



Sporadic zonular cataract found by scleral penetration

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ABSTRACT

Purpose: To present a case of bilateral zonular cataract without visual deterioration.

Observation: A 41-year-old Taiwanese Han male presented with severe left ocular pain after being hit by iron filings while working. The iron dust was removed in a local hospital but due to a scleral laceration diagnosis he was referred to our hospital for further management. On examination, best-corrected visual acuity (BCVA) of 20/25 in the right eye and 20/200 in the left eye were obtained, while the before BCVA was 20/25 in the both eyes. The slit-lamp biomicroscopy demonstrated bilateral zonular cataract and left scleral full-thickness laceration with vitreous prolapse. The scleral suture procedure was then performed smoothly and the patient discharged three days later with BCVA in the left eye recovered to 20/30.

Conclusion and Importance: The bilateral zonular cataract without associated systemic disorder is a rare form, which may be found incidentally with no visual symptoms.

1. Introduction

Cataract is the leading cause of reversible blindness throughout the world with various subtypes and degrees.¹ The common clinical presentations of cataract include progressively blurred vision, decrease visual quality and photophobia which depended on the site of cataract formation. Although some risk factors of cataract involving ultraviolet exposure, smoking and use of corticosteroid can be avoided,² surgical intervention is always advocated for matured cataract to relieve the visual symptoms.¹

Zonular cataract, a congenital cataract also known as lamellar cataract, was first described in the late 1800s,³ which would interfere with visual performance and result in severe visual loss.^{4,5} The clinical feature of such cataract is an opacified layer with dotted and dusted opacification close to both a clearer central zone and a layer of clear cortex outside the cataract.⁶ In addition to visual deterioration, zonular cataract is usually associated with ocular or systemic diseases such as strabismus, Pearson syndrome, trisomy 17 mosaicism, subluxated lens, and traumatic events.^{4,7-9} Up to now, there was no report regarding

solitary zonular cataract without other co-morbidity. Herein, we report a case of bilateral zonular cataract without visual impairment and comorbidity.

2. Case report

A 41-year-old Taiwanese Han male presented with severe left ocular pain plus foreign body sensation and blurred vision after being hit by iron filings while working. There was no relevant work-related injury, surgical history, family history and systemic disease except hypertension. The iron dust was removed in a local hospital but scleral laceration was discovered with positive Seidel test. As a result, he was referred to our tertiary hospital for further management. On examination, his best-corrected visual acuity (BCVA) was 20/25 in the right eye and 20/200 in the left eye, and the intraocular pressure of the left eye was not measurable due to possible eyeball rupture. Both the extraocular movement and pupillary light reflex revealed normal function, while slit-lamp biomicroscopy demonstrated bilateral zonular cataract (Fig. 1) and 5-mm left scleral full-thickness laceration with vitreous prolapse at 4 o'clock, 6mm from the limbus. However, the patient denied any

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List of abbreviations

BCVA best-corrected visual acuity

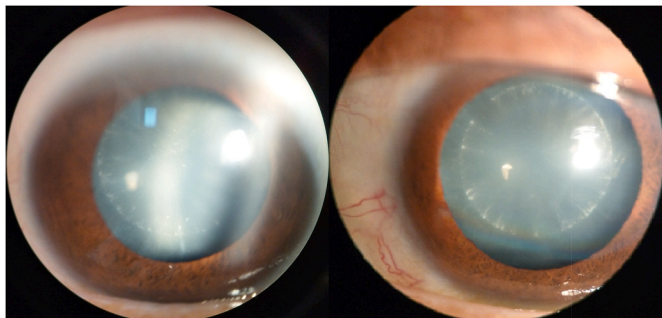


Fig. 1. Silt-lamp photograph of the zonular cataract in both eyes.

previous symptoms relate to cataract formation including decreased vision, photophobia, halo, glaring, or cloudy vision. In addition, no congenital deformity or disorder was found according to both the patient himself and family. The computed tomography showed no sign of intraocular foreign body (Fig. 2). For the left eyeball rupture, emergent repair of lacerated conjunctiva and sclera with removal of prolapsed vitreous material was performed smoothly, and the tobramycin ointment (Tobrex, Alcon, Cusi, S.A.) was applied two times per day after the surgery. The patient was discharged three days later without further complications. Two weeks after the traumatic accident, the BCVA in the left eye recovered to 20/30.

3. Discussion

Briefly, bilateral zonular cataract was found incidentally with neither associated disorders nor similar pathology in living relatives in our case. Although a traumatic lesion including scleral laceration and vitreous prolapse occurred in the left eye of our patient which might lead to the development of zonular cataract,⁴ the right eye of our patient was also diagnosed with zonular cataract while ocular examination revealed no signs of eye trauma. Moreover, the trauma-induced zonular cataract

in previous report resulted from a blow injury of a twig,⁴ while the ocular trauma in our patient did not meet the above condition. As a consequence, the bilateral zonular cataract that occurred in our patient owned a less chance to result from the left eye penetrating trauma.

