CASE REPORT

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Uveitic glaucoma management with recurrent uveitis episode

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ABSTRACT

Introduction: Uveitic glaucoma is used to describe glaucoma resulting indirectly or directly from uveitis. Anterior uveitis accounts for more cases of uveitic glaucoma than do intermediate or posterior uveitis. Uveitic glaucoma is a complex disease entity, which is present challenges in management. This case report aims to discuss the clinical signs and management of uveitic glaucoma.

Case Report: A man 18 years old, complained of red eyes accompanied by blurred vision for 1 week before admitted to the hospital. Visual acuity on the right eye 1/300, on left eye 6/24 did not improve with pinhole. Anterior segment examination on both eyes found Van Herrick 3-4 posterior synechia at the 12-6 o'clock on the right eye and 11-1 o'clock left eye, hazy lens with iris pigmented and posterior segment examination found cloudy vitreous with decreasing reflex fundus. Intraocular pressure is 16 mmHg right eye and 49 mmHg left eye. The gonioscopy examination found a cilliary body in all quadrants on the right eye and found a scleral spur in the nasal quadrant with cilliary body in other quadrant on left eye. Patients with a history and currently on treatment for uveitis with secondary glaucoma. Patients undergo with surgical combination and Nd YAG laser therapy.

Discussion: Combination of medical-surgery and routinely follow-up patients provide optimal result.

Conclusion: Uveitic glaucoma is a disease with a high recurrence rate. A multidisciplinary approach is necessary to achieve a successful outcome.

Keywords: Uveitis, Secondary Glaucoma, Nd YAG Laser

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INTRODUCTION

Uveitic Glaucoma (UG) is used to describe glaucoma resulting indirectly or directly from uveitis. The mechanisms by which intraocular inflammation causes an elevation of Intraocular Pressure (IOP) and subsequent secondary glaucoma vary according to the specific uveitic etiology, ocular anatomic features, ocular physiology, and treatment modalities employed which can affect eye pressure. Aqueous outflow obstruction in uveitis may be either macroscopic (ie, with synechial seclusion of the pupil, secondary pupillary block and chronic synechial, and/or neovascular angle closure) or ultrastructural (ie, with open-angle glaucoma due to microanatomic changes to aqueous outflow pathways).[1]

The overall prevalence of secondary glaucoma (SG) in uveitis clinic based studies has varied from 5.2% to 41.8% although historically, the diagnosis has often been made on the basis of IOP elevation alone and 10% patients with uveitis developed secondary glaucoma.[2] Panek et al (2013) found 23 patients (31 eyes) out of 100 patients (161 eyes) to have SG by criteria of IOP alone yielding prevalence rate of 23%. Another study of 1254 cases of uveitis, SG was found in 153 eyes of 120 patients.[3]

In addition, the prolonged use of topical corticosteroids, a mainstay of uveitis treatment, and to a lesser extent, periocular or systemic corticosteroids, may result in trabecular damage and glycosaminoglycan deposition resulting in steroid-induced glaucoma. Anterior uveitis accounts for more cases of uveitic glaucoma than do intermediate or posterior uveitis. Certain uveitic disorders particularly have higher risk of developing secondary glaucoma. Higher rates are reported in those with rheumatoid arthritis-associated iridocyclitis, Fuchs heterochromic iridocyclitis (27%), sarcoidosis (34%), herpes simplex keratouveitis (54%), zoster uveitis (38%),[4] Lyme-associated uveitis, cancer associated uveitis,[5] juvenile idiopathic arthritis (JIA) (12-35%), Behcet's disease, pars planitis, sympathetic opthalmia, and syphilis.[4] Elliot et al (1915) postulated that infectious diseases such as syphilis, gonorrhea,

herpes zoster ophthalmicus, and tuberculosis were the predominant causes of UG.[6]

Uveitic Glaucoma typically is associated with very high IOP and more intense optic nerve damage than other glaucoma types. This SG requires an early diagnosis and adequate management of both uveitis and glaucoma. The modality for the management of UG is a challenge and is aimed at controlling the inflammatory processes that underlie secondary glaucoma according to the etiology and damage caused. The mechanism of UG is very complex and its management requires careful diagnosis and adequate control of IOP and inflammation. A multidisciplinary approach is needed in many cases to achieve optimal results and requires surgical procedures. This case report aims to give information and discuss to the clinical signs and management of UG to achieve the optimal results.

