

Pediatric uveitis complicating in cataract formation regained normal visual acuity – a challenging case

Tran Hong Bao^{1,2,*}



Use your smartphone to scan this QR code and download this article

¹Vietnam National University – Ho Chi Minh City, Vietnam

²School of Medicine – VNU-HCM, Vietnam

Correspondence

Tran Hong Bao, Vietnam National University – Ho Chi Minh City, Vietnam
School of Medicine – VNU-HCM, Vietnam
Email: thbao@medvnu.edu.vn

History

- Received: 3-10-2022
- Accepted: 26-6-2023
- Published: 30-6-2023

DOI :

<https://doi.org/10.32508/stdjhs.v4i1.536>



Copyright

© VNU-HCM Press. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International license.



ABSTRACT

Background: Pediatric uveitis and its complications are important causes of child blindness. Strong inflammatory response and unstable treatment compliance result in worse treatment outcome than adults and frequent recurrence. However, effective anti-inflammatory treatment can still lead to good result. **Case report:** We report a case of pan-uveitis in a 13-year-old patient, complicating in cataract formation who was successfully treated and regained 20/20 final visual acuity. The patient was admitted to us due to blurry vision, pain and redness on her left eye, with best-corrected visual acuity 12/20, intraocular pressure 15 mmHg, ciliary flush, anterior chamber cell and constricted pupil with poor light reflex. Her left eye was diagnosed with anterior uveitis and treated with topical prednisone acetate along with peri-orbital injection of dexamethasone. At 1-week follow-up, her left eye showed significant progress with best-corrected visual acuity being 16/20 and no inflammatory reaction detected. Due to social distancing in Covid-19 pandemic, she was unable to have follow-up examinations; her condition worsened to pan-uveitis which complicated in cataract formation and her visual acuity fell down to counting finger 0.5m. She was then treated with systemic methylprednisolone in 2 weeks and local corticosteroids in 6 months, including 3 consecutive peri-orbital injections of triamcinolone acetate with monthly interval and topical prednisone acetate; after that she underwent cataract surgery with anterior vitreous humor removed and intraocular lens implanted in the ciliary sulcus. At 1-month follow-up, best-correct visual acuity of her left eye was 20/20 and intraocular pressure was 16 mmHg, the inflammatory response of her left eye was completely in control. **Conclusion:** Effective anti-inflammatory treatment even after surgery (if existed) takes the decisive role in regaining patient's vision. Cataract removal surgery on pediatric uveitis patients should be combined with vitrectomy and the surgeon should be prepared to place the intraocular lens in the ciliary sulcus.

Key words: pediatric uveitis, cataract, corticosteroids, intraocular lens, case report

INTRODUCTION

Pediatric uveitis is currently one of the leading causes of child blindness in both developed and developing countries^{1,2}. In children, strong inflammatory response and poor treatment compliance make uveitis difficult to treat, resulting in various complications which affect life quality of many years ahead of them^{3,4}. Corticosteroids still takes the main role in treating pediatric uveitis, the others are either only complementary treatments or still in research^{5,6}. High recurrence rate and various complications result in low percentage of gaining visual acuity; most patients have their visual acuity unchanged or even reduced due to complications^{2,3}. However, effective anti-inflammatory treatment may lead to good result and preserve the patient's baseline visual acuity.

We hereby present a challenging case of pan-uveitis in a 13-year-old child with cataract formation, who was treated with corticosteroids and then underwent

cataract surgery with an intraocular lens (IOL) implanted, with best-corrected visual acuity (BCVA) at 1-month follow-up being 20/20.

