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Metastatic tumor of the ciliary body manifesting as phacomorphic glaucoma: A clinical case

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Abstract

Introduction: Metastatic ciliary body tumor is a relatively rare tumor with a poor prognosis. Ciliary body tumors manifest as closed angle glaucoma, secondary glaucoma (phacomorphic glaucoma (PG), neovascular glaucoma), chronic uveitis, and cataract. The diverse manifestation of symptoms leads to diagnostic errors.

Case presentation: This article presents a clinical case of a man aged 59 years with PG of the left eye. Ultrasound biomicroscopy revealed: a mushroom-shaped mass on the ciliary body penetrating toward the posterior chamber, with indistinct boundaries. Metastatic tumor of ciliary body had clinical manifestation as PG in this patient.

Conclusion: All types of secondary glaucoma and acute attack of primary closed angle glaucoma should be carefully examined for intraocular tumor. Incorrect choice of treatment tactics for such patients can lead to common complications such as metastasis.

Key words: ocular metastases, phacomorphic glaucoma, ultrasound biomicroscopy

Introduction

Metastatic tumors are a rare cause of intraocular tumors and cases due to ciliary body neoplasia are rarely described in the literature. Malignant neoplasms of the breast, lung, mediastinum, and kidney are frequent causes of metastases to the eyeball [1,2]. According to Shields CL et al. tumors of other organs quite often give metastases to the iris (64 %), ciliary body (67 %), chorioid (1 %) and the disease is often accompanied by elevated intraocular pressure (IOP) [3].

When the ciliary body tumor reaches a large size, patients complain of visual impairment associated with lens deformity and dislocation. When the mass invades the angle of the anterior chamber (AC), IOP increases [4].

The treatment of glaucoma, due to metastases of malignant tumors of various localizations, is challenging. Since, drug therapy is varied and often has little efficacy. According to Radcliffe N.M. et al. the use of prostaglandin analogs increases uveoscleral outflow, and pilocarpine activates trabecular outflow, which in turn can increase the risk of malignant tumor metastasis [5]. Antiglaucomatous surgery is contraindicated due to the possibility of tumor cells entering the bloodstream and spreading hematogenously to other organs [6]. Treatment of ciliary body tumors includes local resection, enucleation, radiation therapy and laser treatment, and each case requires an individual approach [4,7].

The prognosis of visual function depends on the type of tumor and extent of ocular involvement, as well as the treatment received. The main goal of treating a neoplasm of the eyeball, is to control the tumor, then control IOP. Additionally, the treatment of any intraocular tumor should be done simultaneously with the oncologist.

In this article, we would like to share a clinical case of metastatic ciliary body tumor associated with phacomorphic glaucoma (PG).

Case presentation

The principles of the Declaration of Helsinki were followed in the article. A 59-year-old man, Asian nationality, presented to the emergency ophthalmology department of the Central City Clinical Hospital with the complaints of acute pain, redness, sharp decrease in vision in the left eye. The above complaints had been bothering him for one month. When the pain intensified, only then the patient went to an ophthalmologist at the

place of residence. The oculist in the outpatient clinic diagnosed PG in the left eye, provided appropriate care and referred the patient for inpatient treatment.

The life history: the patient had been on the dispensary registration since 2016 with an oncologist for surgical carcinoma of the thymus gland, metastases of the thymus gland (right thoracotomy, removal of formation S 3 of the upper lobe of the right lung). The patient refused radiation therapy after surgery and had not been seen by an oncologist for the last two years. He was registered with a general practitioner for arterial hypertension, grade III.

An examination of his visual acuity in the right eye equaled 0.8, not correct, in the left eye - 0.04, not correct. IOP in the right eye (Maklakov tonometer) was 18 mmHg, in the left eye - 47 mmHg.

On biomicroscopy the right eye is quiet. The cornea was clear. The depth of the anterior chamber was medium, the moisture was transparent. The pupil was rounded, 2.5 mm in diameter, pupil reaction to light is preserved. The iris is subatrophic, pigmentary border was thinning. The anterior cortical layers of the lens were irregularly clouding. Ocular fundus: Optic disk (OD) with clear borders and optic disc excavation (E/D) - 0,5. The retinal arteries were sharply narrowed, the veins were of irregular caliber, and there were grade II arteriovenous crosses. The ratio of artery to vein was 1:3. The macular reflex was smoothed.

