

Case Report

UNILATERAL HERPES ZOSTER UVEITIS FOLLOWING CATARACT SURGERY ON CONTRALATERAL EYE

Siti Nur Amira Abu Kassim, Yong Meng Hsien*, Wan Haslina Wan Abdul Halim & Othmaliza Othman

Department of Ophthalmology, Faculty of Medicine, University Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Kuala Lumpur, Malaysia.

ARTICLE INFO

Corresponding author:
Dr Meng Hsien Yong

Email address:
yongmenghsien@gmail.com

Received:
September 2022
Accepted for publication:
November 2022

Keywords:

herpes zoster ophthalmicus;
uveitis;
acyclovir;
cataract surgery

ABSTRACT

We reported a case of unilateral herpes zoster (HZ) uveitis after cataract surgery on contralateral eye. A 73-year-old gentleman with a history of bilateral herpes zoster (HZ) ophthalmicus 30 years prior underwent an uneventful left eye cataract surgery. Preoperatively, there was no clinical evidence of recurrent herpetic eye infection in both eyes. Postoperatively he was covered with oral aciclovir prophylactic dose and routine post-op topical steroid and antibiotic. Seven weeks after the left cataract surgery, he presented with right eye acute redness and blurred vision. His right vision dropped to 6/21 with acute anterior uveitis and reduced corneal sensation. He was diagnosed with right HZ anterior uveitis which was later supported by positive PCR viral study from his aqueous humour. He responded well to topical steroid and oral aciclovir (800mg 5x/day) on a ten-week tapering dose. We postulated that the patient developed bilateral HZ uveitis due to surgical stress, but the inflammation of the operated eye was suppressed by topical steroid, which was meant to reduce post-operative inflammation. Another hypothesis for contralateral infection (Von Szily theory) is that the activated herpesvirus from the operated eye may travel via neural pathway to the opposite nerve. We can conclude that despite perioperative prophylaxis of oral aciclovir and long quiescent period, reactivation of HZ infection can happen in either the operated or fellow eye after cataract surgery. Timely treatment with topical steroid and oral aciclovir shall resolve the reactivation.

INTRODUCTION

Herpes zoster (HZ) disease is a reactivation of dormant varicella zoster virus (VZV) after a primary infection. Symptomatic VZV reactivation usually causes unilateral localised vesicular rash according to the dermatomal distribution. The disease involves the ophthalmic division of trigeminal nerve that may manifest as HZ ophthalmicus, conjunctivitis, keratitis, anterior uveitis, iridocyclitis and retinitis. Recurrence is one of the common complications in HZ eye diseases with unclear mechanism. Ocular surgery is one of the risk factors for the development of recurrent HZ eye diseases. Here we presented a case of Herpes Zoster uveitis after an uneventful cataract surgery in the contralateral eye in a 73-years-old gentleman.

CASE PRESENTATION

A 73 year-old gentleman presented with three days history of right eye redness, progressive blurring of vision and eye pain. He had recent left uneventful cataract surgery seven weeks prior with good refractive result. Besides, he had a background

history of treated bilateral herpes zoster disease involving face and trunk with herpes zoster ophthalmicus (HZO) 30 years ago, which recovered well without any significant sequelae or recurrence.

Prior to his left cataract surgery, there was no clinical evidence of previous or recurrent herpetic eye infection noted. In view of his previous history of HZO, a prophylactic course of oral aciclovir was started three days prior surgery. The surgery was uneventful and postoperatively the oral Aciclovir was continued for another one week along with routine topical Ciprofloxacin 0.3% and topical Dexamethasone 0.1%. Upon follow up at the first and fourth weeks of the postoperative period, the operated eye showed good recovery.

However, seven weeks after the left eye surgery, the patient presented with new complaints of redness, pain and blurring of vision of five days on the contralateral right eye. Examination of the right eye showed diminished vision from the baseline of 6/6 to 6/21. The cornea sensation was diminished compared to the left eye. The cornea was mildly

oedematous with pigmented keratic precipitates. There was presence of sectoral iris atrophy from 10 to 11 clock hour, mid-dilated pupil and grade 3+ anterior chamber cells (Figure 1A & 1B). No obvious fibrin, posterior synechiae, hypopyon or iris nodule seen. The vitreous was clear without inflammatory cells while the retina and choroid were normal. Otherwise, the left eye which was the post-operative eye showed unremarkable findings (Figure 2). The intraocular pressure was normal bilaterally. Skin examination was normal without obvious skin rash observed on the nose, face or body. The history of HZO and the current presentation of acute anterior uveitis, prompted us to investigate the cause of uveitis with routine uveitic work-up and virology study of aqueous humour of the right eye. Aqueous humour sample was acquired via anterior chamber tapping and detected VZV virus. All other systemic uveitic workup were normal.

