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CASE REPORT

Primary iris cyst and its surgical management: A case report

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Aim: The aim of this study was to show a case of primary iris cyst and its surgical management.

Case report: A 5-year-old child reported to our clinic with distorted and blurred vision in the left eye. The anterior segment examination of the left eye showed an oval, brownish-colored cyst, located in the inferior mid-iris touching the corneal endothelium. Ultrasound biomicroscopy (UBM) revealed that the cyst expanded anteriorly and just touched the corneal endothelium, causing localized corneal edema. The B-scan USG of the posterior segment was normal. The iris cyst was surgically removed, and after a month, the excised area healed with a small area of iris atrophy, and the corneal edema resolved. The resolved cyst area showed localized iris atrophy, the cornea became clear, and vision improved with a regular, round pupil. No recurrence was reported in the 6 months following the surgery.

Conclusion: Primary iris cysts can be managed surgically in the early stages without any devastating ocular complications.

Keywords: iris cyst, surgical excision, corneal edema, iris atrophy, B-scan ultrasonography (B-scan USG), anterior segment optical coherence tomography (AS-OCT), ultrasound biomicroscopy (UBM)

Introduction

The iris cyst is a cystic space in the layer of the iris lined with squamous epithelium, which is non-keratinized in nature. Iris cysts could be classified as primary or secondary. This cystic lesion makes up to 21% of all iris tumors and originates either from the epithelium or the stroma (1). A primary cyst could be congenital or primary and occurs sporadically, while a secondary cyst is produced by surgical or nonsurgical trauma and medications such as topical miotic, e.g., pilocarpine. Among primary cysts, pigment epithelial cysts are more common than stromal cysts. Stromal cysts may also present as primary or secondary cysts, whereas iris cysts can present a very innocuous to very severe form with complications. The majority of the primary cysts do not require treatment unless they expand and cause secondary glaucoma due to pupillary block, persistent uveitis, cataract formation, and corneal endothelial decompensation due to endothelial touch. In primary cases, most stromal cysts needed treatment either by needle aspiration or surgical excision rather than pigment epithelial cysts (2). Secondary iris cysts almost always need treatment.

History taking, assessment of visual function, anterior segment examination with a slit-lamp biomicroscope, intraocular pressure measurement, posterior segment examination with B-scan USG, anterior segment optical coherence tomography (AS-OCT), and ultrasound biomicroscopy (UBM) are needed for a detailed evaluation before any surgical intervention (3). The treatment options range from only observation to minimally invasive procedures such as aspiration, laser therapy, to surgical excision. Here we present the case of a child with a primary iris cyst managed surgically.

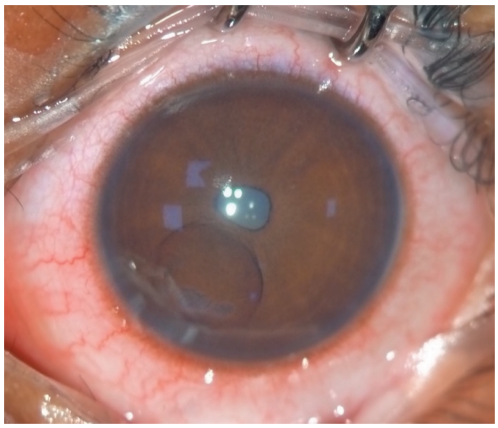

FIGURE 1 | Brown color iris cyst associated with mildly distorted pupil and localized corneal edema.

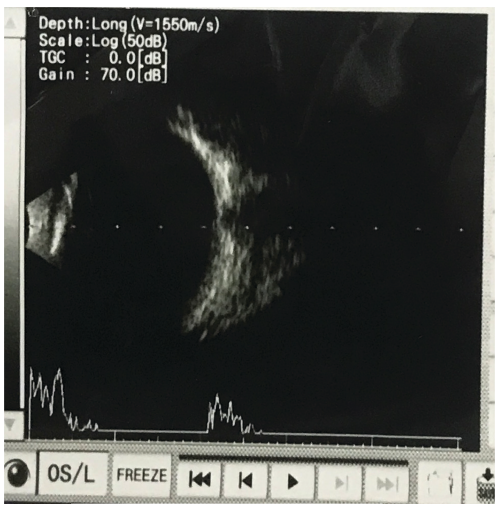

FIGURE 2 | B-scan USG shows attached retina with retia–choroid–sclera (RCS) thickening.