CASE REPORT

This was a single case study and has been approve from the Sanglah Hospital Ethics Committee. Patient were followed up from Mei 2017 until September 2019 and diagnosed as anterior uveitis, cataract complicate, mild vitreus opacity on both eyes with LE secondary glaucoma

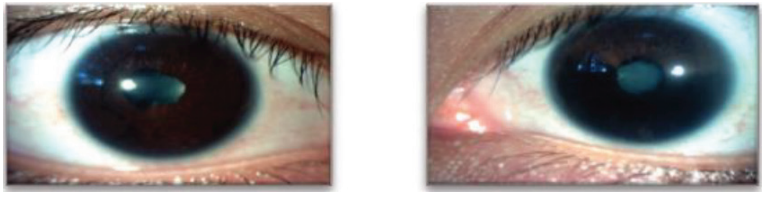

Figure 1. Anterior segment on both eyes.

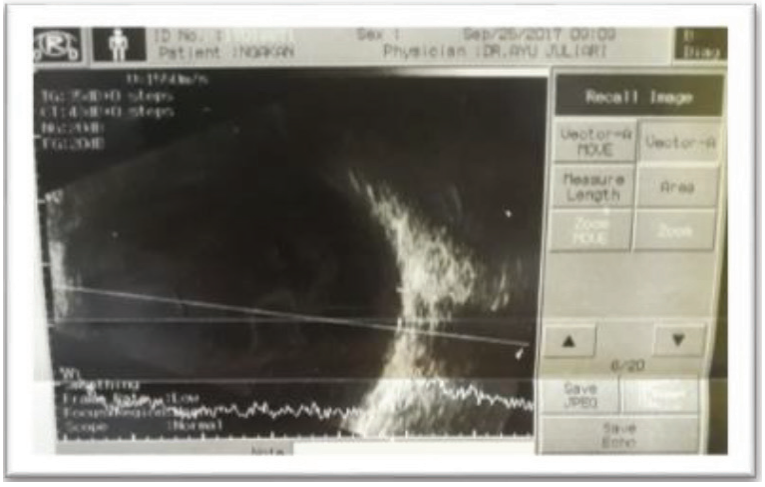

Figure 2. USG on RE shown echogenic vitreous cavity, low-moderate mobility, low-moderate reflexivity, intact retinal-choroid-scleral.

A man 18 years old, complained of recurrent red eyes accompanied by blurred vision for 1 week before admitted to the Eye Polyclinic of Sanglah Hospital on Mei 23, 2017. The patient had been treated at Bali Mandara Hospital since 2 years ago with uveitis and there was no specific illness. Visual Acuity (VA) on Right Eye 1/300, Left Eye (LE) 6/24 pinhole (PH) No Improvement (NI). Anterior segment examination on both eyes found Van Herrick (VH) 3-4 posterior synechiae at 12-6 o'clock RE and at 11-1 o'clock LE, hazy lens with iris pigmented and posterior segment examination found cloudy vitreous with decreasing reflex fundus. IOP is 16 mmHg RE and 49 mmHg LE. The gonioscopy examination found a cilliary body in all quadrants on RE and found a scleral spur in the nasal quadrant with cilliary body in other quadrant on LE. The patient was diagnosed with SG ec uveitic anterior on LE, complicata cataract ec uveitic anterior RLE. Antiglaucomatous and anti-inflammatory oral-topical has given.

Patients undergo ultrasonography (USG) examination in both eyes and the result is mild vitreus opacity RLE (Figure 2).

Patients returned to follow up on May 26, 2017. IOP is 12 mmHg RE and 16 mmHg LE. The anterior and posterior segment examination didn't show any improvement. Patient planned lens extraction (phacoemulsification, intraocular lens (IOL), iris retractor) and pars plana vitrectomy, but External Eye Diseases (EED) division is holding off actions until the inflammation has healed.

The patient was consulted to the department of Ear, Nose, and Throat (ENT) to evaluate upper respiratory tract infection and department of health and human services, the results shown no signs of symptoms of Systemic Lupus Erythematosus (SLE) or spondyloarthritis on August 4, 2017.