Left eye: congestive injection of the eyeball. A slight edema of the corneal epithelium. Folds of the descemetal membrane were defined. The anterior chamber was shallow. The pupil was oval in shape, wide (4.5 mm in diameter), unresponsive to light. The iris was subatrophic and without pigmentary border. The lens was swollen, the anterior capsule is strained, and the

Figure 1 - In the light of the slit lamp of the left eye seen are corneal edema and swollen cataract (photo after decreasing of high intraocular pressure).

anterior cortical layers was cloudy. Details of the ocular fundus cannot be seen because of a cloudy lens (Figure 1).

On the gonioscopy of the right eye, the anterior chamber angle (ACA) was narrow, and the iris root was convex. Iris root penetrates into the anterior chamber, ciliary body stripe and scleral spur were not seen. Left eye: ACA was closed.

Ultrasound investigation of the right eye revealed the vitreous body destruction. There was a hyperechogenic shadow in the ciliary body area at 6 o'clock on the left eye. The axial length (AL) of the right eye was 22.70 mm, anterior chamber depth (ACD) - 2.73 mm, lens thickness - 5.01 mm. Left eye: AL-21.93 mm, PC - 1.95 mm, lens thickness - 5.26 mm.

Ultrasound biomicroscopy (UBM) of the left eye: ACD - 2.30 mm average, ACA closed, posterior chamber depth (PCD) 0.53 mm average, lens thickness 4.9 mm, cinnamic ligaments 0.38 mm, ciliary body hypertrophied; thickness at 3 o'clock 1.44 mm, at 6 o'clock 2.85 mm, iris root convex. At 6 o'clock, the cinnamic ligaments were absent and there was a subluxation of the lens due to the ciliary body. At 6 o'clock, "+" tissue of heterogeneous echogenic density with hyperechogenic margins toward the posterior chamber, margins indistinct, irregular shape, true size was impossible due to the depth of formation, maximum size in the visible zone was 2.85 mm (Figure 2-4).

Figure 2 - On ultrasound biomicroscopy of the left eye are seen metastasis to the ciliary body and subluxation of the lens.

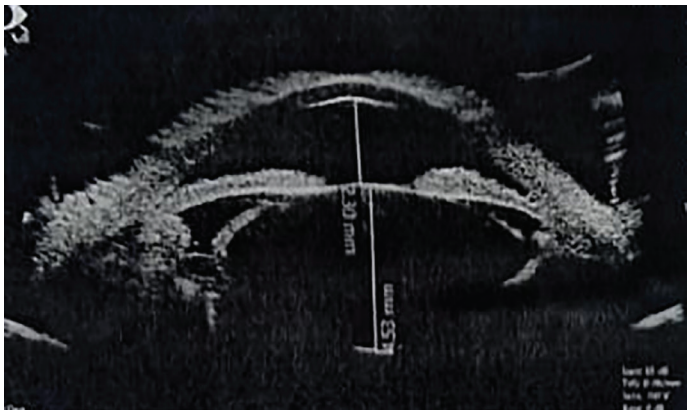
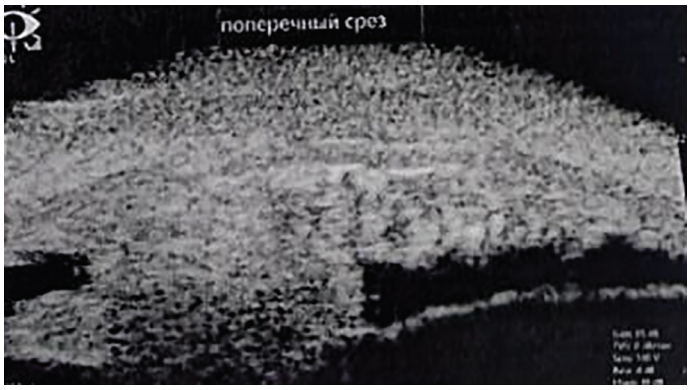


Figure 3 - Ultrasound biomicroscopy shows plus tissue of inhomogeneous echo density with irregular shape and hyperechoic density, the edges towards the posterior chamber are indistinct.

