Clinical Case Report

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A novel application of B-ultrasonography at various head positions in the diagnosis of untypical uveitis-glaucoma-hyphema (UGH) syndrome

A case report

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Abstract

Rationale: Uveitis-glaucoma-hyphema (UGH) syndrome could be identified by conventional ultrasound biomicroscopy (UBM) and B-ultrasonography, but failed in some untypical cases. We introduced a novel application of B-ultrasonography in diagnosis of UGH syndrome in a rare case.

Patient concerns: A 60-year-old woman was referred for distending pain with blurred vision for more than 1 month in the right eye after cataract surgery.

Diagnoses: B-ultrasound scanner and UBM demonstrated the Intraocular Lens (IOL) was centered in the bag. No chafing in all directions was detected between IOL and iris/ciliary body. The proposed diagnoses were iridocyclitis and secondary glaucoma of the right eye.

Interventions: The symptoms were not improved after antiinflammation and intraocular pressure (IOP) lowering treatment for 1 month. B-ultrasonography was applied in horizontal, sitting, and head-down positions. The results demonstrated movements of IOLs when position changed. The IOLs were in contact with the iris pigment epithelium in sitting position and head-down positions but not in horizontal position. The dynamic interactions between IOLs and iris/ciliary body implied a diagnosis of UGH syndrome. The IOLs were then extracted.

Outcomes: Two weeks after the IOLs explantation, the IOP significantly reduced to a normal level in both eyes. Ten-month follow-up showed that the IOP was maintained at a normal level.

Lessons: The chronically intermittent chafing between IOL and iris in specific head positions would also lead to UGH syndrome. Dynamic application of B-ultrasonography in various head positions could be useful in the diagnosis of an untypical UGH syndrome.

Abbreviations: BCVA = best corrected visual acuity, ECCE = extracapsular cataract extraction, IOL = Intraocular Lens, IOP = intraocular pressure, UBM = ultrasound biomicroscopy, UGH = uveitis-glaucoma-hyphema.

Keywords: ultrasonography, ultrasound biomicroscopy, uveitis-glaucoma-hyphema syndrome

1. Introduction

Uveitis-glaucoma-hyphema (UGH) syndrome, first reported by Ellingson, has increased recently.[1] It could be caused by not only the rough anterior chamber Intraocular Lens (IOL)[2] but also the modern well-made posterior chamber IOL.[3] The UGH syndrome after posterior chamber IOL implantation is mainly caused by 2 factors: sliding out of the haptics or part of the optical district from the capsule and[4] zonule relaxation caused by pigment dispersion syndrome, high myopia, connective tissue diseases, or vitreoretinal surgery. In several cases, the optical district and haptics of IOL are still in the capsule but dislocated.[5] These 2 factors irritate and damage iris and/or ciliary body, resulting in intraocular pigment dissemination, inflammation, hemorrhage, and increased intraocular pressure (IOP). The first type of UGH syndrome is characterized by IOL optical district and haptics subluxation, as well as pigment epithelium defects under iris transillumination. The characteristics of the second type of UGH syndrome are the phakodonesis and dislocation of IOL even optical district and haptics are in the capsule. The chafing of IOL with iris or ciliary body can be observed by ultrasound biomicroscopy (UBM).[6,7]

However, an untypical UGH syndrome could occur even the IOL are in the capsule without phakodonesis or dislocation. Conventional UBM and normal B-ultrasonography also showed negative findings in this situation. In this case report, we present a novel application of B-ultrasonography at various head positions

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in diagnosing this untypical UGH, which could be valuable in clinical practice. Ethical approval for this study (No. 5817) was provided by the Ethics Committee of Hangzhou First People's Hospital and written informed consent was obtained from the patient.

Informed consent was obtained from the patient for the publication of this study.

2. Case report

A 60-year-old woman was referred for distending pain with blurred vision for more than 1 month in the right eye without predisposing factors. The best corrected visual acuity (BCVA) was 20/100 and IOP was between 40 and 50 mm Hg in the right eye. The patient treated with eye drops for antiinflammation and IOP lowing for 20 days. But neither the visual impairment nor the floating particulates had been alleviated. Moreover, the IOP remained from 40 to 50 mm Hg.