Phacoemulsification surgery RE was performed under local anesthesia. The lens of the cortex is very sticky when the capsulorhexis maneuver is performed. Extraction is complete by emulsification because the nucleus adhesions in various quadrants and IOL mounted in a capsular bag. Sinekiolisis is done to reduce posterior synechiae and prevent postoperative complications on December 6, 2017.

Patient diagnosed with pseudofakia RE, vitreous opacity and complicated cataract LE with anterior uveitis RLE on December 7, 2017. VA on RE 6/60 PH 6/24, LE 6/48 PH 6/24. IOP is 28 mmHg RE and 40 mmHg LE.

Patients treated with Nd: YAG laser to reduce fibrin debris at pupil and planned trabeculectomy on fellow eye on December 11, 2017.

A month after surgery, VA on RE 6/15 PH 6/9, LE 6/45 PH 6/24. IOP is 20 mmHg RE and 44

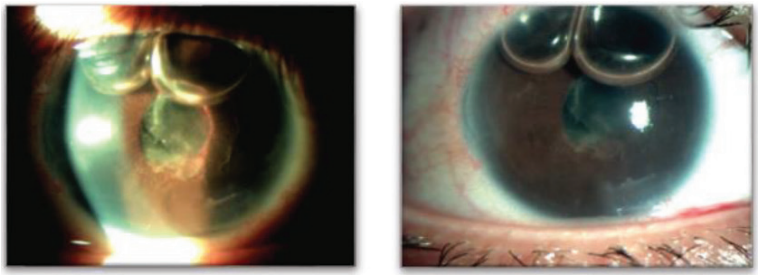

Figure 3. Pseudofakia RE after phacoemulsification surgery day 1.

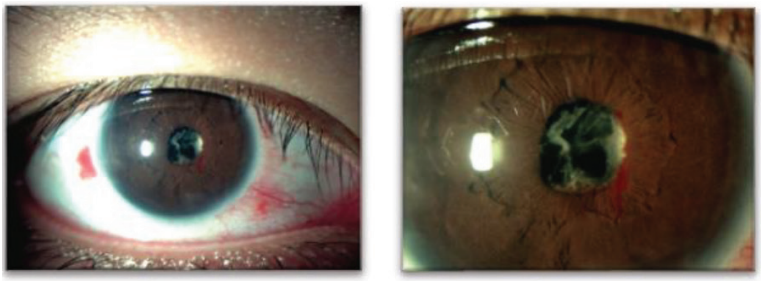

Figure 4. Post NdYag laser RE to reduce fibrin at pupils.

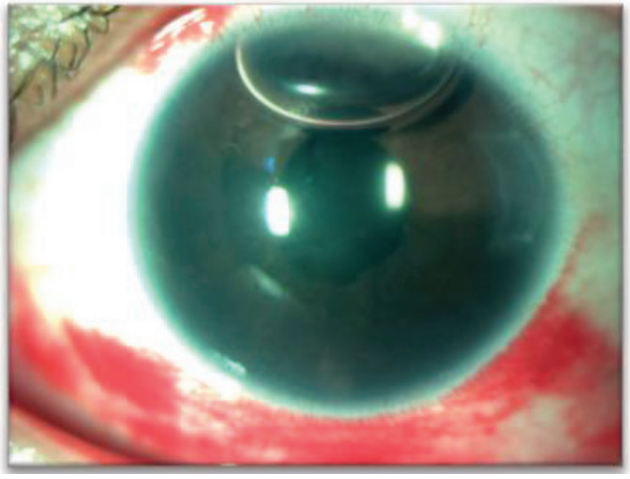

Figure 5. After phacoemulsification surgey LE day 1.

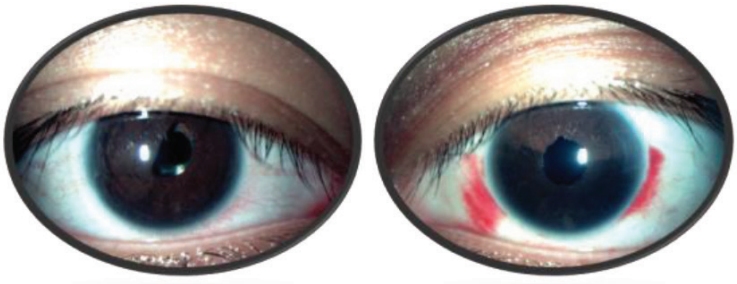

Figure 6. RLE post surgery (LE day 8).

mmHg LE. Patients has given combination of anti-inflammatory medication such as p-pred eye drop, metilprednisolon oral, cycloplegic agent; atropine eye drop, anti-glaucomatous medication such as timolol eye drop, glaucon and aspar-K oral, with levofloxacin eye drop as antibiotics on January 5, 2018.

