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Free-floating iris cyst in the anterior chamber: a case report

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ABSTRACT

Iris cyst is a rare finding and can be primary, without any clear pathology, or secondary, which may arise following inflammation, trauma, or surgery. These cysts can be located on either surface of the iris. In rare cases, an iris epithelium cyst can dislodge and move into the anterior chamber. Here we present a rare case of a free-floating iris cyst. A 32-year-old female presented to our department with a free-floating, pigmented, round-shaped, translucent, avascular lesion with a smooth surface in the left eye. The lesion was about 2 mm in diameter. The rest of ophthalmic examination was unremarkable. The iris cyst was surgically removed, and pathological examination confirmed the diagnosis of an iris cyst originating from the iris pigment epithelium. Iris cysts are relatively uncommon and can sometimes pose a diagnostic hurdle. We further discuss differential diagnosis and therapy options.

KEY WORDS: ocular oncology; iris tumor; iris cyst; ocular pathology

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INTRODUCTION

Iris tumors, although less common compared to similar choroidal tumors, present a diverse spectrum of benign and malignant pathologies. The array of iris tumors ranges from melanocytic lesions to metastases [1, 2]. While benign iris tumors generally offer a more favorable prognosis due to their lack of metastatic potential, they can still pose a threat to vision and cause local destruction. Due to the relative rarity of iris tumors, there is a limited number of studies on iris neoplasms, and it takes a significant amount of time to accumulate a representative number of cases. Significant contributions include the work by Duke and Dunn, which documented 43 cases as early as 1958, followed by a review of 145 iris neoplasms reported by Ashton et al. in 1964 [3, 4]. More recently, Shields et al. published a review of a clinical series of 3680 iris tumors [2]. According to a study by Shields et al., the incidence of iris tumors is more prevalent among Caucasians. The mean age of presentation is typically around 48 years, ranging from 2 weeks to 95 years [2].

The vast majority of iris tumors (> 70%) tend to be solid [1]. A cyst is cavity-lined by a single layer of epithelium. Iris cysts are broadly classified as either cystic or solid. Cystic lesions typically exhibit stable characteristics over time and follow predictable patterns. On the other hand, solid iris tumors represent various melanocytic and nonmelanocytic variants [1, 5]. Among malignant iris tumors, melanoma is the most frequently encountered and carries a significant risk of metastasis [1, 2, 6].

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Differentiating cysts from other iris lesions poses a challenge due to the wide range of potential causes and origins [1]. Primary cysts are usually benign; however, they require multimodal diagnostics to rule out a potentially malignant process. Rarely primary cysts can break free and float into the anterior chamber of the eye. Here, we present a case of an asymptomatic primary free-floating cyst in the anterior chamber.

The purpose of this article is to present a case of an asymptomatic primary free-floating cyst in the anterior chamber and to briefly review evaluation methods, differential diagnosis, treatment options, and prognosis of iris tumors.

CASE PRESENTATION

A 32-year-old woman in good health with no past ocular history was referred to our department for further evaluation of a suspicious lesion in the anterior chamber of her left eye. The patient observed in the mirror that the lesion moved in her eye when tilting her head. The patient reported no visual symptoms and no pain. The patient reported no systemic diseases and was not taking any medication. The best corrected visual acuity was 20/20 in both eyes. The eye pressure was 13 mm Hg in the right eye and 15 mm Hg in the left eye. The examination of the anterior segment revealed a clear, translucent cornea. No precipitates were found on the corneal endothelium. No anterior nor posterior synechiae were found. The lens was clear. On further examination, a free-floating cyst was found in the inferior part of the anterior chamber (Fig. 1 and 2). A gonioscopy examination showed an open anterior chamber angle in all four quadrants. Dilated fundus examination was normal. After a discussion with the patient on the risks and benefits of surgical removal, she elected to proceed. The cyst removal surgery was performed under topical anesthesia. Local anesthesia was used. Viscoelastic material was injected through a limbal incision opposite the cyst. Cyst was removed in toto using forceps followed by irrigation of the anterior chamber with balanced salt solution (BSS). There were no peri- or post-operative complications. Following the surgery, a pathological examination revealed dispersed pigment and several pigmented epithelial cells, confirming the diagnosis of a cyst originating from the posterior iris epithelium.

DISCUSSION

Iris cysts can manifest as either primary or secondary. Primary iris cysts originate from the iris stroma or pigment epithelium. Secondary iris cysts develop due to external factors such as trauma, parasitic infections, tumors, nevi, or iatrogenic causes. They are significantly more prone to cause ocular complications than primary iris cysts [7]. Iris epithelial cysts are primarily comprised of densely pigmented columnar cells. They can be further classified based on their location, which includes pupillary (central), mid-zonal, peripheral, free-floating in the anterior chamber, or within the vitreous. Stromal cysts typically exhibit stratified squamous or a single layer of cuboidal cells [6, 8]. Stromal cysts are believed to originate from ectopic surface epithelium that became trapped within the iris during embryologic development [1, 9].

