

Hasil Turnitin Acute Primary Angle

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Submission date: 09-May-2025 04:03PM (UTC+0700)

Submission ID: 2667976976

File name: AcutePrimaryAngle.pdf (301.57K)

Word count: 3604

Character count: 19806



ACUTE PRIMARY ANGLE CLOSURE: CASE REPORT

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ABSTRACT⁸

Acute primary angle-closure is an ocular emergency caused by the rapid increase in intraocular pressure due to outflow obstruction of aqueous humor. The major predisposing factor is the structural anatomy of the anterior chamber, leading to a shallower angle between the iris and the cornea. The medical treatment for acute angle-closure glaucoma aims to decrease the intraocular pressure by blocking the production of aqueous humor, increasing the outflow of aqueous humor, and reducing the volume of the aqueous humor. Iridotomy laser should be chosen to open the angle blockage, while trabeculectomy is occasionally performed on eyes that do not respond to medical therapy. Aims to comprehensively describe the management and clinical course of a patient with primary acute angle closure (PAAC). This report also aims to improve clinicians' understanding of the importance of early diagnosis, appropriate treatment, and long-term follow-up in preventing complications that can lead to permanent vision loss. This study is a descriptive study with a case report design. Data were obtained retrospectively from the medical records of patients diagnosed with acute primary angle closure at Christian University Hospital, Jakarta. Information collected includes patient identity, anamnesis, physical and supporting examinations, diagnosis, therapeutic interventions, and clinical outcomes during treatment and follow-up. The data were then analyzed qualitatively and presented narratively according to the clinical case report format. A 51-year-old woman who developed an acutely painful eye with loss of visual acuity a day before admission. She reported a sensation of pressure and blurry vision in her right eye with no apparent exacerbating factors. The first examination was performed on Uncorrected Visual Acuity (UCVA), where the UCVA was measured as 1/60 OD and 0.4 OS. Slit-lamp examination of the right eye showed moderate conjunctival injection, corneal edema, and pigment deposits on the corneal endothelium. The anterior chamber of both eyes was shallow; gonioscopy findings in the right eye were Schwalbe lines in four quadrants and three in the left. The crystalline lens was clear, and the IOP was measured as 67 mmHg OD and 16 mmHg OS. Acute Primary Angle Closure is an emergency condition that challenges the eye doctor to reduce IOP as soon as possible. The failure of maximum medication to reach the IOP below could lead to the condition to surgery. Even Trabeculectomy has several cautions to consider in this case, but it succeeds in lowering IOP and increasing the patient's visual acuity. Close monitoring is required to avoid the risk of postoperative complications.

Keywords: acute angle closure glaucoma; painful eye; trabeculectomy; visual loss

How to cite (in APA style)

Christine, R. N. (2025). Acute Primary Angle Closure: Case Report. Indonesian Journal of Global Health Research, 7(4), 349-356. <https://doi.org/10.37287/ijghr.v7i4.6332>.

INTRODUCTION¹³

Acute angle closure attack is an emergency condition in the eye where there is a closure of the iridocorneal angle, which is appositional on the trabecular meshwork due to the pupillary block mechanism (Sun et al., 2017). Acute glaucoma attacks are characterized by redness in the eye, accompanied by severe pain and a sudden decrease in visual acuity (Kear et al., 2021; Zha et al., 2021). Symptoms can be accompanied by nausea and vomiting. Sun, 2017 wrote that angle-closure glaucoma itself is estimated to reach 23 million cases in 2020 and the figure could increase to 32 million cases in 2024. The incidence of acute glaucoma attacks occurs most in the Inuit and Asian populations (Sun et al., 2017). In Indonesia, the Riskedas survey found that the prevalence of glaucoma was 2.9%, and this included acute glaucoma attacks (Tobing, 2014). Primary Acute Angle-Closure Glaucoma (PAACG) is a form of ophthalmological emergency characterized by a sudden increase in intraocular pressure (IOP) due to the sudden closure of the anterior chamber angle of the eye. This condition disrupts the flow of aqueous humor from the posterior chamber to the anterior chamber, which ultimately

triggers an increase in IOP and progressive damage to the optic nerve if not treated immediately (Anwar & Turalba, 2017).