Research elaboration: case presentation

A 5-year-old girl presented to the cornea department of Chittagong Eye Infirmary with distorted and blurred vision in her left eye for 6 months. Her mother also reported that she observed a blackish spot in the patient's left eye in the last 1 year, which has increased in the last 6 months. There was no history of trauma to her eyes. Visual acuity of her left eye was 6/18 and for Snellen chart 6/6. Slit-lamp biomicroscopy revealed a brownish-colored lesion measuring about 5x5 mm in the 6 to 8 o'clock position of the iris just touching the corneal endothelium, associated with localized corneal edema and a mildly distorted pupil (**Figure 1**). The anterior segment of the right eye was quite normal. Intraocular pressure measured by Perkin's tonometer was 14 mm Hg in both eyes. B-scan USG (TOMEY UD 800) of the posterior segment of the left eye showed an attached retina with retina–choroid–scleral thickening (**Figure 2**). UBM showed an acoustically empty cystic lesion touching the cornea, localized edema, and no lesion in the ciliary body (**Figure 3**), using the Quantel ABSoul UBM machine. The anterior segment optical coherence tomography (AS-OCT) was not done. The patient was managed by surgical excision. Postoperatively, the patient was managed by topical atropine 1% for 7 days, topical broad-spectrum antibiotic moxifloxacin 0.5% for 7 days, and prednisolone acetate for 21 days in a tapered dose. Notably, 1-month follow-up showed a quiet anterior chamber with a regular pupil and visual acuity of 6/6 (**Figure 4**). No recurrence was observed 6 months after surgery.

Surgical technique: The surgery was done under general anesthesia after obtaining informed written consent from parents. With all aseptic precautions, two clear corneal incisions were given at 11 and 2 o'clock by 2.2 keratomes. Methyl cellulose was later added into the anterior chamber. The cyst's anterior wall was cut using a vitrectomy cutter with a cut rate of 800 per minute, and the posterior wall remained attached to the iris surface. Viscoelastic was washed out, and the anterior chamber was formed with a balanced salt solution. The corneal incisions were closed by two corneal sutures with 10/0 nylon. After 3 months, the sutures were removed.

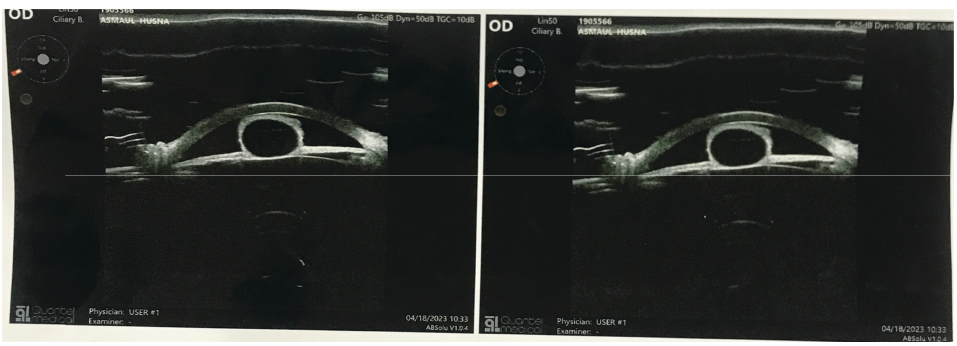

FIGURE 3 | UBM shows an acoustically empty cystic lesion extending forward and touching the cornea.

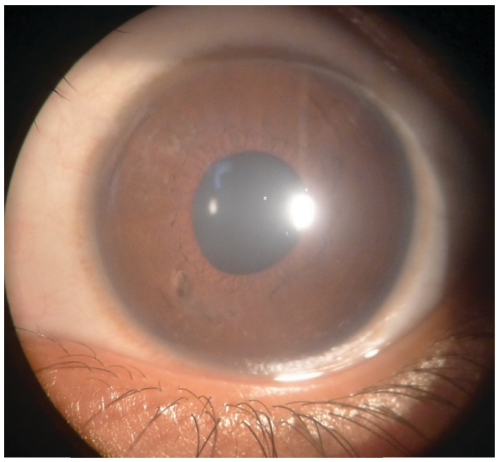

FIGURE 4 | One-month post-operative view: regular pupil with resolved localized corneal edema and lesion resolved and represented as small depression as localized iris atrophy.

Discussion and literature review

The iris cysts are classified as primary cysts and secondary cysts. Primary cysts arise from either the iris pigment epithelium or the iris stroma. Secondary cysts may occur due to epithelial ingrowth from surgical and non-surgical trauma, intraocular tumors like iris melanoma & medullo-epithelioma, post-inflammatory conditions and the long term use of topical miotics & prostaglandin analogs. The primary iris cysts occur congenitally and sporadically, and usually systemic abnormalities are not associated (4). In adults, primary iris cysts commonly arise from the pigment epithelium, whereas stromal cysts are found more commonly in children.

Primary iris cysts may happen at the pupillary margin, mid-position of the iris, iris root, ciliary sulcus, or even dislodged to the anterior chamber or vitreous cavity. Different literature show that the majority of cysts are located in the lower and temporal parts of the iris (5). In our case, the child was 5 years of age, had no other systemic abnormalities, and the cyst position was in the midpoint of the iris and inferotemporal quadrant. It was brownish in color, and UBM shows the cyst arose from the iris stroma. Congenital iris stromal cysts compose 16% of iris cysts in children (6).