The patient was treated as right HZ anterior uveitis with oral aciclovir 800mg 5 times per day for 10 weeks in tapering dose along with topical Dexamethasone 0.1%. Upon follow up, the patient responded well to treatment as evidenced by improvement of visual acuity to 6/9, clear cornea, resolved anterior chamber cells and resolved keratic precipitates (Figure 3).

DISCUSSION

Varicella zoster virus is a human herpesvirus that causes varicella and herpes zoster. Varicella is a result of primary infection, commonly in childhood. The VZV then established latency in sensory dorsal root ganglia and its reactivation leads to herpes zoster which is likely in immunosuppressed patients, malignancy, stress and older age group

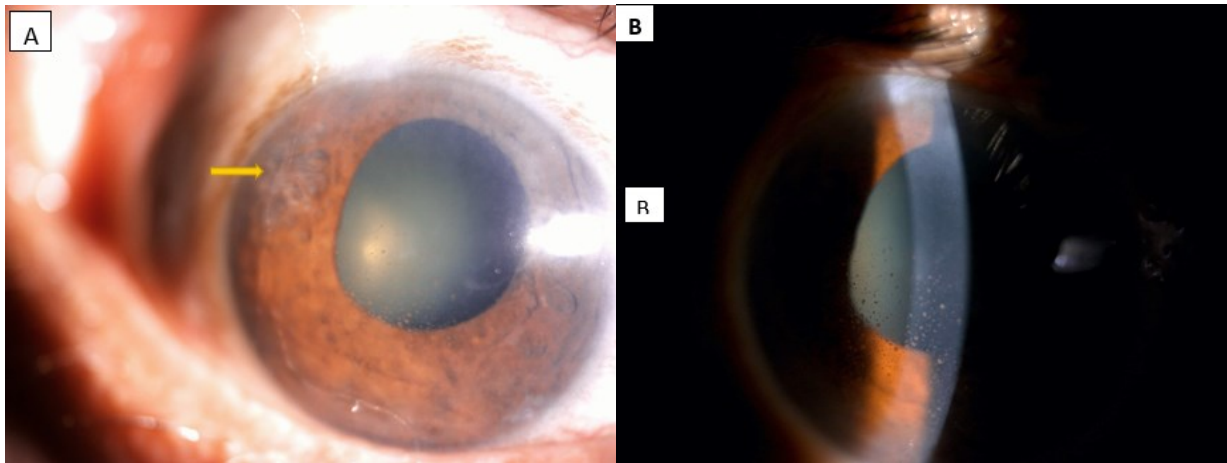


Figure 1: A) Right anterior segment showing cornea mildly oedematous with pigmented keratic precipitates and sectoral iris atrophy (yellow arrow), mid-dilated pupil and grade 3+ anterior chamber cells

Figure 1: B) Right anterior segment slit-lamp bio-microscopy showing pigmented keratic precipitates

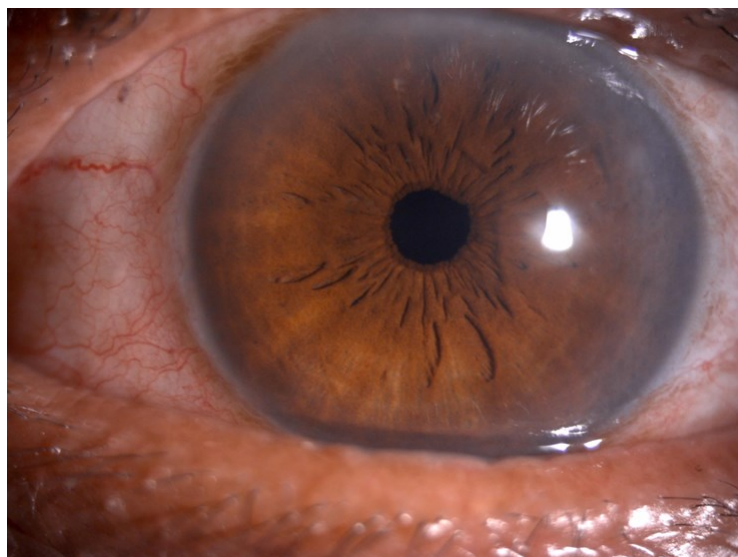


Figure 2: The left eye which was the post-operative eye showed no evidence of anterior uveitis

