmHg. The gonioscopy revealed intermittent peripheral anterior synechaie.

A computed tomography was arranged in view of his near-complete left ophthalmoplegia. The scan showed enlargement of all extraocular

muscles of the left eye. However, the left optic nerve appears normal. The right extraocular muscles and optic disc were normal. Based on the imaging, left extraocular myositis was diagnosed. Patient was diagnosed with left HZO with OAS. He was commenced on oral acyclovir 800mg 5 times a day for 6 weeks and intravenous combination of amoxicillin and clavulanic acid 1.2g three times a day for a week. Ointment acyclovir 5 times a day was also started. Topical prednisolone 1% 4 hourly and timolol 0.5% twice daily were also started for the left eye.

The herpetic skin lesions dried up with residual scarring after a week. The left periorbital lid swelling resolved after 3 days and patient could open his eyes spontaneously. Extraocular muscle movements showed slight improvement after completing 1 week of intravenous antibiotics. The IOP reduced to 20mmHg. However, upon review 1 week after completing systemic antibiotics, the anterior chamber showed worsening inflammation with presence of cells 4+ with flare 3+. The next day, patient developed total hyphema. The IOP was 15mmHg. His vision deteriorated to no perception to light (NPL) in all quadrant. (Figure 2). Patient was counselled regarding his visual prognosis.

Patient was placed on close observation with daily monitoring of IOP as inpatient. However, he was comfortable. About three weeks later patient started to have left eye pain and headache. The IOP increased and remained high range between 35-40mmHg in spite instilling 4 types of topical antiglaucoma and oral acetazolamide 250mg 4 times a day. He received topical timolol 0.5% twice daily, brimonidine 0.2% twice daily, dorzolamide 2% thrice a day and latanoprost 0.05% at night. There was presence of endothelial corneal blood staining. He was advised to undergo anterior chamber washout to remove the blood clot due to his persistent severe eye pain. The operation underwent smoothly. Postoperatively, the anterior chamber was quiet with no residual blood clots. There was no rubeosis seen at the angle structure and iris. The intraocular pressure was back to normal. His topical antiglaucoma medications were stopped. The visual acuity remained NPL. Prognosis was re-counselled to patient after the operation (Figure 3).

Patient was seen after completing 6 weeks of oral acyclovir. On follow up, he was comfortable. His visual acuity in the left eye remained NPL. The extraocular muscle movements were full. The anterior uveitis completely resolved with normal IOP.

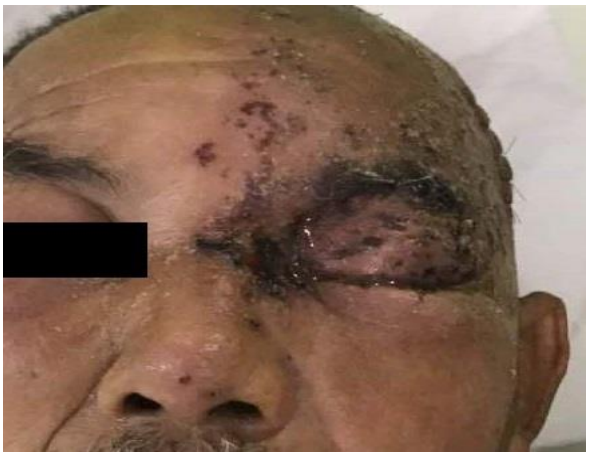

Figure 1: Photograph taken on initial presentation shows herpetic vesicles present from the left forehead to tip of the nose.

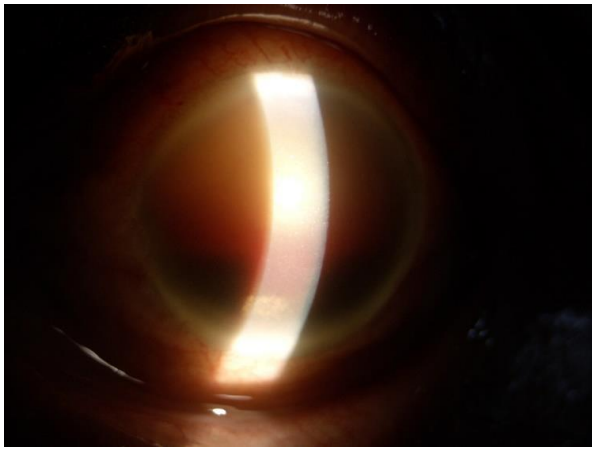

Figure 2: Anterior segment photograph taken one week later shows hyphema with ciliary injection