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PAACG often occurs in individuals with certain anatomical predispositions, such as a shallow anterior chamber, narrow anterior chamber angle, thickened lens, or relatively small eyeball size (hypermetropia). The incidence is higher in Asian populations, women, and elderly individuals. In addition, triggers such as emotional stress, use of mydriatic drugs, or being in a dimly lit environment can also precipitate acute attacks (Kear et al., 2021). The clinical manifestations of this condition usually include severe eye pain, blurred vision, headache, nausea, vomiting, and red eyes. Prompt diagnosis and prompt treatment are essential to prevent permanent optic nerve damage and vision loss. Initial therapy includes medical lowering of IOP, followed by definitive measures such as laser iridotomy. In this case, the author describes an interesting case, where an acute attack of glaucoma occurred in a 51-year-old woman, and with eye pressure-lowering drugs, there was no improvement, especially in the target intraocular pressure. The next option was laser iridotomy, but the patient had difficulty accessing health facilities with laser iridotomy, so it was decided to perform trabeculectomy. One day after surgery, the intraocular pressure dropped and reached the target 2 weeks later. The patient's visual acuity increased, and the patient continued control for 1 month without any complications. This case report aims to describe the clinical management of a patient with acute primary angle-closure glaucoma, emphasizing the importance of early detection, appropriate management, and the challenges that may be encountered in daily clinical practice. The purpose of this research is to : to comprehensively describe the management and clinical course of a patient with primary acute angle closure (PAAC). This report also aims to improve clinicians' understanding of the importance of early diagnosis, appropriate treatment, and long-term follow-up in preventing complications that can lead to permanent vision loss.

METHOD

This study is descriptive in the form of a case report that aims to systematically document the clinical course, diagnosis, management, and outcome of one patient with a diagnosis of primary acute angle closure. This design was chosen to highlight important clinical aspects that can be used as lessons for daily medical practice, especially in the field of ophthalmology. The research subject is A 51-year-old woman domiciled in the Tangerang district who came with a primary complaint of sudden pain and blurring in the right eye since 1 day ago. The patient also had nausea, vomiting, and a right-sided headache with a pain scale of 8/10. The pain was felt to be very disturbing and did not decrease with rest. Data were analyzed descriptively and presented in chronological narrative form, tables, and figures when available. Results were then compared with relevant literature to assess the appropriateness of management and clinical outcomes.

RESULT

Case Report

A 51-year-old woman domiciled in the Tangerang district came with the main complaint of sudden pain and blurry right eye since 1 day ago. The patient also felt nauseous, vomited, and had a headache on the right side with a pain scale of 8/10. The pain was felt to be very disturbing and did not decrease with rest. Vision felt foggy and very disturbing, so that she could only see approximately within a distance of 1 meter. The patient also complained of nausea accompanied by vomiting and headaches that did not improve with painkillers purchased without a prescription at the shop. This was the first time the patient had experienced complaints like this. The patient had been to the emergency room 1 day earlier to be given painkillers and anti-vomiting drugs, but the complaints did not decrease.

Past Medical History:

The patient has never experienced complaints like this before, a history of taking long-term steroid medication, a history of diabetes mellitus, and a history of trauma around the eyes are denied.

Family Medical History:

No family member of the patient has the same complaints as the patient at the time, the patient also does not know the history of glaucoma in the family. General status examination was within normal limits. On ophthalmological examination, visual acuity was found in the right eye to be 1/60 and in the left eye 0.4. Intraocular pressure in the right eye was 67 mmHg and in the left eye 16 mmHg. On examination of the right palpebra, hyperemia with mild spasm was found. On examination of the anterior segment of the right eye, corneal edema was found, with COA VH II accompanied by flare cells. Glaucoma flecken was also found in the lens of the right eye. The posterior segment of the right eye could not be evaluated. On the left eye, visual acuity was found in the left eye 0.4, shallow COA with VH II, IOP 16 mmHg, and posterior segment CD ratio 0.4. Gonioscopy on the right eye showed Schwalbe Line in all four quadrants, while the left eye showed Schwalbe Line in the nasal, temporal, and inferior quadrants.

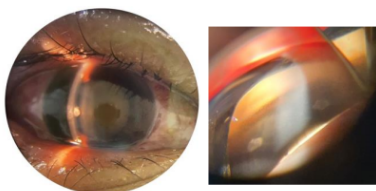


Figure 1. Anterior segment photo and gonioscopy of the right eye.

