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Research Paper

Iris implantation cyst : a case report

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***Abstract** :*
Introduction: *Cysts of the iridociliary complex are rare condition, could be primary or secondary, and their appearance may occasionally mimic a pigmented tumor. Secondary implantation cysts state their presence in a much more robust way than primary cysts. Implantation cysts comprise the most common type, they originate by invasion of conjunctival or corneal epithelial cells following surgical trauma or a penetrating wound.*
***Materiels and methods** : We report the case of a 82 year-old women with history of cataract surgery, who present iatrogenic polylobulated serous stromal iris cyst with endothelial contact and angle closure on 360° causing secondary glaucoma.*
***Discussion** : implantation cysts are formed by the intrusion of epithelial cells into the anterior chamber, usually through a surgical wound or trauma. Small and asymptomatic iris cysts can be monitored, whereas larger cysts require treatment as they can cause pupillary block, secondary glaucoma, uveitis, cataract, and corneal decompensation. Regarding the management of iris cysts, there are numerous different strategies, the main rule is to be as minimally invasive as possible. When less intrusive treatment alternatives have failed or are unlikely to be effective, surgery is always the last choice.*
***Conclusion** : Secondary implantation cysts and epithelial downgrowth must be differentiated from secondary endothelial proliferation, iridocorneal endothelial syndrome, and metastatic carcinomas. To be minimally invasive is the golden rule in treating iris cysts.*
***Key words**: iris implantation cyst, , surgical wound, ultrasound biomicroscopy (UBM).*

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I. Introduction :

Cysts of the iridociliary complex could be primary or secondary, and their appearance may occasionally mimic a pigmented tumor. Secondary iridociliary cysts are usually secondary to trauma or anterior segment surgery. Traumatic iris cysts can be divided into two types: solid-looking cysts with stratified or cubical epithelium that aligns with the cyst wall and serous cysts. Small and asymptomatic iris cysts can be monitored, whereas larger cysts require treatment as they can cause pupillary block, secondary glaucoma, uveitis, cataract, and corneal decompensation.

Regarding the management of iris cysts, there are numerous different strategies, the main rule is to be as minimally invasive as possible. When less intrusive treatment alternatives have failed or are unlikely to be effective, surgery is always the last choice. [1].
High-frequency ultrasound biomicroscopy (UBM) clarifies the diagnosis and guides therapy.

II. Observation :

We report the case of a 82 year-old women with history of cataract surgery both eyes by phacoelumsification and intraocular lens IOL (10 years right eye, 3 months left eye) ; who presented to the emergency room for painful rocky left eye and vision loss, visual acuity limited to light perception, examination shows hyperemic conjonctiva with episcleral vascular congestion, corneal oedema with endothélial decompensation and Descemet's folds, peroperative iridotomy, IOL reflection, Iris bulge on 360°, fundus was impossible , IOP was 68mmhg.

Right eye examination shows corneal dytrophy, a pseudophakic eye, fundus normal IOP 14mmhg
Ultrasound of the posterior pole both eyes did not show any abnormalities., UBM shows polylobulated serous stromal iris cyst with endothelial contact and angle closure on 360° causing secondary glaucoma left eye.
The diagnostic was iatrogenic polylobulated serous stromal iris cyst with angle closure and secondary glaucoma.