CASE REPORT

A 13-year-old female patient was admitted to us due to blurry vision of her left eye (OS). Her left eye was blurry in 1 week, along with redness, mild pain and no discharge. She used unknown eye drops from a pharmacy but her eye showed no progress. Her parents had her eye checked as her condition became worse. The best-corrected visual acuity (BCVA) of her right eye (OD) and OS were, in order, 20/20 and 12/20; the intraocular pressure (IOP) of her OD and OS were, in order, 16 and 15 mmHg. Clinical examination of her OS revealed ciliary flush, anterior chamber cell 2+, 2mm pupil with poor light reflex. Her complete blood count, VS 1h and 2h, syphilis, toxoplasma, toxocara, CMV and other immune tests showed no abnormality. Her OS was then diagnosed with aseptic anterior

Cite this article : Bao TH. Pediatric uveitis complicating in cataract formation regained normal visual acuity – a challenging case. *Sci. Tech. Dev. J. - Health Sci.*; 4(1):595-600.

uveitis and treated with topical prednisone acetate 1% q3h, topical atropine 1% q12h and 1 peri-orbital injection of 0.5 ml dexamethasone 4 mg/ml. One week later, her OS had BCVA 16/20, IOP 15mmHg and no anterior chamber cell detected. She was continued treating with topical prednisone acetate 1% 4 times/day only and appointed to have her eye checked after 2 more weeks. However, due to social distancing in Covid-19 pandemic, she was unable to continue follow-up check.

The patient continued follow-up check after the social distancing had been lifted, approximately 4.5 months after her first check. She told that because of treatment discontinuation, her OS became worse. At the time of examination, her OS had BCVA counting finger (CF) 0.5m and IOP 12 mmHg. Clinical examination of OS revealed ciliary flush, anterior chamber depth abnormality and cell 4+, posterior synechia, white cataract formation, dark pupillary reflex and unapproachable fundus (Figure 1). B-scan ultrasonography of OS showed patchy vitreous opacification, dense chorioretinal echo (Figure 2). Her OS was diagnosed with panuveitis complicated in cataract, and treated with oral methylprednisolone 1mg/kg q24h, topical prednisone acetate 1% q3h, topical atropine 1% q12h and one periorbital injection of 0.5ml triamcinolone 40 mg/ml. After 2 weeks, her OS had BCVA unimproved, IOP 15 mmHg, ciliary flush resolved, anterior chamber only 1+, posterior synechia and cataract remained; oral corticosteroids and topical atropine were stopped and she was appointed to have a recheck after 2 weeks. On the next follow-up, her OS still had BCVA unchanged, normal IOP, anterior chamber cell only nil; the liberal region of pupil still had light reflex, and the orange color of fundus could still be seen through unopacified regions of the lens. She was continued to treat with topical prednisone acetate 1% q6h and 2 more injections of peri-orbital 0.5ml triamcinolone 40 mg/ml with monthly interval. At 1 month after the last injection, her OS still had unchanged BCVA, normal IOP and no anterior chamber cell. Triamcinolone injection was stopped and she continued topical prednisone acetate 1% q8h in 3 months, with monthly check of IOP (all normal). After 3 months, she underwent cataract surgery and had intraocular lens (IOL) implanted. One day before the operation, she had one more periorbital injection of 0.5ml triamcinolone 40 mg/ml.

In the operation, the lens was found to become white and phacolytic, resulting in abnormal anterior chamber depth; anterior capsule became attached to posterior capsule. The anterior surface of the lens was



Figure 1: The patient's left eye (white cataract and posterior synechia can be observed)

cover with a thick, firm fibrotic membrane with neovascularization. After making the incision and filling the anterior chamber with viscoelastic, the fibrotic membrane cannot be removed with either 26-gauge needle or capsulorhexis pincer. Hence, the mass of the fibrotic membrane, anterior capsule and posterior capsule was removed by Vannas scissors with a 6-millimeter round cut and then taken out through the incision. After that, the remaining cortex and anterior vitreous humor were removed by a 23-gauge vitrectomy cutter. The IOL was placed in the ciliary sulcus, with the haptic being placed at 3 o'clock and 9 o'clock position. Viscoelastic was sucked out (no sucking beneath the IOL), and the incision was closed after injecting intracameral antibiotic. Post-operation medication included oral ofloxacin 0.2g b.i.d, paracetamol 0.5g t.i.d in 5 days and topical levofloxacin 0.5% q3h, topical prednisone acetate 1% q3h.