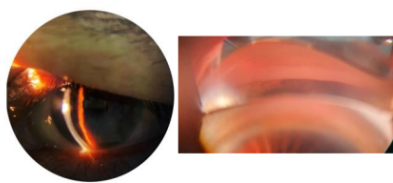


Figure 1. Anterior segment photo and gonioscopy of the left eye

The patient was then diagnosed as OD acute primary attack / Acute Primary Angle Closure and OS Primary Angle Closure. Initial therapy in this patient was hospitalization for intravenous mannitol infusion preceded by urea and creatinine examination. During treatment, the patient received 20% Mannitol as much as 300 cc intravenously, Tramadol 100mg IV, Vometa tablet 3x1, Lansoprazole 2x1 capsule, Glauseta tablet 3x250 mg, Aspar-K tablet 1x1, Mefenamic Acid 500mg tab 3x1, Timolol 0.5% ED 2x1 ODS and Polydex ED 4x1 OD. One hour after administration of mannitol, intraocular pressure dropped to 54 mmHg and the patient said the pain began to decrease although vision was still blurry. After 3 days of treatment, intraocular pressure dropped to 43 mmHg and there was still intermittent pain in the eye. The patient was referred for Laser Peripheral Iridotomy (LPI) to another hospital that has this facility but the patient refused. Therefore the patient was planned to undergo trabeculectomy.

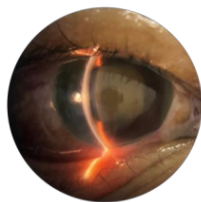


Figure 3. Pre-operative anterior segment photo of trabeculectomy OD



Figure 4. OD Durante trabeculectomy surgery

Before the patient underwent trabeculectomy, the patient was given a preoperative mannitol infusion and an intraocular pressure of 42 mmHg was obtained. Surgery was performed under sedation by an anesthesia colleague. The surgical steps were conjunctival peritomy in the superior limbus area, after the bleeding was controlled with hand cauter, 5-FU application for 2 minutes, a scleral flap was made measuring 4x2 mm, anterior chamber paracentesis at 11 o'clock, preplaced suture, trabeculectomy, peripheral iridectomy and then scleral and conjunctival closure. The first day after trabeculectomy, the pain in the eye **at 6** a decreased but the vision was still blurry. On ophthalmological examination, the right eye visual acuity was 1/300. The right eye intraocular **pressure** was 19 mmHg. On examination of the right palpebra, spasm was found. On examination of the anterior segment of the right eye, the conjunctiva was **found** to have diffuse bleb, conjunctival injection, and paracorneal injection. Corneal edema has decreased, mi**d** dilated pupil with COA VH II accompanied by flare cells. Glaucomaflecken was also found **in the right eye** lens. The **posterior segment of the right eye** could not be evaluated. The patient was given additional medication after trabeculectomy in the form of Ciprofloxacin tab 2x500 mg, Mefenamic Acid tablet 3x500mg, Acetazolamide tab 2x250 mg, Aspar-K tab 1x1, Timolol 0.5% ED 2x1 OD, and Polidex ED 6x1 OD. The patient was hospitalized for 1 day then sent home and advised to have a 1-week check-up.

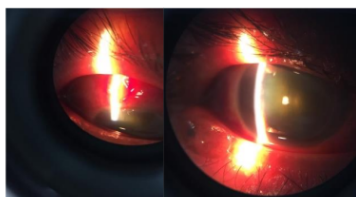


Figure 5. Post-operative OD and Bleb image H+1 Trabeculectomy

After 1 week, the patient returned to the eye clinic with complaints that the eye was no longer painful and the vision felt brighter. On examination of vision, it was 2/60, and IOP was 9 mmHg. On examination of the anterior segment of the right eye, conjunctiva with diffuse

bleb, conjunctival injection, and paracorneal injection was found. Corneal edema had decreased, pupil dilation was 7 mm in diameter with CO₂ VH II, accompanied by flare cells that had decreased. Glaucomaflecken was also found in the right eye lens. The posterior segment of the right eye CD ratio was 0.4, cupping +, there were no abnormalities in the retina, and a/v retina 2:3. All post-trabeculectomy medications had been stopped. For the drugs that were continued, only Timolol ED 0.5% 2x1 ODS, and Polidex 4x1 OD (Tapering off until 4 weeks after the procedure).

