

Original Article/ພິພິດຕິດຕັດ

Outcome of the Fellow Eye of Acute Primary Angle Closure after Prophylactic Laser Peripheral Iridotomy

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Objective: To study the long-term outcome of the fellow eyes of patients with acute primary angle closure (APAC) who underwent only prophylactic laser peripheral iridotomy (LPI).

Design: Retrospective, noncomparative, interventional case series.

Participants: Ninety-seven consecutive patients with APAC who were treated with LPI at presentation to the Department of Ophthalmology, Faculty of Medicine, Ramathibodi Hospital from January 1997 through December 2005.

Methods: The patients' medical records were reviewed and the data on the presenting features of the fellow eye were obtained. The subsequent long-term intraocular pressure (IOP) outcome after LPI was analyzed. A rise in IOP during follow-up was defined as an IOP over 21 mmHg requiring treatment by medication or surgery.

Main outcome measures: Incidence of acute angle closure and IOP in the fellow eye of APAC.

Results: The mean follow-up period was 47.4 months (range, 9-100 months). Of the 97 patients, none had APAC developed after prophylactic LPI. Among the fellow eyes, 82 eyes (84.5%) were successfully treated with LPI alone without additional glaucoma treatment. Ten eyes (10.3%) had IOPs of 21 mmHg or less at presentation, but a rise in IOP developed despite the presence of a patent LPI. Five eyes (5.2%) had signs of preexisting chronic angle closure glaucoma at presentation and required further glaucoma treatment after LPI. There was no significant complications from the LPI procedure in any studied eyes.

Conclusion: In our study, prophylactic LPI was safe and effective in preventing APAC in the fellow eyes. In addition, this treatment helped to prevent long-term IOP rise in the majority of eyes (84.5%). Because a significant proportion of fellow eyes (10.3%) had IOP rising despite the presence of a patent LPI, close monitoring of the fellow eye in patients with APAC is suggested. **Thai J Ophthalmol 2006; July-December 20(2): 179-183.**

Keywords: acute primary angle-closure, laser peripheral iridotomy

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Acute primary angle-closure (APAC) is a type of glaucoma with classic clinical presentation and straightforward diagnosis. Patients need an early diagnosis and require urgent treatment. The underlying mechanisms of primary angle-closure (PAC) is an anatomical disorder. The previous reports showed that the fellow eyes were found to have a high incidence of angle-closure and peripheral anterior synechiae¹⁻⁵. If left untreated, there is a high risk of developing angle closure glaucoma. Lowe¹ documented that without treatment, 58 of 113 patients experienced an acute attack in the contralateral eye, a third of these occurring in the first year. Surgical peripheral iridectomy (SPI), performed prophylactically in the fellow eye, was found to be effective in preventing APAC.^{1,3,6,7} However, laser peripheral iridotomy (LPI) has largely superseded SPI as the definitive treatment of choice in both the management of APAC and as a prophylactic procedure in the fellow eye, because it is noninvasive and can be performed quickly and safely on an outpatient basis.

Ang, et al⁸ reported the effectiveness of prophylactic LPI in preventing APAC in the fellow eye of Asian. This study was conducted to assess the long-term outcome of the fellow eye of patients with APAC at presentation who were treated with LPI. The studied principal parameters were the incidence of APAC and the intraocular pressure (IOP) outcome after prophylactic LPI.

Patients and Methods

A retrospective review of medical records of consecutive patients with APAC presented at the Department of Ophthalmology, Faculty of Medicine, Ramathibodi Hospital, from January 1, 1997 through December 31, 2005 was conducted.

Definitions of APAC

1. Presence of the following symptoms : ocular or periocular pain, nausea and/or vomiting, sudden onset of blurred vision or haloes around light
2. Presenting IOP of more than 21 mmHg with ciliary injection, corneal edema, and middilated unreactive pupil
3. Presence of an occluded angle in the affected eye on gonioscopy

Patients with secondary angle closure, such as lens-induced glaucoma, neovascular glaucoma, or uveitic glaucoma, were excluded.

Data collection

A total of 97 fellow eyes from 97 APAC patients were included in the study and the medical records were reviewed. The following data were collected ; age, gender, duration of symptom, presenting IOP and gonioscopic findings.

The initial treatment for APAC was conducted for the affected eye at the discretion of the managing ophthalmologist and the fellow eye was treated with 2% pilocarpine every 6 hours as prophylaxis in preventing an acute attack until prophylactic LPI.