At 1 day post-operation, her OS had uncorrected visual acuity (UCVA) 4/20 and IOP 42 mmHg, conjunctival injection, corneal edema, centered IOL. Her IOP was corrected with oral acetazolamide 0.25g b.i.d, kaleorid 0.6g q24h in 5 days and topical Combigan (timolol 0.5% + brimonidine 0.2%) q12h. At 1week post-operation, her OS had UCVA 6/20, BCVA 20/20, IOP 15 mmHg, normal cornea and anterior chamber, pupil 3mm with normal light reflex, a small piece of the fibrotic membrane remained, and centered IOL; the patient was treated with topical levofloxacin 0.5% q3h, topical prednisone acetate 1% q3h and topical Combigan q12h. At 1-month post-operation (the patient had stopped using Combigan for 2 days), her OS had BCVA 20/20, IOP 16 mmHg, normal cornea and anterior chamber and centered IOL; the iris slightly attached onto the fibrotic membrane (Figure 3). Her fundus image showed normal fundus (Figure 4). She was treated with topical fluorometholone 0.1% q6h and appointed to have recheck after 3 months.

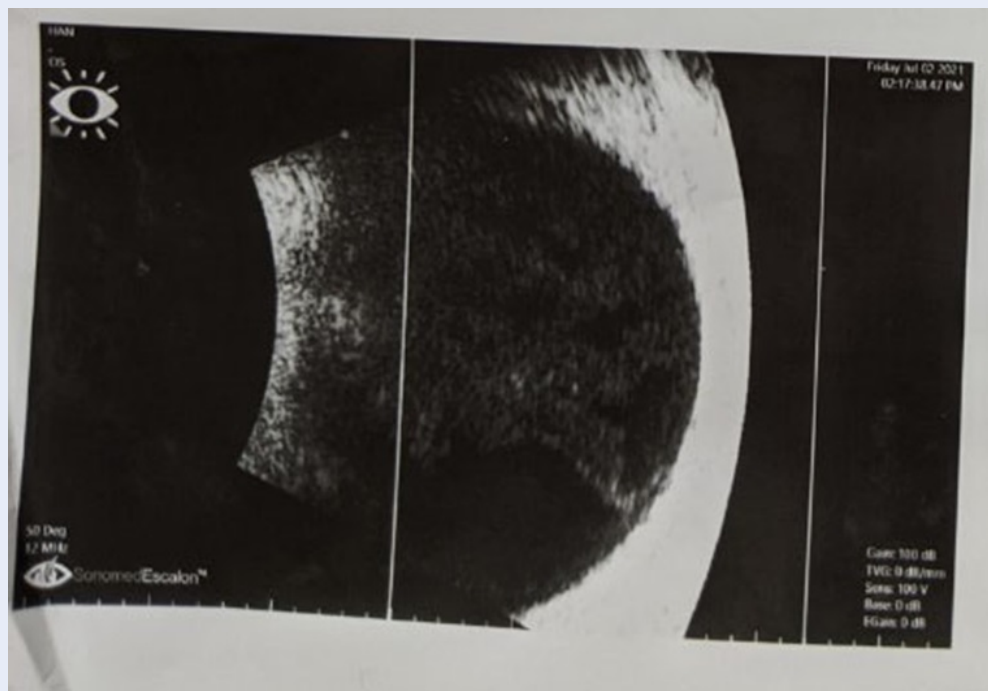


Figure 2: B-scan ultrasound image of left eye (patchy opacification of nearly whole vitreous cavity can be observed)

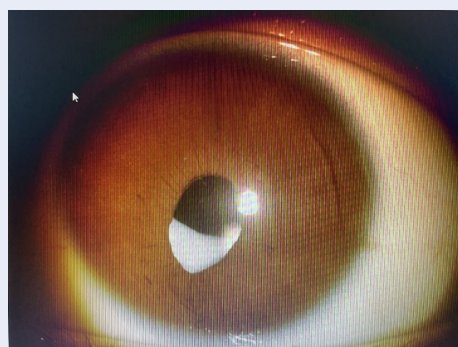


Figure 3: The OS at 1-month follow-up (stable IOL, the iris attached slightly onto the fibrotic membrane)