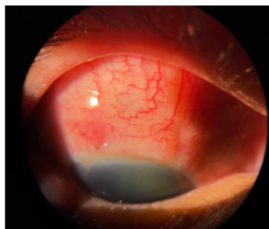


Figure 6. Bleb Diffuse OD accompanied by conjunctival injection post-operatively 1 week

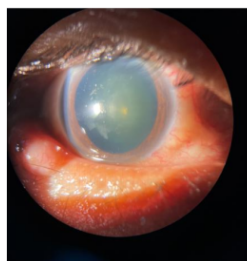


Figure 7. Post op right eye 1 week trabeculectomy

DISCUSSION

Acute primary angle closure occurs when there is a sudden increase in intraocular pressure due to blockage of the trabecular meshwork by the iris. Several risk factors can affect the configuration of the anterior chamber, namely 1) Race, where the acute form is more common in white people and the chronic form is more common in African and Asian people. 2) Biometry, patients with primary angle closure have a small and dense anterior segment and short axial length. Anterior chamber depth measuring less than 2.5 mm is considered likely to trigger acute attacks. 3) Family history, especially in the relationship of "first degree relatives". 4) Refractive Disorders, Hypermetropia conditions can trigger acute attacks. 5) Age. There is an increased incidence of primary angle closure attacks at age over 40 years. (Anwar & Turalba, 2017; Prum et al., 2016; Tham et al., 2014)

The pathophysiology in this case occurs due to pupil block. Where there is aqueous humor flow from the posterior chamber to the anterior chamber through the disturbed pupil and the blockage creates a pressure difference in the anterior and posterior chambers where the IOP of the posterior chamber is greater than the anterior chamber. (MANSBERGER & Sanders, 2025; Tham et al., 2014). If this pupil block increases, the iris will be pushed forward or often called iris bombans (iris bombe). If this condition occurs suddenly and severely, an acute attack occurs which is called acute angle closure, if the angle closure is partial and rather severe, intermittent or subacute angle closure will occur and if it occurs gradually and the

increase in IOP increases slowly, it will develop into chronic angle closure. (Anwar & Turalba, 2017; Prum et al., 2016; Talluto et al., 1998). In acute angle closure, the anterior chamber is closed by iridocorneal apposition and can be reversible, while chronic angle closure is irreversible anterior chamber closure (MANSBERGER & Sanders, 2025). The main goal of therapy for primary angle closure is early initiation of lowering eye pressure to reduce pain and improve corneal edema.

In conditions of acute increase in intraocular pressure, there is thickening of the Retinal Nerve Fiber Layer (RNFL) for several days, then it begins to decrease in thickness within 3 months as long as there is no adequate therapy and the pressure remains high (Aretha & Nugrahani, 2023; Kear et al., 2021). This begins due to axonal swelling, the resolution stage, and begins to enter the atrophy stage. According to the American Academy of Ophthalmology, the choice of medical treatment for this case is oral or intravenous hyperosmotic agents, topical beta-adrenergic antagonists, alpha-adrenergic agonists, and topical or oral carbonic anhydrase inhibitors (Al-Essa & Turjoman, 2021; Sambhara & Aref, 2014). Laser iridotomy surgery can cause angle widening and flattening of the iris (flattening), before performing iridotomy, administration of hyperosmotic agents is needed to clear the cornea. If efforts to lower IOP are difficult, then the choice of action can be attempted laser iridotomy in conditions of corneal edema or COA paracentesis (Supit, 2023; Yang et al., 2013). In some cases, trabeculectomy is an unavoidable option, but it must be remembered that there are high risks. The most feared risks are postoperative aqueous misdirection, intraretinal hemorrhage, and shallowing of the anterior chamber angle (Baskaran et al., 2013; Flores-Sánchez & Tatham, 2019; Suzuki, 2023)

In the case discussed this time, the patient lives far from the hospital and has difficulty getting a referral to a hospital equipped with a laser iridotomy machine. (George et al., 2022; Marchini et al., 2015). Hyperosmotic agents and IOP-lowering drugs have been given maximally for five days, but the expected IOP reduction did not occur. Trabeculectomy was performed by performing paracentesis at the beginning and preplacing a suture before sclerotomy to prevent sudden flattening of the anterior chamber when peripheral iridotomy was performed (Kear et al., 2021; Sun et al., 2017).

CONCLUSION

This case illustrates the importance of early detection and management of acute primary angle-closure glaucoma. Careful clinical examination and timely intervention, including intraocular pressure-lowering medications and peripheral laser iridotomy, are critical in preserving vision. Evaluation of the contralateral eye is also essential to prevent future attacks.

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