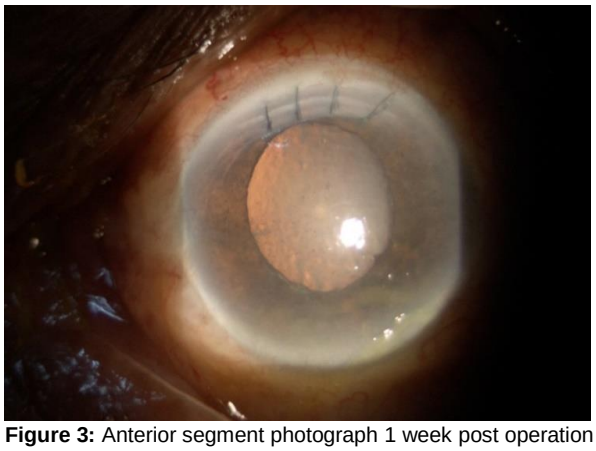

Figure 3: Anterior segment photograph 1 week post operation shows a clear anterior chamber with no hyphema. The pupil is round and lens is visible.

3 DISCUSSION

Herpes zoster ophthalmicus (HZO) is common in ages between 50 to 59 years. Patients with HZ affecting the fifth cranial nerve require referral to an eye care practitioner to rule out sight threatening complications. Only 10-20% of HZ cases involving the fifth cranial nerve that develop HZO. This case presented with classical signs of HZO that comprised of uveitis, trabeculitis and increased intraocular pressure [3]. This patient then developed to two rare complications; orbital apex syndrome and persistent hyphema.

The exact mechanism of uveitis in HZO is indistinct. There has been postulation due to that it arises as an immunological response following viral invasion to the uveal tissue [3]. They present at initial stage as anterior uveitis with associated raised intraocular pressure. Uveitis occurs in about 40% of patients with HZO [3]. It generally develops to one to three weeks after the onset of rash.

In HZO, intraocular pressure elevation may be caused by damage to the trabeculum by the virus, plugged trabecular meshwork from prolonged inflammation and synechial scarring. Our patient required combination therapy of topical corticosteroids and intraocular pressure lowering agents. However, the development of hyphema halted the improvement and led to rebound raised intraocular pressure. Thean et al reported that, out of 34 uveitic patients with HZO, 56% developed glaucoma [4]. The raised IOP usually settles with topical IOP lowering agents. Despite this, there was significant rate of surgical intervention required as an adjunct in controlling this uveitic glaucoma [4].

Hyphema is rare in herpes zoster infection. It has been postulated that hyphema is due to occlusive vasculitis of the iris vessels, which results in ischemia. Ischemia causes new vessel formation and this leads to hyphema. Okunuki et al. described a case of herpetic-caused severe hyphema which resolved medically. However, our patient underwent an anterior chamber washout surgery to remove the hyphema. This was done to relieve him from his eye pain. Surgical intervention for hyphema is indicated in presence of long duration of hyphema and raised intraocular pressure [8]. Many literatures reported isolated cases of orbital apex syndrome and hyphema [8, 9, 10]. There has only been one literature, so far, which reported both conditions occurring simultaneously, as in our patient [3].

Orbital apex syndrome is diagnosed clinically based on optic nerve involvement and ophthalmoplegia. Most reported cases described this illness in patients above the age of 60 [5]. The onset of ophthalmoplegia varies from days to weeks after onset of herpetic skin rashes. Radiological imagining is crucial to rule out other causes of OAS such as neoplasm, haemorrhage and cavernous sinus thrombosis [7]. In our patient, radiological evidence of inflamed and swollen extraocular muscles aided in confirming the diagnosis.

The principal goals of treatment are reduction of pain and cessation of viral replication in HZO. Systemic acyclovir is strongly recommended as first line treatment in immunocompetent patients [11]. The effective time for initiation of acyclovir treatment is within 72 hours of onset of rash. The current mainstay of treatment is combined systemic acyclovir and steroids [11, 12, 13]. Despite this recommendation, the role of systemic corticosteroid therapy remains controversial [14, 15]. In patient with ocular and neurological complications, it is also recommended to consider extending duration of antiviral therapy [11]. The treatment effect may have been reduced in our patient as he presented to us 3 days after onset of rash. However, he was given a long duration of systemic acyclovir in view of his complications.