DISCUSSION

Diagnosis

There was no difficulty in making a definitive diagnosis in this patient as she had almost all typical signs and symptoms of uveitis^{2,7}. Laboratory tests – including syphilis, toxoplasma, toxocara – showed no abnormality, allowing us to exclude infectious causes and use corticosteroids in treatment⁷⁻⁹. On later stage, besides the signs of anterior uveitis and cataract

formation, B-scan image of diffuse and patchy vitreous opacification helped confirm the diagnosis of panuveitis^{2,7}.

Medical treatment

Treating uveitis in children is a challenge to even experienced ophthalmologists. Strong inflammatory response, patient's poor compliance and difficulties in follow-up reduce treatment results considerably^{2,8,9}. The delay in admission to hospital results in severe condition and low baseline visual acuity, and then also contributes to poorer prognosis than the adults. In another study of us, only 23.4% of eyes gained visual acuity after treatment, 69.2% of eyes had at least one complication; 51.4% of eyes had baseline visual acuity less than 6/20². Low percentage of gaining visual acuity was also concluded in other studies^{1,4}.

Corticosteroids is still first-line treatment in aseptic uveitis^{8,9}; the others either take the role of complementary treatment or are still in research^{5,6}. Local corticosteroids is the first choice in treating monocular anterior uveitis. Options of local corticosteroids include topical drop, periorbital/subtenon injection and intravitreal injection; among those, intravitreal injection is the most effective. However, due to risk of ocular hypertension and endophthalmitis, intravitreal injection of corticosteroids is only indicated