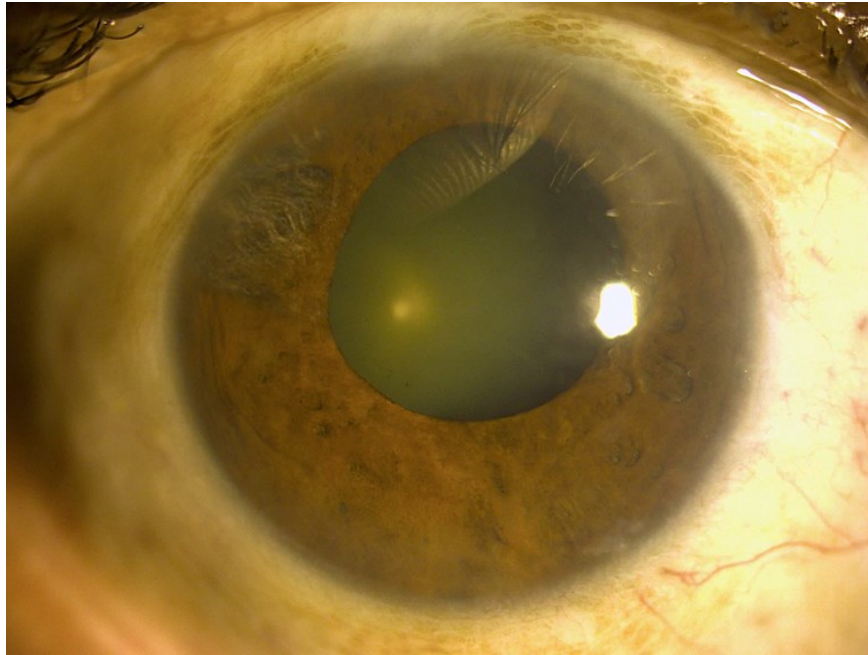


Figure 3: Right anterior segment showing clear cornea, resolved anterior chamber cells and resolved keratic precipitates

people. Symptomatic VZV reactivation usually manifested unilaterally [1]. Bilateral involvements may present as well but were rarely reported. Herpes Zoster eye diseases present with different manifestations including HZO, conjunctivitis, keratitis and uveitis. The diseases may manifest into chronic or recurrent episodes of inflammation in different parts of the ocular tissues. One of the predisposing factor for recurrence is cataract surgery, as supported by previous studies. Lucy et al reported that nearly 40% recurrence of HZ eye infection post-cataract surgery occur commonly within 2 years after the surgery [1]. Meanwhile, He et al reported 25% recurrence post-cataract surgery and they also observed higher rate of complications in patient with past HZ infection which includes persistent epithelial defect, cornea neovascularization and cystoid macular oedema [2]. However, these events of recurrence were described to occur in the same eye, in contrast with contralateral eye as presented in this case.

It is a common practice to give prophylaxis oral aciclovir perioperatively for intraocular surgery to reduce the risk of reactivation of HZ infection, based on a questionnaire conducted at The United Kingdom in 2013. However there is no clear consensus for this practice in cataract surgery [3]. The evidence that prophylaxis with aciclovir prevent recurrence of herpetic virus infection was adopted from Herpetic Eye Disease Study (HEDS). This study showed that there was 45% reduction in recurrence of ocular herpes simplex virus (HSV) infection when aciclovir prophylaxis was given over one year period compared with placebo [4]. In this case, prophylaxis aciclovir was given perioperatively. However, despite the prophylaxis and long quiescent period of past HZ infection, the HZ anterior uveitis occurred. It could be explained by

the hypothesis that the reactivation of Herpesviruses is also determined partially by the virulence of the original colonizing strain and the host immunity, apart from systemic stress, immunosuppression, old age, or surgically induced local trauma [5].

Another focus of discussion in this case is the rarity of contralateral HZ reactivation after the fellow eye ocular surgery. Since the patient was given topical dexamethasone postoperatively on the left eye, one may hypothesise that the inflammation on the left eye (in case if it was bilateral HZ reactivation) was suppressed by topical steroid which was initially intended to suppress the postoperative inflammation. Although steroid is known to cause reactivation of herpesviruses, it acts in a dose-dependent manner [6]. Anti-inflammatory effect is seen mostly with lower doses and short duration while immunosuppressive effect seen at vice versa. Even though so, bilateral HZ itself is a rare and atypical presentation. Our knowledge regarding this is still limited. Some authors proposed that the mechanism of bilateral infection is due to high viral load infecting multiple dorsal sensory ganglia on bilateral side, which then lead to bilateral disease [7, 8].