Patients with VA 6/9 PH NI RE, 6/48 PH NI LE. IOP is 20 and 30 mmHg. The patients planned to phacoemulsification surgery LE on June 4, 2018. On June 5, 2018 the VA on RE 6/12 PH 6/10, LE 6/48 PH NI. IOP is 18 mmHg RE and 32 mmHg LE. Patients diagnosed with pseudofakia RLE with uveitis anterior and vitreous opacity RLE.

When patient controlled on June 13, 2018 VA is RE 6/12 PH 6/10, LE 6/30 PH 6/10. IOP is 17 mmHg RLE.

The patient returned to follow up on August 10, 2018 and complained with relaps symptoms such as pain and redness on RE. VA on RE 6/30 PH NI, LE 6/24 PH 6/18. Camera oculi anterior RE VH3, cell+3, flare+3, hipopion 1mm. IOP is 11 mmHg RE and 12 mmHg LE. Patients diagnosed with uveitis anterior relapse RE, Secondary Glaucoma (SG), pseudofakia and vitreous opacity RLE. Patients undergo topical anti-inflammatory medications such as P-pred, cycloplegic agent; atropine eye drop, and artificial tears; lyteers eye drop.

Patient returned to follow up with VA 6/15 PH 6/10 RE, 6/15 PH 6/10 LE on September 19, 2018. The Best Corrected Visual Acuity (BCVA) is C -1.50 X 80^0 on RLE. IOP is 15 mmHg RE and 17 mmHg LE. Patients diagnosed with SG et causa uveitis anterior, pseudofakia, and vitreous opacity on RLE. Artificial tears was given and eye glasses with the best correction.

DISCUSSION

Uveitis or inflammation of the uvea is derived from the Latin word uva (grape) that can be classified based on the involvement of anatomical structures by the Standardization of Uveitis Nomenclature (SUN) Working Group into anterior, intermediate, posterior, and panuveitis.[7] Uveitis can be caused by variety conditions including; autoimmune, infections, and less commonly trauma, but 50% of all cases of uveitis are idiopathic.[8] In this case various tests were carried out to look for triggers for uveitis and the results obtained to idiopathic.

The mechanisms that determine an IOP increase in UG are diverse and complex; many are often present simultaneously in the same patient. Open-angle glaucoma occurs as a result of mechanical obstruction of trabecular meshwork by inflammatory cells, proteins, debris, fibrin, or

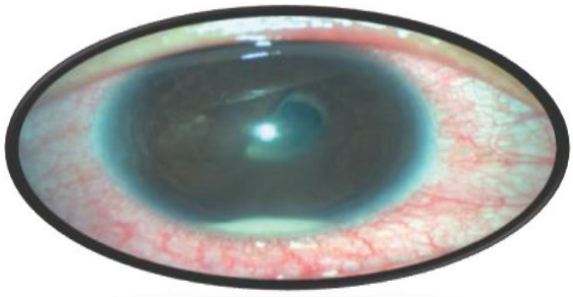

Figure 7. Hypopion at RE in camera oculi anterior.