Zonular cataract is the most common type of congenital cataract with a bilateral, symmetric and autosomal dominant hereditary pattern.^{10,11} Associated hereditary diseases including congenital nuclear cataract, Pearson syndrome and trisomy 17 mosaicism had been reported in preceding articles,^{7,8,12} and a positive family history up to fourth degree of kinship was observed in patient with zonular cataract.¹³ In our patient, no signs of above disease were found after we reviewed the medical records in the health insurance system and his parents stated no cataract-related diagnosis was told before. In addition, none of his relatives were diagnosed with this early-developed cataract according to the patient's statement, and there was no severe zonular cataract-related co-morbidities necessitating medical assistance observed in his relatives.^{7-9,14} Concerning the ocular co-morbidities that may be associated with zonular cataract, both strabismus and neurological evaluation during admission showed no specific findings. On the other hand, the lab work didn't reveal hypocalcemia and hypoparathyroidism and only a mild leukocytosis was encountered. To our knowledge, this may be the first case of zonular cataract without prominent comorbidities which may be overlooked. Still, absence of previous ophthalmic records and related genetic studies might indicate certain undiscovered diseases in his parents or relatives.

Though some experimental study revealed the possibility to manage cataract with medical therapy,¹⁴ cataract surgery are still needed to recover the vision in patients with advanced cataract currently.¹ Although the BCVA of left eye was only 20/200, the BCVA of right eye which also had zonular cataract was 20/25 which is probably result from the mild refractive error about 1.50 diopters. Consequently, the zonular cataract in the right eye did not significantly influence the visual performance. Moreover, the BCVA of left eye was 20/30 two weeks after the accident and our patient stated that the visual acuity of left eye was similar to that before the traumatic episode which was 20/25. Since the zonular cataract may have existed as a congenital lesion and did not lead to visual disturbance, cataract surgery was not arranged at this time. Still, the progression of the cataract is not impossible so a periodically ophthalmic examination was suggested.

4. Conclusion

In conclusion, the current finding suggests that zonular cataract without associated systemic disorders is a rare form but still happens occasionally. Moreover, not all well-established cataracts may influence the visual performance since the zonular cataract was found incidentally with no visual symptoms in our case.

Patient consent

The retrospective cohort study is adhered to Declaration of Helsinki in 1964 and its late amendment, which approved by the Institute Review Board of Linkou Chang Gung Memorial Hospital. A written informed consent was signed by patient and can be provided upon reasonable request.

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Authorship and contributions

All authors attest that they meet the current ICMJE criteria for authorship and the following is the contributions of each author:

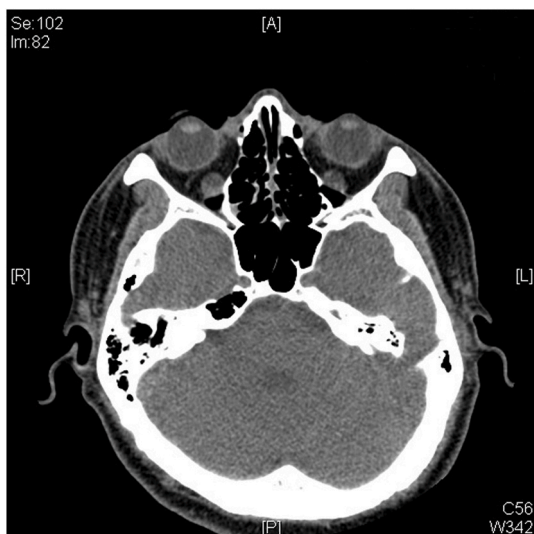


Fig. 2. Computed tomography scan of bilateral orbits.

Conceptualization: C.-Y.L. and H.-C.C.; Data acquisition: H.-T.C., Y.-J.-J. M.; Data analysis and interpretation: Y.-J.H. and W.-C.W.; Manuscript writing - original draft C.-Y.L., H.-T.C., Y.-J.H. and H.-C.C.; Writing - review & editing: Y.-J.-J.M., H.-C.C. and W.-C.W., final approval of submission and possible publication: all authors, accountable for all aspects of the work: all authors.

The zonular cataracts in the both eyes were noted without sign of traumatic cataract. Conjunctival congestion of left eye (right portion of figure) was observed resulting from the trauma.

Computed tomography scan performed at the emergency room showed relatively normal orbital and ocular contours. Importantly, no dislocated lens or intraocular foreign body were noted.

Declaration of competing interest

The authors have no proprietary or commercial interest in any materials discussed in this article.

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Not applicable.

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