4 CONCLUSION

Herpes Zoster Ophthalmicus complicated with persistent hyphema and orbital apex syndrome is rare and very challenging to manage. A thorough ocular examination is important as it could detect early neovascularization. Early surgical intervention to remove hyphema could potentially save sight in cases of persistent hyphema with uncontrolled IOP. Radiological imaging is important to exclude other causes of OAS such as neoplastic, traumatic, inflammatory or vascular causes. It is recommended to treat HZO with systemic acyclovir for a longer duration in view of ocular and neurological involvement.

CONFLICTS OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

ACKNOWLEDGEMENT

Author(s) certify that they have no affiliation with or significant financial involvement in any organizations or entity with a direct financial interest in the subject matter or materials discussed in the manuscript on this page.

CONSENT

Written and signed informed consent from the patient has been obtained.

REFERENCES

[1] Yawn B, Gilden D. *The global epidemiology of herpes zoster.* Neurology 2013; [81: 928–930].

[2] Johnson RW, Alvarez-Pasquin M-J, Bijl M, Franco E, Gaillat J, et al. *Herpes zoster epidemiology, management, and disease and economic burden in Europe: a multidisciplinary perspective*. Therapeutic Advances in Vaccines. 2015; [3(4):109-120].

[3] Othman K, Evelyn-Tai LM, Raja-Azmi MN, Julieana M, Liza-Sharmini AT, et al. *Concurrent hyphema and orbital apex syndrome following herpes zoster ophthalmicus in a middle aged lady*. International Journal of Surgery Case Reports. 2017; [30:197-200].

[4] Thean JH, Hall AJ, Stawell RJ. *Uveitis in Herpes zoster ophthalmicus.*Clin Experiment Ophthalmol. 2001; [29:406-410].

[5] Arda H, Mirza E, Gumus K, Oner A, Karakucuk S, et al. *Orbital apex syndrome in herpes zoster ophthalmicus.* Case Rep. Ophthalmol. Med. 2012

[6] Shirato S, Oshitari T, Hanawa K, Adachi-Usami E.*Magnetic resonance imaging in case of cortical apex syndrome caused by varicella zoster virus.* Open Ophthalmol. J. 2008; [2(1):109–111].

[7] Chun-Yuan Lee, Hung-Chin Tsai, Susan Shin-Jung Lee, Yao-Shen Chen. *Orbital apex syndrome: an unusual complication of herpes zoster ophthalmicus.*BMC Infect Dis*.* 2015; [15: 33].

[8] Walton W, Von Hagen S, Grigorian R, Zarbin M.*Management of Traumatic Hyphema.* SurvOphthalmol*.* 2002; [Jul-Aug;47(4):297-334].

[9] Okunuki Y, Junichi Sakai, Takeshi Kezuka,Goto H. *A case of herpes zoster uveitis with severe hyphema.* BMC Ophthalmol. 2014; [14(1):74].

[10] Akpek E K, J D Gottsch. *Herpes zoster sineherpete presenting with hyphema*. Ocul. Immunol. Inflamm. 2000; [8(2):115–118].

[11] Dworkin RH, Johnson RW, Breuer J, Gnann JW, Levin MJ, et al. *Recommendations for the management of herpes zoster*. Clin Infect Dis 2007; [(Suppl 1):S1–26].

[12] Lee C-Y, Tsai H-C, Lee SS-J, Chen Y-S. *Orbital apex syndrome: an unusual complication of herpes zoster ophthalmicus.* BMC Infectious Diseases. 2015; [15:33].

[13] Kurimoto T, Tonari M, Ishizaki N, Monta M, Hirata S, et al. *Orbital apex syndrome associated with herpes zoster ophthalmicus.* Clinical Ophthalmology (Auckland, NZ). 2011; [5:1603-1608].

[14] Wood M-J, Johnson R-W, McKendrick M-W, Taylor J, Mandal B-K, et al.*A Randomized Trial of Acyclovir for 7 Days or 21 Days with and without Prednisolone for Treatment of Acute Herpes Zoster.*New England Journal of Medicine*,* 1994;[330(13**)**,896-900].

[15] Whitley RJ, Weiss H, Gnann Jr JW, Tyring S, Mertz GJ, et al. *Acyclovir with and without Prednisone for the Treatment of Herpes Zoster: A Randomized, Placebo-Controlled Trial.* Ann Intern Med. 1996; [125:376-383].