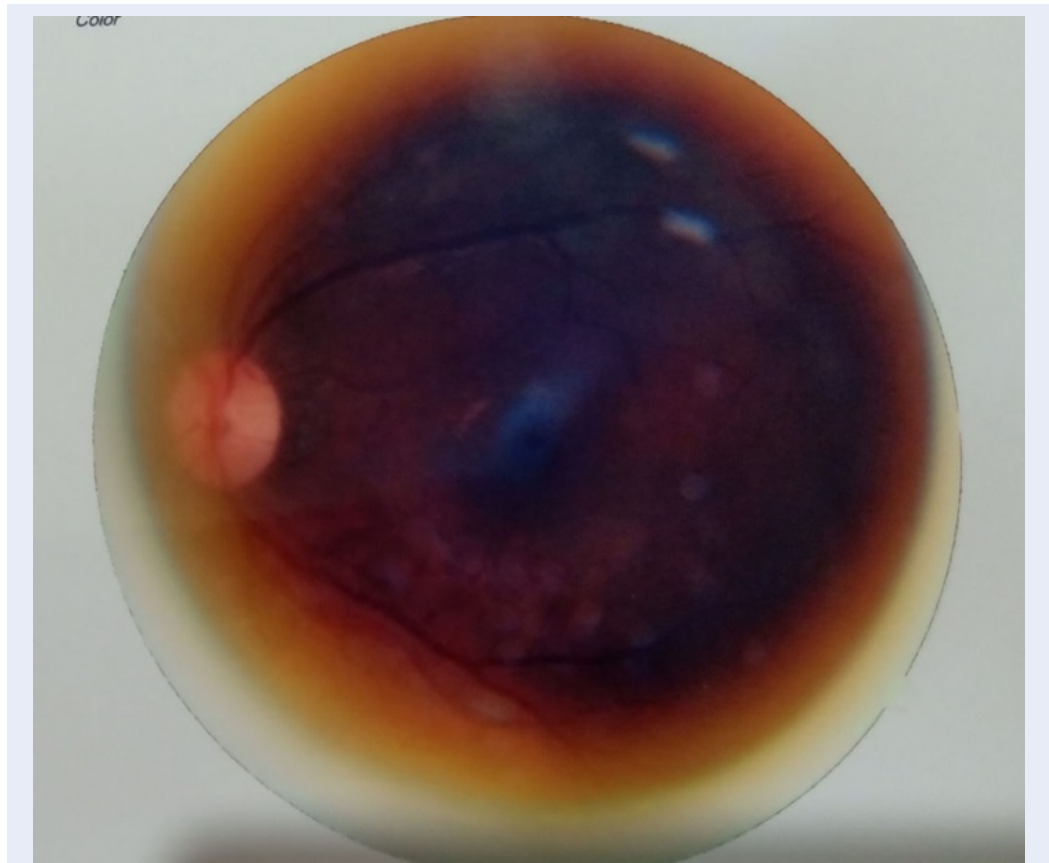


Figure 4: Fundus image of OS at 1-month follow-up (The image was a bit blurry because the pupil was small and partially covered by the fibrotic membrane, however a clear vitreous humor and normal fundus can still be observed)

to patients with panuveitis, or refractory to other choices^{8,9}. Our patient was initially treated with topical and periorbital injection of corticosteroids and showed progression before being unable to have follow-up checks in social distancing.

When the patient developed panuveitis, in order to support local corticosteroids, we combined systemic corticosteroids in a short amount of time; after 2 weeks, when the inflammatory response reduced considerably, she was stopped systemic corticosteroids. Periorbital injection of triamcinolone was maintained in 3 months (until no inflammatory response present) and topical prednisone acetate was maintained in 6 months with taper to prevent ocular hypertension.

The patient was given 1 more periorbital injection of triamcinolone 1 day before the surgery to prevent the post-operating exacerbation of uveitis. Some authors chose intravitreal injection of triamcinolone right after the surgery as an alternative way¹⁰.

Surgical treatment

The decision to perform cataract surgery on this patient is also a big challenge due to strong post-operating inflammatory response, as well as the prognosis of improving visual acuity is not certain^{11,12}. On clinical examination, the patient's pupil still had light reflex in regions without posterior synechia; as well as the orange color of the fundus could still be observed through clear regions of the lens. On B-scan ultrasound images, despite the opacification of vitreous humor, the choroid and retina was intact, no retinal traction or detachment was observed. Therefore, we decided to perform cataract surgery and implant an IOL. A 3-piece IOL with thin haptic was chosen in case we need to implant the IOL into the ciliary sulcus. In the operation, the mass of anterior capsule, posterior capsule and the fibrotic membrane was dissected with Vannas scissors to prevent uncontrolled damaged of anterior capsule and late posterior capsule opacification. A 23-gauge vitrectomy cutter was

used to remove the remaining cortex and anterior vitreous humor to prevent vitreous spilling in the anterior chamber. Without posterior capsule, the IOL was implanted in the ciliary sulcus. We thought that the unremovable piece of the fibrotic membrane (at 6-7 o'clock) might attach to the iris after the surgery; therefore, we placed the haptic at 3 and 9 o'clock position to prevent the IOL to be distorted.

After the surgery, the patient's OS had 20/20 BCVA with no abnormal astigmatism, centered IOL, which demonstrated that IOL distortion did not happen although the iris did attach to the fibrotic membrane itself (Figure 3). The inflammatory response was completely controlled with quiet anterior chamber and clear vitreous humor. The IOP of the OS increased transiently, was fully controlled with glaucoma medications and returned to normal at 1-month follow-up.

CONCLUSION

Effective anti-inflammatory treatment with corticosteroids, even after surgery (if existed), takes the decisive role in treating uveitis in children. Cataract removal surgery on pediatric uveitis patients should be combined with vitrectomy. The surgeon should be fully prepared to implant the IOL in the ciliary sulcus.

INFORMED CONSENT

The informed consent, which allow the pathological information and images of the patient being published, has been read and signed by the patient's blood-related parents.

ABBREVIATIONS

BCVA: best-corrected visual acuity
IOL: intraocular lens
IOP: intraocular pressure
OD (occulus dexter): right eye
OS (occulus sinister): left eye
UCVA: uncorrected visual acuity

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest in this study

AUTHORS' CONTRIBUTION

THB was involved in the medical care of the patient, designed and wrote the manuscript.