Slit lamp examination in the right eye showed mild hyperemia of the conjunctiva. Deep anterior chamber with dense brown floating particulates was observed. The optics and haptics of IOL were centered in-the-bag. Neither phakodonesis nor phacometecesis was detected. Slit lamp did not detect any abnormality in the left eye. B-ultrasound scanner (Mylab 25, Genoa, Italy) demonstrated the IOL was centered in the bag, opacity of the vitreous. There was no retinal detachment in both eyes. UBM (Suoer SW-3200L, Tianjin, China) scanned both eyes and showed all the anterior chamber angles were open. No chafing in all directions was detected between IOL and iris/ciliary body. We found no cyst in iris or ciliary body.[8] A lot of granular hyperechoic echoes were detected in the right anterior chamber (Fig. 1A, B, C, D, E). No or few hyperechoic echoes were found in the left eye (Fig. 1F, G, H, I, J). The patient's physical examination showed no abnormalities. No history of ocular trauma or anticoagulant usage was reported.[9,10] The blood cell count, hemoglobin, and blood viscosity were normal.

The major medical history includes: high myopia (−9.0DS for both eyes); extracapsular cataract extraction (ECCE) and IOL implantation (Alcon MZ60CD UV +8.0D) in the left eye; phacoemulsification and IOL implantation (Alcon Acrsof SA60AT +7.0D) in the right eye; and binocular YAG laser posterior capsulotomy for posterior capsule opacification.

The proposed diagnoses were iridocyclitis and secondary glaucoma of the right eye. However, the symptoms were not improved after antiinflammation and intraocular pressure reduction treatment for another 1 month. After paracentesis for the right eye, erythrocytes in the aqueous humor were identified. Gonioscopy further revealed remote hemorrhage in the right eye and recent hemorrhage in the left eye. We double-checked the eyes by B-ultrasonography (Vinno G60, Suzhou China) in horizontal, sitting, and head-down position. They demonstrated the movement of IOLs when position changed. The IOLs were not in contact with the iris pigment epithelium in the horizontal position of both eyes and head-down position of the left eye (Fig. 2A, B, F). The IOLs were in contact with the iris pigment epithelium in the sitting position of both eyes and head-down position of the right eye (Fig. 2C, D, E). The dynamic interactions between IOLs and iris/ciliary body indicate a diagnosis of UGH syndrome.

The IOL of the right eye was removed out. One week after surgery, the IOP was 17 to 20.4 mm Hg. UCVA was 20/133 (+2.5DS→20/50). Nineteen days later, IOP of the left eye increased and a few dense brown floating particulates in the anterior chamber appeared. IOL of the left eye was removed out later. Two weeks after surgery, the IOP was from 17 to 21.2 mm Hg. UCVA was 20/133 (+2.5DS→20/50). Ten-month follow-up showed the BCVA improved to 20/33. The IOP was maintained at a normal level.

3. Discussion

It has been reported that various positions during B-ultrasonography could improve diagnostic ability and efficiency for several diseases.[11,12] However, there are no publications reported the application of various position ultrasonography in UGH. In the present case, we revealed the relationship between UGH with head position. It could help to improve the ability for UGH diagnosis.

UBM in horizontal position can discover the chafing between optical district/haptics of IOLs, and iris/ciliary body.[6] It provides a vital information for the diagnosis of UGH syndrome. But in our case, general UBM in horizontal position and normal B-ultrasonography did not discover the chafing between IOLs and iris/ciliary body in all directions. However, in sitting and head-down positions, B-ultrasonography demonstrated that the IOLs touched iris and ciliary body. The chronically intermittent chafing of the iris pigment epithelium caused in different head positions would lead to microhyphema.[13] Thus, secondary