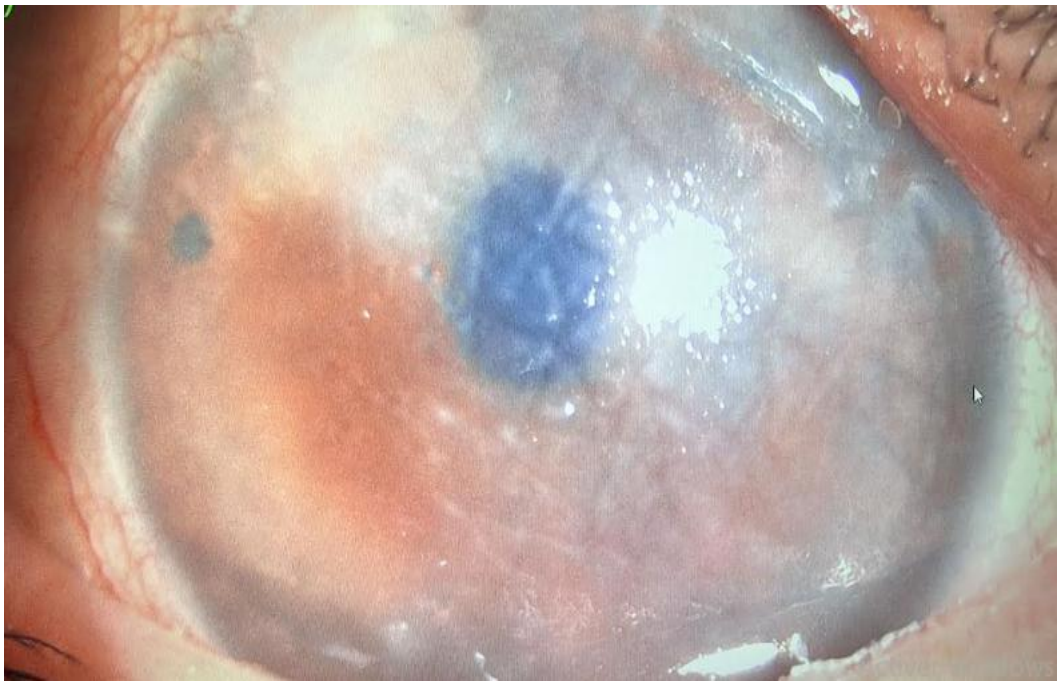

Figure 1: left eye image showing heperemic conjonctiva, corneal edema with endothelial decompensation, peroperative iridotomy, IOL reflection, Iris bulge with 360° endothelial contact 3months after cataract surgery.