ACKNOWLEDGEMENTS

The author(s) would like to thank our patient and her family, who kindly agreed with using her case for the purpose of science and education worldwide.

REFERENCES

1. Phu VV, To QT, Huyen DTP. The prevalence of uveitis in Ho Chi Minh city Eye Hospital from 1998 to 1999. University Training Center of Healthcare Professionals; 2000. p. 3;
2. Bao TH, Quan NN, Quyen PTT, Tinh TN, Thuong CTT, Thuy NTT. Clinical characteristics of pediatric uveitis at Ho Chi Minh City Eye Hospital in 2017. EyeSEA. 2020;15(1):45-9; Available from: <https://doi.org/10.36281/2020010205>.
3. Benezra D, Cohen E, Maftzir G. Patterns of intraocular inflammation in children. Bull Soc Belge Ophtalmol. 2001;(279):35-8; PMID: 11344713.
4. Takkar B, Venkatesh P, Gaur N, Garg SP, Vohra R, Ghose S. Patterns of uveitis in children at the apex institute for eye care in India: analysis and review of literature. Int Ophthalmol. 2018;38(5):2061-8; PMID: 28861733. Available from: <https://doi.org/10.1007/s10792-017-0700-6>.
5. Mehta PJ, Alexander JL, Sen HN. Pediatric uveitis: new and future treatments. Curr Opin Ophthalmol. 2013;24(5):453-62; PMID: 23872814. Available from: <https://doi.org/10.1097/ICU.0b013e3283641ede>.
6. Hersh AO, Cope S, Bohnsack JF, Shakoor A, Vitale AT. Use of immunosuppressive medications for treatment of pediatric intermediate uveitis. Ocul Immunol Inflamm. 2018;26(4):642-50; PMID: 27960602. Available from: <https://doi.org/10.1080/09273948.2016.1255340>.
7. Maleki A, Anesi SD, Look-Why S, Manhapra A, Foster CS. Pediatric uveitis: A comprehensive review. Surv Ophthalmol. 2022;67(2):510-29; PMID: 34181974. Available from: <https://doi.org/10.1016/j.survophthal.2021.06.006>.
8. Wentworth BA, Freitas-Neto CA, Foster CS. Management of pediatric uveitis. F1000Prime Rep. 2014;6:41; PMID: 24991418. Available from: <https://doi.org/10.12703/P6-41>.
9. Kim L, Li A, Angeles-Han S, Yeh S, Shantha J. Update on the management of uveitis in children: an overview for the clinician. Expert Rev Ophthalmol. 2019;14(4-5):211-8; PMID: 32831897. Available from: <https://doi.org/10.1080/17469899.2019.1663731>.
10. Ren Y, Du S, Zheng D, Shi Y, Pan L, Yan H. Intraoperative intravitreal triamcinolone acetonide injection for prevention of postoperative inflammation and complications after phacoemulsification in patients with uveitic cataract. BMC Ophthalmol. 2021;21(1):245; PMID: 34088282. Available from: <https://doi.org/10.1186/s12886-021-02017-y>.
11. Yangzes S, Seth NG, Singh R, Gupta PC, Jinagal J, Pandav SS et al. Long-term outcomes of cataract surgery in children with uveitis. Indian J Ophthalmol. 2019;67(4):490-5; PMID: 30900580. Available from: https://doi.org/10.4103/ijoo.IJO_846_18.
12. Pålsson S, Nyström A, Sjödel L, Jakobsson G, Byhr E, Andersson Grönlund M et al. Combined phacoemulsification, primary intraocular lens implantation, and pars plana vitrectomy in children with uveitis. Ocul Immunol Inflamm. 2015;23(2):144-51; PMID: 24564567. Available from: <https://doi.org/10.3109/09273948.2014.883546>.