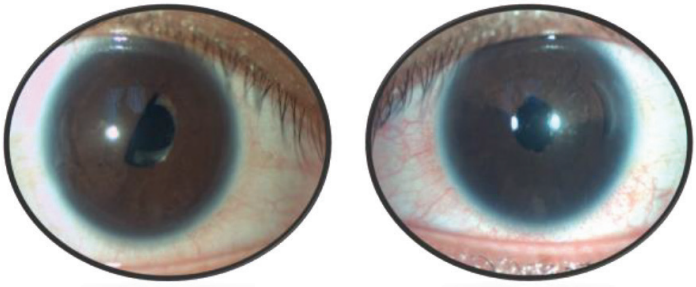

Figure 8. RLE condition after relaps treatment

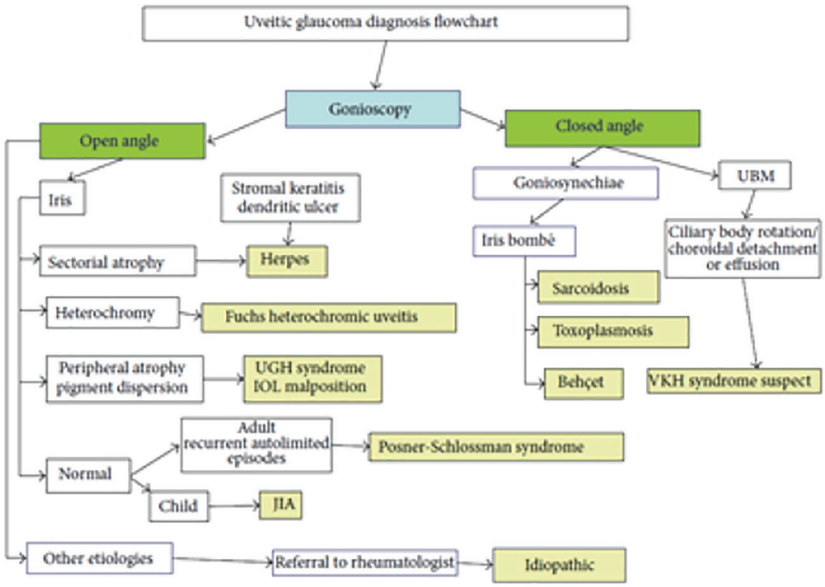

Figure 9. Uveitic glaucoma diagnosis flowchart.

inflammatory precipitates. Additionally, direct inflammation of the trabecular meshwork and effect of corticosteroids on the trabecular meshwork may contribute to the SG of UG. Up to one-third of patients with uveitis treated with corticosteroids may have elevated IOP.[9]

Epidemiologically, most cases of UG are found in the adult age group between the 3-4th decade of life with an average age of 41.1 years and women have a higher prevalence than men.[10] In this case the patient was a male, 18 years old with a history of uveitis and previous use of topical corticosteroids.

Common symptoms of UG are eye redness, pain, blurry vision, photophobia, with watery complaints. Unilateral signs of UG lead to specific types, for example; *Fuchs Heterochromic Iridocyclitis* (FHI), was described as the triad of anterior uveitis, heterochromia, and cataract. The uveitis is chronic and low-grade without synechiae and with typical small stellate keratic precipitates and FHI is considered to have a higher risk of failure when associated with UG.[9,11] *Posner-Schlossman Syndrome* (PSS) is typically with unilateral recurrent episodes of mild cyclitis with a few fine keratic precipitates and elevated IOP in the range of 40 to 60 mmHg during episodes that usually resolves spontaneously,[12] although bilateral symptoms appear in the case of UG. Detail examination must be carried out to identify.[6]

Recent improvements in the clinical evaluation of the optic nerve and retinal nerve fiber layer (RNFL), such as scan laser ophthalmoscopy and optical coherence tomography (OCT), ultrasound biomicroscopy (UBM), anterior segment OCT and laboratories to obtain causes of inflammatory).[13] In this case, ultrasound was performed to evaluate the posterior segment and found turbidity in the vitreous.

The first step in UG management is controlling the inflammation, which minimizes the adverse effects of the inflammatory process. In some cases, controlling the uveitis may help reduce the IOP. Patients treated aggressively with anti-inflammatory therapy have a better clinical course of the UG. Corticosteroids are the preferred anti-inflammatory drug used to treat uveitis. It is advisable to start with strong topical corticosteroids such as prednisolone acetate, but periocular or systemic corticosteroids may be required in refractory cases.[14] Cycloplegic agents must be combined with anti-inflammatory drugs in several acute uveitic episodes, with the exception of FHI and PSS. The case of peripheral anterior synechiae with permanent angle closure, given mydriatic and cycloplegic agents is contraindicated. Antiviral treatments must be prescribed to treat specific etiologies such as herpes simplex or varicella zoster.[14]

In UG, the effectiveness of antiglaucomatous medical treatment may vary in the presence of inflammation or when combined with mandatory steroid treatment. Topical beta-blockers and carbonic anhydrase inhibitors (CAI)s have been considered the first-line agents to treat increased IOP associated with uveitis. *Alpha-2 adrenergic*

agonists groups such as brimonidine are considered as the second line of medical choice for anti-glaucoma GU which are often combined with other groups. *Prostaglandine analogue* (PGAs) can be used as first-line therapy in UG with controlled uveitis.[13] Cholinergic agents or miotics are generally contraindicated in the case of UG because they have the potential to cause an exacerbation of inflammation related to the disruption of the aqueous-blood barrier stability and trigger the formation of synechiae.[15] In these patient, the therapy are combination of anti-inflammatory medication such as P-Pred, atropine eye drop and metilprednisolon oral, anti-glaucomatous medication such as timolol eye drop, glaucon and aspar-K oral, with levofloxacin eye drop as antibiotics.