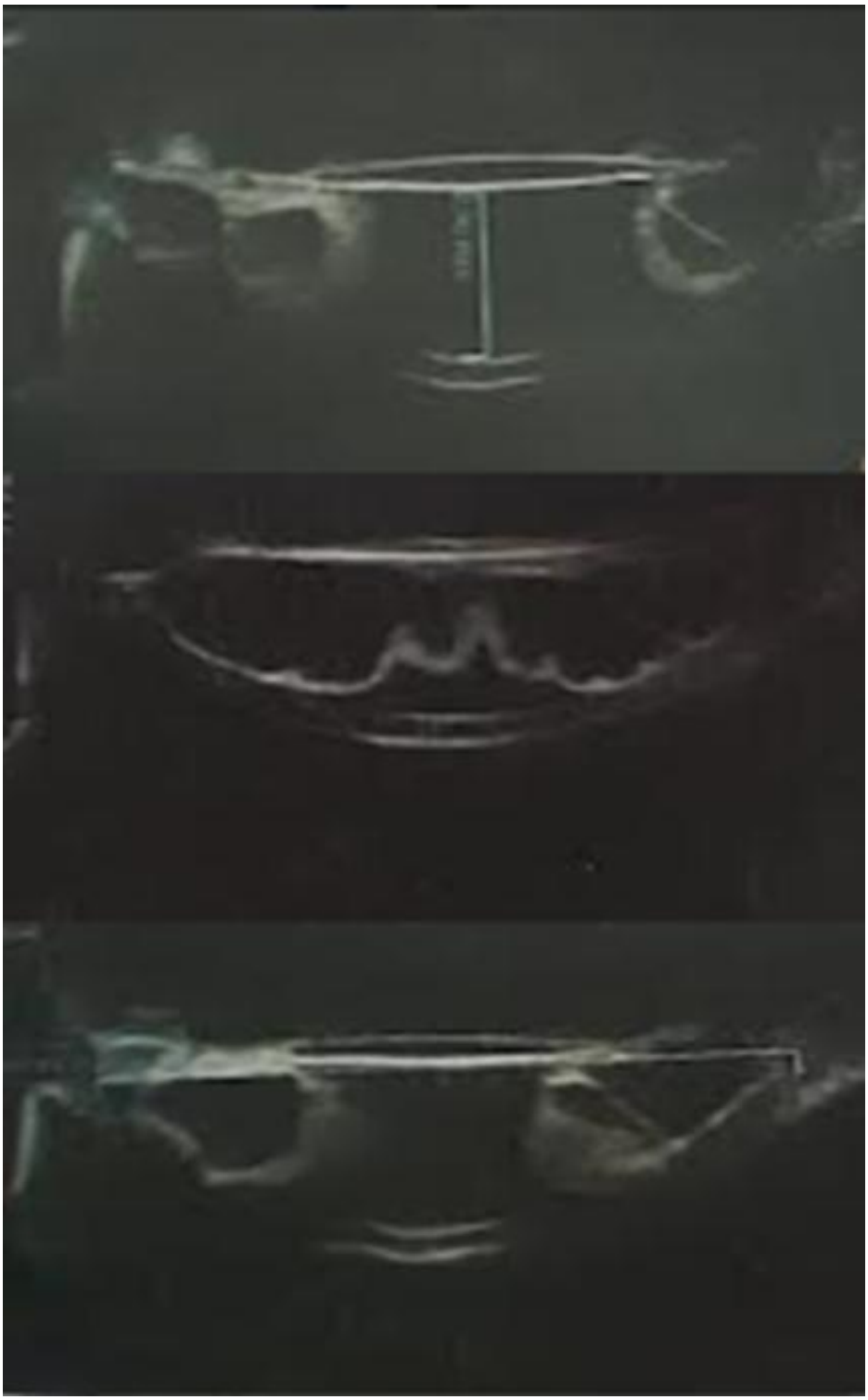

Figure 2: UBM images of left eye showing polylobulated serous stromal iris cyst with endothelial contact and angle closure on 360°.

III. Discussion :

Secondary cysts are classified, according to the pathogenic mechanism, into implantation cysts, drug-induced, uveitic, tumor-induced, parasitic, or as cysts associated with systemic disorders. Implantation cysts comprise the most common type, they originate by invasion of conjunctival or corneal epithelial cells following surgical trauma or a penetrating wound. Drug-induced cysts associated with the use of miotics or latanoprost usually regress after the cessation of the drug. Uveitic cysts usually arise in the context of nongranulomatous uveitis. Tumor-induced cysts either primary iris tumors (iris nevus, leiomyoma, adenoma, medulloepithelioma,

melanocytoma, or melanoma) or secondary (conjunctival or lacrimal gland tumors), as well as metastatic tumors can develop cystic formations. Parasitic cysts associated with the presence of intraocular parasite are extremely rare. Cysts associated with systemic disorders: Mucopolysaccharidoses, iris flocculi, diabetes mellitus, Menkes syndrome and malignancies [2].

Regarding implantation cysts, penetrating trauma and surgical procedures are nearly equal as etiological factors. In a study by Behruzi and Khodadoust, penetrating trauma was the underlying cause in 50 (49.1%) of 102 cases. The remainder 52 cases (51%) were attributed to various surgical procedures; intracapsular cataract extraction with vitreous loss in 30 cases (29.9%), intracapsular cataract extraction in 11 cases (10.8%), extracapsular cataract extraction in 5 cases (4.9%), with posterior chamber intraocular lens implantation in 3 cases (2.9%), and trabeculectomy in 2 cases (1.9%). In 1 case (0.48%), the underlying cause was unknown. The cysts formed between 3 months and 9 years after injury [3].

The prerequisite for the formation of secondary cysts is the intrusion of epithelial cells into the anterior chamber, usually through a surgical wound or trauma. Trauma includes cases of occult ocular trauma, even intra uterine limbal perforation by the amniocentesis needle. In cases with no evident trauma, developmental anomaly with conjunctival tissue invasion into the iris stroma during the early stage of eye development seems to be the underlying cause[4] [5] [6].

Epithelium intrusion can present as epithelial downgrowth, where sheets of epithelial cells proliferate into the anterior chamber, or cyst formation. What drives the epithelial cells to either path is unknown. Epithelial cells carry a high proliferative potential. As soon as they find a source of nutrients they start to proliferate, covering intraocular structures. Iris, as a richly vascularized tissue, provides an ideal scaffold for proliferation [7].

Histologically, implantation cysts are lined by concentric layers of stratified squamous epithelium. According to their appearance, they can be divided into: pearl, serous or atypical.

Gradually (the course may take years), after invading the iris, epithelial cells may also invade the angle and the retrocorneal surface. It is poorly understood why in some cases epithelial cells manage to implant, harvest the nutrient supply of the iris and proliferate, and in other cases they do not. The varying rate of proliferation defines the time point of apparent clinical presentation.

Secondary implantation cysts state their presence in a much more robust way than primary cysts. A history of preceding surgery, trauma, or inflammation is nearly always present, although it may go back as far as 20 years. Their tendency to expand and invade ocular structures leads to a higher incidence of complications varying from iritis/uveitis (the most common), to obstruction of visual axis, secondary glaucoma, intraocular lens subluxation, iris bombe, or complicated cataract. One case of vitreous hemorrhage has also been reported. More extensive expansion (usually associated with recurrent disease after surgical removal) may reach as far as the pars plana and the posterior segment. Two case reports describe the occurrence of sympathetic ophthalmia or scleral cysts formation [8] [9].