Viêm màng bồ đào trẻ em biến chứng đục thể thủy tinh lấy lại thị lực bình thường – một trường hợp khó

Trần Hồng Bảo^{1,2,*}



Use your smartphone to scan this QR code and download this article

¹Đại học Quốc gia TP. Hồ Chí Minh, Việt Nam

²Khoa Y – Đại học Quốc gia TP. Hồ Chí Minh, Việt Nam

Liên hệ

Trần Hồng Bảo, Đại học Quốc gia TP. Hồ Chí Minh, Việt Nam

Khoa Y – Đại học Quốc gia TP. Hồ Chí Minh, Việt Nam

Email: thbao@medvnu.edu.vn

Lịch sử

- Ngày nhận: 3-10-2022
- Ngày chấp nhận: 26-6-2023
- Ngày đăng: 30-6-2023

DOI:

<https://doi.org/10.32508/stdjhs.v4i1.536>



Bản quyền

© ĐHQG Tp.HCM. Đây là bài báo công bố mở được phát hành theo các điều khoản của the Creative Commons Attribution 4.0 International license.



TÓM TẮT

Mở đầu: Viêm màng bồ đào (VMBD) cùng các biến chứng của bệnh là một trong những nguyên nhân quan trọng gây mù lòa ở trẻ em. Đáp ứng viêm mạnh cùng việc tuân thủ điều trị không tốt dẫn đến kết quả điều trị kém hơn người lớn, và tái phát thường xuyên. Tuy nhiên, việc điều trị chống viêm hiệu quả có thể duy trì thị lực tốt cho bệnh nhân.

Trường hợp lâm sàng: Chúng tôi báo cáo một trường hợp VMBD toàn bộ trên một bệnh nhi 13 tuổi, biến chứng đục thể thủy tinh được điều trị thành công và lấy lại thị lực 20/20. Bệnh nhân đến khám vì mắt trái (MT) nhìn mờ, đau nhức và đỏ, thị lực kính MT 12/20, nhãn áp 15 mmHg, cương tụ kết mạc rìa, tế bào viêm tiền phòng, đồng tử co nhỏ và phản xạ ánh sáng yếu. MT bệnh nhân được chẩn đoán VMBD trước, điều trị với prednisone acetate nhỏ tại chỗ và dexamethasone tiêm cạnh nhãn cầu. Thời điểm tái khám 1 tuần, MT tiến triển rõ rệt với thị lực kính 16/20 và không còn phản ứng viêm. Do giãn cách xã hội trong đại dịch Covid-19, bệnh nhi không thể tái khám đúng hẹn; tình trạng MT diễn tiến nặng thành VMBD toàn bộ, biến chứng đục thể thủy tinh và thị lực giảm xuống đếm ngón tay 0.5m. Bệnh nhi được điều trị với methylprednisolone đường toàn thân trong 2 tuần và corticosteroids đường tại chỗ trong 6 tháng, bao gồm tiêm cạnh nhãn cầu 3 mũi liên tiếp triamcinolone acetate cách nhau 1 tháng và nhỏ tại chỗ prednisone acetate. Sau đó, bệnh nhân được phẫu thuật lấy thể thủy tinh đục, cắt dịch kính trước và đặt kính nội nhãn ở rãnh thể mi. Hậu phẫu 1 tháng, MT có thị lực kính 20/20, nhãn áp 16 mmHg và phản ứng viêm được kiểm soát hoàn toàn.

Kết luận: Điều trị chống viêm hiệu quả ngay cả sau phẫu thuật (nếu có) đóng vai trò quyết định trong việc khôi phục thị lực của bệnh nhân. Phẫu thuật đục thể thủy tinh trên bệnh nhi viêm màng bồ đào cần kèm theo cắt dịch kính, và chuẩn bị cho tình huống đặt kính nội nhãn ở rãnh thể mi.

Từ khoá: Viêm màng bồ đào trẻ em, đục thể thủy tinh, corticosteroids, kính nội nhãn, báo cáo trường hợp lâm sàng

Trích dẫn bài báo này: Bảo T.H. Viêm màng bồ đào trẻ em biến chứng đục thể thủy tinh lấy lại thị lực bình thường – một trường hợp khó. *Sci. Tech. Dev. J. - Health Sci.*; 4(1):595-600.