Iris pigment epithelial cysts form from the spontaneous separation of two layers of epithelium anywhere between the pupillary margins and the ciliary body, tend to be stable, and diagnosed at teenage or adult age. Iris stromal cysts likely caused by sequestration of epithelium during embryogenesis, especially during the formation of lens vesicles, usually contain goblet cells and gradually enlarge and cause complications. Stromal cysts are often diagnosed at infancy. Both sexes are equally affected by primary cysts (7).

Acquired cyst formations occur after trauma or surgery. Surface epithelial cells are implanted into the stroma and may progress with a higher rate of recurrence after excision. The cyst walls are usually thick, transilluminated, and contain fluid with degenerated cells. The cysts usually progress and give rise to secondary glaucoma (8). Topical medications like prostaglandin analogs and pilocarpine may produce iris cysts by increasing the uveoscleral outflow of aqueous fluid and changing the fluid dynamics through the intraepithelial space of the posterior iris. Melanoma of the iris should be differentiated from an iris cyst. Most iris melanomas involve the inferior iris with prominent vascularization and sometimes spontaneous hyphema. Iris melanomas look brown in color as a solid mass and sometimes have surface plaque (9).

Complications due to progressive enlargement of the cyst causing raised IOP, sectoral cataract, iris atrophy, iritis from cyst leakage, pigment dispersion, and corneal edema due to endothelial touch. A careful slit-lamp examination is essential to detect iris cysts. UBM and AS-OCT are the imaging systems used to visualize the cyst even behind the iris. Different studies showed that UBM was better than AS-OCT due to its higher resolution, and we used UBM to observe the details of the cyst (2).

Iris cysts appear oval-shaped with a thin, hyperechoic wall (due to the epithelial cell lining) and a hypoechoic interior (due to its fluid contents) with no solid component on imaging, in contrast to iris melanoma, which appears as a solid irregular iris mass with variable internal reflectivity. Most primary iris cysts are benign in nature and occur in adulthood, but childhood cysts enlarge gradually, causing distortion of the pupil, blocking the visual axis, raising intraocular pressure, and affecting corneal endothelial touch leading to endothelial decompensation. Secondary post-traumatic iris cysts have a higher tendency to proliferate and a higher rate of recurrence after excision.

The treatment for iris cysts includes observation, needle aspiration, and surgical excision. Discontinuation of medications such as pilocarpine and prostaglandin analogs can resolve the topical medication–induced cysts. Argon laser photocoagulation, Nd: YAG-photo disruption of cyst, cyst aspiration with an injection of absolute alcohol, and en bloc excision are needed to manage various iris cysts (3). Alternatively, antimitotic agents can be infused to help prevent recurrence (6). In our case, the primary iris cyst was managed surgically.

Conclusion

Primary iris cysts can be managed surgically in the early stages without any devastating ocular complications.

Limitation

Histopathology of excised iris tissue was not done. Thus we did not confirm the margin of remaining iris tissue free from

secretory epithelium or any tumor cells. So, there is a chance of recurrence in future and regular follow up is needed for a long period.

Ethics statement

Ethics approval was obtained from the institutional ethical committee, and informed consent was obtained from the patient's guardian.

Consent for publication

Informed consent for publication was obtained from the patient's guardian.

Authors' contributions

SB: concept and design, analysis and/or interpretation of data; SR: critical review/revision; SN: acquisition of data; AT: drafting the manuscript.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. Shields CL, Kancherla S, Patel J, Vijayvargiya P, Suriano MM, Kolbus E, et al. Clinical survey of 3680 iris tumors based on patient age at presentation. *Ophthalmology.* (2012) 119:407–14.
2. Köse HC, Gündüz K, Hoşal MB. Iris Cysts: Clinical Features, Imaging Findings, and Treatment Results. *Turk J Ophthalmol.* (2020) 50:31–6.
3. Dubey S, Pegu J, Jain K. Iris cysts: Varied presentations and review of literature. *Saudi J Ophthalmol.* (2022) 35:341–6.
4. Shields JA, Kline MW, Augsburger JJ. Primary iris cysts: a review of the literature and report of 62 cases. *Br J Ophthalmol.* (1984) 68:152–66. doi: 10.1136/bjo.68.3.152
5. Konopińska J, LisowskiŁ, Mariak Z, Obuchowska I. Clinical features of iris cysts in long-term follow-up. *J Clin Med.* (2021) 10:189.
6. Georgalas I, Petrou P, Papaconstantinou D, Brouzas D, Koutsandrea C, Kanakis M. Iris cysts: A comprehensive review on diagnosis and treatment. *Surv Ophthalmol.* (2018) 63:347–64.
7. American Academy of Ophthalmology. *Primary Iris Cysts: Basic and Clinical Science: Section 6- Paediatric Ophthalmology and Strabismus.* (2021).
8. Molday RS, Kellner U, Weber BH. X-linked juvenile retinoschisis: clinical diagnosis, genetic analysis, and molecular mechanisms. *Prog Retin Eye Res.* (2012) 31:195–212.
9. Melanoma. Basic and clinical science course section 4: ophthalmic pathology and intraocular tumors. *Eur Board Ophthalmol.* (2021).