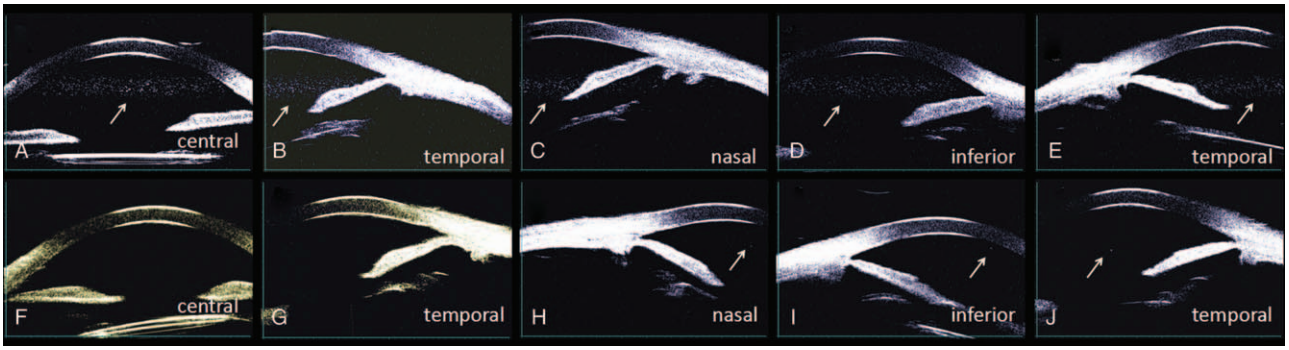

Figure 1. UBM images. UBM images of right eye (A–E) and left eye (F–J) in different directions (central, superior, nasal, inferior, and temporal). Panels A to J show the angles were open. No chafing was detected between Intraocular Lens and iris/ciliary body in all directions. No cyst in iris or ciliary body was found. In A, B, C, D, and E, a lot of granular hyperechoic echoes were detected in the anterior chamber of the right eye (as the arrows show). In F and G, there were no hyperechoic echo in the left eye, In H, I, and J, there were few hyperechoic echoes in the left eye (as the arrows show). UBM = ultrasound biomicroscopy.

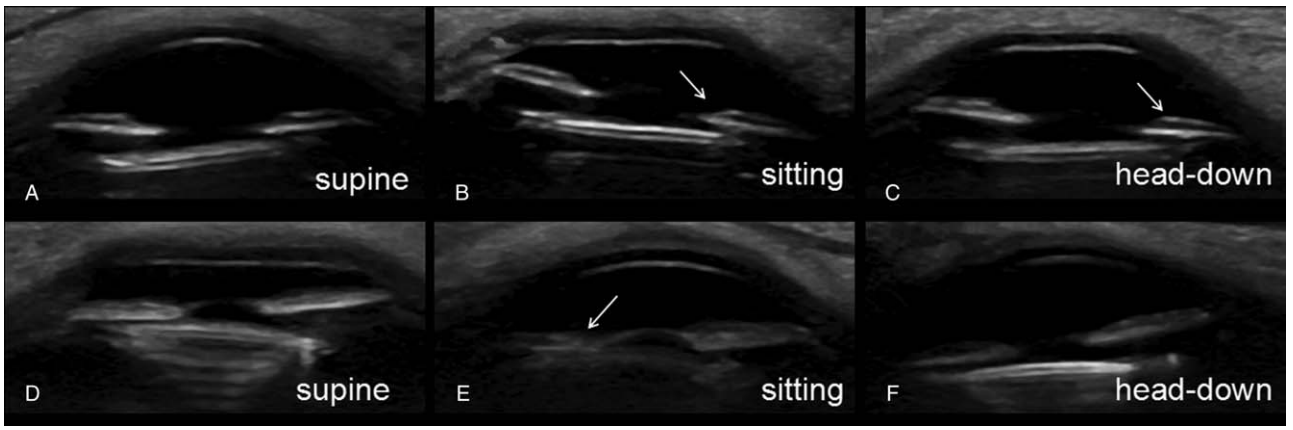

Figure 2. B-ultrasonography images. B-ultrasonography of the right eye (A–C) and left eye (D–F) in various head positions: supine (A, D), sitting (B, E), and head-down (C, F). In A, D, and F, IOL and haptics were not in contact with the iris. In B, C, and E, chafing between IOL and iris was identified (as the arrows show). IOL: Intraocular Lens.

glaucoma occurred. The current case implied that the diagnosis of UGH syndrome cannot be excluded even if conventional UBM showed no abnormalities. In such special cases, dynamic changes of head position for B-ultrasonography could be helpful in identifying UGH syndrome.

The surgery options for UGH syndrome patients include IOL exchange, capsular tension ring implantation, IOL refixation (such as scleral fixation or iridosis), and IOL explantation. It was difficult to exchange the IOL and implant capsular tension ring when the extensive fibrosis in capsule. Thus, the IOL exchange and capsular tension ring implantation were unable to avoid reoccurring of UGH syndrome and may cause other complications. For the current case, IOLs were extracted after adequately communicating with the patient and received her permission. Antiglaucoma surgery was not required as no angle adhesion happened. Owing to high myopia of both eyes, lower degree of spherical lens was distributed for correction of hyperopia after IOL extraction.

4. Conclusions

In conclusion, the chronically intermittent chafing between IOL and iris in specific head positions would also lead to UGH syndrome, Dynamic application of B-ultrasonography in various head positions could be useful in the diagnosis of an untypical UGH syndrome.

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