If medical management fails to control IOP, surgery is the next step. Example for *Glaucoma filtration surgery* such as trabeculectomy is indicated if IOP conditions cannot be controlled with maximal medical treatment. Nd:YAG laser peripheral iridotomy (LPI) 532-nm Q-switched are indicated in cases of iris bombé and angle closure secondary to posterior synechiae. In UG, LPI has an increased incidence of failure. Those investigators recommended do several LPI to anticipate pupillary block due inflammation.[16]

Trabeculectomy surgical intervention combined with mitomycin or 5-Fluorouracil (5-FU) is a broad choice for management of elevated IOPs including cases of UG with the conditions of afakia, neovascularization or poor vision by minimizing intraocular inflammation before proceeding with invasion procedures in UG cases.[5] Sclerectomy procedure is a glaucoma filtering-nonpenetrating surgery has become an alternative by making 2 scleral flaps (superficial and deep) and implanting a special device under the flap to drain water into the subconjunctival space. Another surgical technique, namely Glaucoma Drainage Implant (GDI), is a very popular technique performed in various health centers with 2 categories of GDI; valved (Ahmed glaucoma implant) and nonvalved (Molteno glaucoma implant and Baerveldt glaucoma implant) either as the primary choice of surgery or if trabeculectomy fails. The success rate of this device is satisfactory in reducing IOP and reducing the use of anti-glaucoma drugs, on average without being found without losing the ability to perceive light, chronic hypotony, or phthisis bulbi.[17]

Other techniques include peripheral iridectomy with or without posterior synechiolysis and goniosynechialysis, canaloplasty is a technique to modify the schlemm canal by using circumferential viscodilation and tensioning canals using microcatheter, thermal trabectome cauter in the ablasio-interno trabeculectomy procedure, or goniotomy which is recommended procedure for refractory glaucoma associated with chronic juvenile glaucoma with choice of interventions in the case of GU to control IOP.[18]

Cataract is very common in patients with uveitis. The optimal time to do cataract surgery with GU is still under debate. Cataract surgery can interfere, but concomitant glaucoma and cataract surgery also increase the risk of postoperative inflammation and may be less successful than glaucoma filtration surgery alone. The use of anti-inflammatory drugs is stronger and longer can be considered in postoperative conditions if uveitis recurs.[13] In this case, the patient undergoing surgical treatment of cataract extraction with phacoemulsification technique with NdYag laser membranectomy and capsulotomy for postoperative management. Determination when surgery is performed involves the infection and immunology division, which is where the inflammatory conditions are very minimal due to the influence of anti-inflammatory drugs in order to reduce the post-operative side effects that may occur.

In general, UG has a good prognosis, but this condition is greatly influenced by complications of damage to the intraocular structure which is related to the possibility of IOP elevation and requires therapy to control IOP. There was no evidence of the relationship between the severity of uveitis and glaucomatous damage, giving aggressive therapy early, stable improvement of the condition between the inflammatory process and the prevention of glaucomatous neuropathy will be maintained in most cases.[19]

CONCLUSION

Uveitis glaucoma is a disease with a high recurrence rate. The management of UG often presents a complexity in practice both in identifying diseases and the follow-up of treatment responses that often require collaborative management from various departments. Many medical therapies and surgical interventions have been developed and have begun to be considered as therapeutic modalities for UG cases. More research and clinical trials are needed to explain the role and relationship between different anti-inflammatory agents with IOP-lowering therapies and surgical interventions to UG cases. The continue improvements with management approach based on developing empirical experience although much controversy and evidence based always provide opportunities for improved management of patients with UG to

reduce symptoms and conditions especially at long-term follow-up.

CONFLICT OF INTEREST

None

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