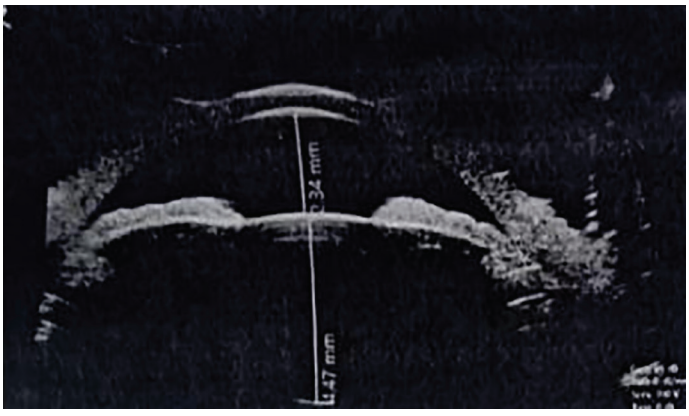
Figure 4 - Ultrasonic biomicroscopy picture in the area of tumor.



Given a life history of thymus gland carcinoma, the patient was referred for consultation to an oncologist, who identified metastases to the mediastinal lymph nodes and to supraclavicular lymph nodes. Results of chest-computed

UBM of right eye ACD was medium 2.34 mm, ACA was narrow, PCD is medium - 0.57 mm, the lens thickness - 4.47 mm, cinnamic ligaments were medium 0.53 mm, thickness of ciliary body was hyporrhotic (1.24 - 1.30 - 1.32 mm), iris profile is convex. The cinnamic ligaments were sharply thinned. The position of the lens is central. Pupillary preblock (Figure 5). The patient was diagnosed with OD - Age-related immature cataract after instrumental examination. Hypertensive retinal angiopathy. OS - Phacomorphic glaucoma. Ciliary body melanoma? Metastatic tumor of the ciliary body?

Figure 4 - Ultrasound biomicroscopy of the right eye, the angle of the anterior chamber is narrow.



tomography: condition after right thoracotomy, removal of a mass S 3 of the upper lobe of the right lung (2016). On computer tomography shown lymphoadenopathy of mediastinal, right supraclavicular lymph nodes. Ultrasound of peripheral lymph nodes: lymphoadenopathy of cervical, supraclavicular, axillary, and inguinal lymph nodes. Biopsy of supraclavicular lymph node on the right: the morphological picture corresponds to the metastasis of solid carcinoma to lymph nodes.

Radiotherapy and chemotherapy were recommended to the patient by the oncologist. Phacoemulsification of cataract with local resection of the ciliary body was recommended to the patient by us, but the patient refused the surgical treatment of his eye.

Discussion

Here, PG is caused by deformation and dislocation of the lens of the eyeball. According to Shields et al. [8], elevated IOP due to intraocular tumor accounts for 5% to 7.5% of cases. Ferry A.P. et al. believe that one of the frequent localizations of metastases in 81% of cases is the vasculature [1]. Metastases to the ciliary body are more often accompanied by lens displacement and sectoral cataract. In turn, iris metastases clinically manifest as uveitis with elevated IOP and pseudohypopyon [4]. Causes of increased IOP depend on the localization of choroidal metastases. Thus, according to Sheilds et al., based on a study of 2704 eyes of patients with intraocular neoplasms, found that 80% of cases of metastases near the iris root cause obstruction of the trabecular apparatus by detached tumor cells [4,9]. Iris neovascularization in chorioidal metastases, which can cause the closure of the ACA by reconfiguring the lens and aperture, have also been identified. In this study patients, the mechanism of increased IOP is due to displacement or increase in the thickness of the lens [4].

Small-sized ciliary body tumors need to be removed within healthy tissue. Consequently, larger tumors are treated with brachytherapy (suturing an applicator to the sclera over the tumor) or removal of the eyeball [10]. In practice, there is a combined treatment method as local ciliary body resection with phacoemulsification of the lens for small ciliary body tumors with cataract [10,11]. This method has advantages over radiotherapy, such as low recurrence and preservation of vision. After radiotherapy, the outcome can vary, including subatrophy of the eyeball and tumor recurrence [11]. Our patient was recommended the combined method described above, but the patient refused treatment.

Conclusion

Incorrect choice of treatment tactics for such patients can lead to common complications such as metastasis. Our case emphasizes that despite the rarity of metastatic ciliary body tumor, careful examination of the patient's visual organ is necessary to exclude a primary intraocular tumor as the cause of secondary hypertension.

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