Another possible hypothesis is based on the Von Szily model, which explained that local stress of the operated eye causes reactivation of the virus in the same eye's sensory ganglion causing the virus to spread along parasympathetic fibres of oculomotor nerve to the ipsilateral ciliary ganglion, then to Edinger Westphal nucleus, to suprachiasmatic area of hypothalamus and crossing to contralateral optic tract, optic nerve and retina.[9] This model was explained for herpes simplex virus-1, but has been adapted for HZO which is called Von Szily reaction

(VSR). However necrotising changes in retina has to take place to fit in the VSR's criteria. One example was reported by Nakanishi et al, which is a case of contralateral acute retinal necrosis (ARN) after HZO the other eye [10].

In this case, the patient had a bilateral HZO in the past without evidence of previous intraocular herpetic infection like keratitis or uveitis. We authors would like to entertain another possibility that the patient developed recurrent bilateral HZO this time after the surgical stress, but without any dermatomal rash. Salowi et al reported a case of left keratouveitis following an HZO on the right eye, similarly postulated to be bilateral but with insufficient dermal findings on the left side [11]. Another similar occurrence of contralateral eye involvement was reported by Walland et al, which is a case of presumed ophthalmic zoster after 1 day of contralateral cataract extraction, with the development of vesicular rashes on the forehead. They concluded that either the disease is bilateral, or contralateral HZO with extensive erythema which poses a challenge in the diagnosis [12].

CONCLUSION

In conclusion, despite perioperative prophylaxis of oral aciclovir and a long quiescence period from the previous infection, reactivation of HZ infection can still occur in either the operated or fellow eye after cataract surgery. Even though there is likelihood for diagnostic challenge, timely treatment with topical steroid and oral aciclovir shall resolve the reactivation.

CONFLICT OF INTEREST

The author(s) declare no potential conflicts of interest concerning the research, authorship, and publication of this article. This case has been presented as e-poster in Asian Pacific Vitreo-Retinal Surgery (APVRS) Scientific Meeting 2021.

REFERENCES

1. Lu LM, McGhee CNJ, Sims JL, Niederer RL. High rate of recurrence of herpes zoster-related ocular disease after phacoemulsification cataract surgery. *Journal of Cataract & Refractive Surgery*. 2019;45(6):810-815.
2. He Y, de Melo Franco R, Kron-Gray MM, Musch DC, Soong HK. Outcomes of cataract surgery in eyes with previous herpes zoster ophthalmicus. *J Cataract Refract Surg*. 2015;41(4):771-777.
3. Sykakis E, Karim R, Parmar DN. Management of patients with herpes simplex virus eye disease having cataract surgery in the United Kingdom. *Journal of Cataract & Refractive Surgery*. 2013;39(8):1254-1259.
4. Wilhelmus KR, Beck RW, Moke PS, et al. Acyclovir for the Prevention of Recurrent Herpes Simplex Virus Eye Disease. *New England Journal of Medicine*. 1998;339(5):300-306.
5. Kanclerz P, Alio JL. Ocular surgery after herpes simplex and herpes zoster keratitis. *Int Ophthalmol*. 2020;40(12):3599-3612.
6. Halford WP, Gebhardt BM, Carr DJ. Mechanisms of herpes simplex virus type 1 reactivation. *J Virol*. 1996;70(8):5051-5060.
7. JACOB FM. BILATERAL HERPES ZOSTER FOLLOWING ACUTE ARSENIC POISONING. *Archives of Dermatology and Syphilology*. 1931;24(2):280-282.
8. Mobley CA. A CASE OF ASYMMETRICAL, BILATERAL HERPES ZOSTER. *Journal of the American Medical Association*. 1912;LIX(11):879-879.
9. Von Szily A. Experimental endogenous transmission of infection from bulbus to bulbus. *Klin Monatsbl Augenheilkd*. 1924;75:593-602.
10. Nakanishi F, Takahashi H, Ohara K. Acute retinal necrosis following contralateral herpes zoster ophthalmicus. *Jpn J Ophthalmol*. 2000;44(5):561-564.
11. Mohamad Aziz Salowi WZZ. Keratouveitis Following A Contralateral Herpes Zoster Ophthalmicus. *Digital Journal of Ophthalmology 2007*. 2007;Volume 13.
12. Walland MJ. Presumed ophthalmic Herpes zoster after contralateral cataract extraction. *Acta Ophthalmologica Scandinavica*. 1995;73(1):83-85.