Secondary implantation cysts and epithelial downgrowth must be differentiated from secondary endothelial proliferation, iridocorneal endothelial syndrome, and metastatic carcinomas. Secondary Endothelialization of the angle and anterior surface of the iris can occur in ischemic eyes with rubeosis iridis. The iridocorneal endothelial syndrome is characterized by iris atrophy, aggregation of iris melanocytes, and the formation of clumps rather than stratified sheets of aberrant endothelial cells. In cases of metastatic tumors, pleomorphic neoplastic cells can form a relatively thin sheet spreading over the posterior surface of the cornea and iris. In cases that epithelial downgrowth form cysts rather than thin sheets, clinical history indispensable in differential diagnosis. In most cases, UBM can distinguish between these entities, on the basis of the increasing size, the depth expansion, internal reflectivity, and infiltration of a malignant tumor. In doubtful cases, fine needle aspiration(FNA), vitrectomy-assisted biopsy, or (as last resort) surgical iridectomy can offer conclusive results [10] [11].

Ultrasound B-scan (USB) is limited by its low operating frequency (10-20mhz). In contrast to USB, Ultrasound biomicroscopy (UBM) can achieve higher resolution in the expanse of limited tissue penetration as it operates in the range of 50–100 Mhz, usually secondary implantation cysts are solitary, unilateral, stromal, thick wall with medium to high reflectivity, their content is variable from layered solid (pearl) to sonolucent or turbid fluid with septae (serous), Serous cysts can erode through the iris and invade the posterior chamber, Pearl cysts are small, serous may enlarge to touch cornea, Usually grow over time, may become suddenly stationary. [12] [13] [14] [2]

Anterior segment optical coherence tomography (AS-OCT) seems to be the best imaging modality in terms of resolution, it has a major disadvantage regarding iris lesions, which is the heavy shadowing caused by the iris pigment epithelium. Although the anterior border of iris lesions is depicted in detail, the imaging of structures lying behind the iris pigment epithelium and internal structure of the lesion is usually insufficient [15]. In contrast, UBM can reveal the entire structure of the cysts and the surrounding tissues and differentiate

them from solid tumors. Thus, UBM remains the gold standard in the imaging and differential diagnosis of iris lesions [2]

Fine needle aspiration (FNA) has been used successfully to differentiate tumors with cystic spaces, such as melanomas, melanocytomas, metastatic tumors, adenomas, lymphomas, leukemic infiltration, retinoblastomas, and epithelial ingrowth from real cysts. Complications include intraocular hemorrhage with secondary glaucoma and the possibility of local or extraocular seeding. The latter can be minimized by transcorneal sampling.

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There are a wide variety of approaches regarding the treatment of iris cysts. This implies that there are many parameters for the clinician to consider in choosing the right method. To be minimally invasive is the golden rule in treating iris cysts. Primary iris cysts that are usually asymptomatic and remain stationary may simply be observed. FNA alone usually lacks the potential to offer a permanent solution and should be rather used as a diagnostic tool. Laser, in the form of argon or Nd:YAG laser is the less invasive approach and is reported to have favorable results, even in cases of epithelial ingrowth, and is especially useful in children or in cases where there is an increased risk of complications after FNA and alcohol infusion. Surgical intervention is always the last resort, when other less invasive options have failed, or are unlikely to be successful because of the extent or nature of the lesion or in cases of malignant or possibly malignant lesions. [19] [20] [21]

The preferred surgical approach should be determined based on the extent of involvement of the cyst and kept as minimal as possible. Surgery also has the advantage of producing tissue and cell samples to be used for histopathologic and cytopathologic studies.

IV. Conclusion :

The trigger for the formation of secondary cysts is the intrusion of epithelial cells into the anterior chamber, usually through a surgical wound or trauma.

Secondary implantation cysts and epithelial downgrowth must be differentiated from secondary endothelial proliferation, iridocorneal endothelial syndrome, and metastatic carcinomas.

Surgical intervention is always the last resort, when other less invasive options have failed, or are unlikely to be successful because of the extent or nature of the lesion or in cases of malignant or possibly malignant lesions.

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