Although rare, iris cysts have been previously reported to dislodge and float freely in the vitreous and anterior chamber [5, 10–12]. These cysts tend to be asymptomatic and are usually identified

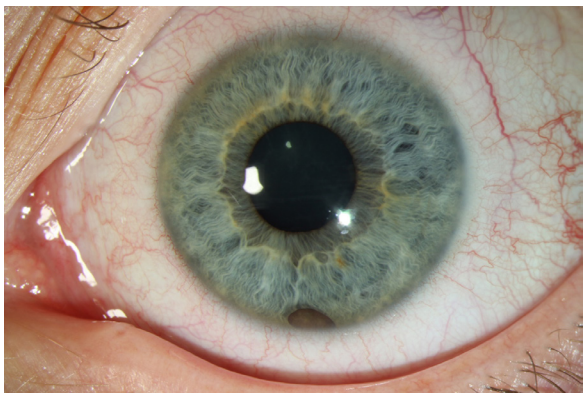

FIGURE 1. Anterior segment slit lamp photography reveals a free-floating Iris cyst in the anterior chamber

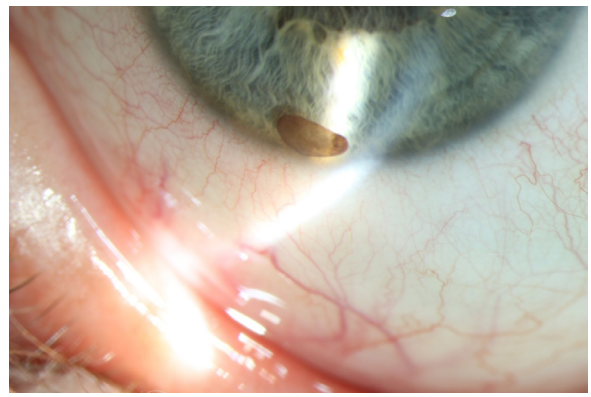

FIGURE 2. Tilting the head causes the move of the cyst in the anterior chamber

during initial or routine ophthalmic exams [10, 11]. If symptoms arise, they vary depending on size, location, and the extension of the lesion. In rare cases, big cysts can lead to visual axis obstruction and corneal decompensation [13]. Pigmented cysts originating from the iris epithelium are benign; however, they can present a diagnostic challenge due to their rarity and similarity to malignant iris and ciliary body tumors. In 1965, Yanoff and Zimmerman reported a case of a free-floating cyst that resulted in enucleation due to suspected melanoma [14]. In any case of an iris cyst, a thorough multimodal diagnostic with differential diagnosis to rule out potential iris melanoma should be conducted [1, 6, 10]. The differential diagnosis should include iris nevus, Lisch nodules, iris pigment epithelium adenoma, metastatic iris lesions, and melanoma [6, 13]. Malignant changes are solid, present with irregular borders, and have surface vessels. Ultrasound biomicroscopy (UBM) exams typically reveal thicker walls and lesion heterogeneity [15, 16].

Suspected iris cysts necessitate a comprehensive evaluation, which should include a slit lamp examination followed by UBM or anterior segment optical coherence tomography (AS-OCT) to confirm the nature of the lesion. AS-OCT is a more convenient imaging modality. However, UBM has been reported to have better imaging resolution for both pigmented and non-pigmented iris tumors [16]. Treatment modalities include conservative and radical approaches. The conservative management options of free-floating cysts include observation or photocoagulation, which are associated with minimal risk [1, 13]. Stable cysts that do not cause symptoms or complications can be observed until complications arise. A more active approach involves surgery, and a limbal or pars plana approach is used, depending on the location of the free-floating cyst. In-toto excision is the preferred surgical approach as it allows definite histopathological evaluation [17–20]. Despite offering the most definitive treatment, surgery carries a risk of visual morbidity and may prolong patient rehabilitation. The prognosis of an iris cyst depends on the size, nature, and location of the cyst. Free-floating cysts are most commonly iris pigment epithelial cysts and have a good prognosis. Previously reported complications include visual axis obstruction, glaucoma, recurrent iritis, and glaucoma [15].

Comprehensive documentation of findings, in addition to UBM and OCT scans, is highly recommended. Management of iris epithelial cysts most commonly involves follow-up with imaging and UBM-microscopy examination. Management involves either regular observation or immediate removal of the lesion. However, each patient should be thoroughly examined to rule out potential malignancies.

CONCLUSION

Here, we present a case of a patient with a free-floating iris cyst in the anterior chamber. The remaining ophthalmic examination was normal. The iris cyst was removed surgically. The following pathological exam revealed that the cyst originated from the iris pigment epithelium.

Free-floating iris cysts in the anterior chamber are rare, unusual findings. The etiology of free-floating cysts is most commonly iris pigment epithelium. Iris cysts most commonly remain stable; however, in rare cases, they can cause visual disturbance or secondary glaucoma. Management includes observation, laser treatment, or surgical removal.

Conflict of interest

The authors declare no conflict of interest.

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