The outcome of the fellow eyes following LPI was defined as "a rise in IOP" of more than 21 mmHg and subsequently required medical or surgical treatment.

Results

Of the 97 patients, 90 (92.8%) were females and 7 (7.2%) were males. The mean age was 61 years (range, 41-81 years). The mean follow-up period was 47.4 months (range, 9-100 months). The mean presenting IOP of the studied eye was 14.8 mmHg (range, 10-25 mmHg). Seventy-two eyes (74.2%) had presenting IOPs of 21 mmHg or less, whereas 25 eyes (25.8%) has IOPs of more than 21

mmHg at presentation. All of these eyes were asymptomatic. However, on gonioscopy their angles were narrow and occludable. Fifteen eyes (15.5%) had closed angles with peripheral anterior synechiae on gonioscopy.

Acute angle closure did not develop in any fellow eye after prophylactic LPI, and the iridotomies remained patent throughout the follow-up period. No major complications from the procedure were observed.

Of the 97 fellow eyes that underwent LPI, 82 eyes (84.5%) were successfully treated with LPI alone and had no rise in IOP during follow-up. There were altogether 15 fellow eyes (15.5%) in which LPI was insufficient for long-term IOP control. Of these, 10 eyes (10.3%) had IOP of 21 mmHg or less on presentation, but experienced a rise in IOP on follow-up despite the presence of a patent LPI. In 8 of these patients, IOPs were controlled with medication, whereas two patients underwent glaucoma filtering surgery (GFS). Gonioscopy of these eyes showed that they had narrow creeping angles. The remaining five eyes (5.2%) that required further treatment because of uncontrolled IOP were those with signs of preexisting chronic angle closure glaucoma at the time of first presentation. LPI was unable to control IOP in these patients, one required further medical treatment, and the rest underwent GFS after failed medical treatment.

Discussion

Asian eyes are thought to have a genetic and anatomic predisposition to develop angle closure.^{9,10} Because ocular dimensions are usually highly correlated in the two eyes¹¹, the contralateral eyes of patients with APAC may have a significant risk to develop some form of primary angle-closure.^{1,4,8} Similar to the previous studies^{1,3,8}, in our study, LPI in the fellow eye of patients with APAC is effective as a prophylaxis against the development of APAC in the long term. No medical regimen is entirely protective against APAC.⁸ Pilocarpine may even have a role in the development of APAC in Asian eyes⁹, because it has been described to cause anterior chamber shallowing^{12,13} and increase relative pupillary block.^{14,15} It is thus advisable to perform prophylactic LPI as soon as possible in the fellow eye.

In our study with 82 eyes (84.5%) have no subsequent rise in IOP after LPI. This result is similar to the previous report from Ang et al.⁸ However, there were 15 fellow eyes (15%) that had IOPs of 21 mmHg or less initially, but later experienced a rise in IOP on follow-up that required treatment despite the presence of a patent LPI. Gonioscopy showed that chronic or creeping angle closure had developed in these eyes.⁹ Angle crowding by progressive thickening of the lens or a plateau iris configuration may have played a role in the pathogenesis of this chronic angle closure. Because most cases of chronic rise in IOP were detected in the first year after initial presentation, close monitoring of the fellow eye is advised in the follow-up of patients with APAC.

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การติดตามผู้ป่วยต้อหินมุมปิดเฉียบพลันที่ได้รับการรักษาโดยเลเซอร์ iridotomy ในตาข้างที่ไม่แสดงอาการ

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บทคัดย่อ

การศึกษาจากเวชระเบียนของผู้ป่วยต้อหินมุมปิดเฉียบพลันที่ได้รับการทำเลเซอร์ iridotomy ทั้ง 2 ตา โดยศึกษาในตาข้างที่ไม่แสดงอาการ จำนวน 97 ราย ในภาควิชาจักษุวิทยา คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี ตั้งแต่เดือนมกราคม 2540 ถึงเดือนธันวาคม 2548 พบว่าผู้ป่วยทุกรายไม่มีอาการต้อหินมุมปิดเฉียบพลันเกิดขึ้นเลย โดยพบผู้ป่วยถึงร้อยละ 84.5 ที่การรักษาโดยเลเซอร์ iridotomy เพียงอย่างเดียวสามารถป้องกันการเกิดภาวะความดันลูกตาสูงและ/หรือต้อหินได้ ในขณะที่มีผู้ป่วยร้อยละ 15.5 ที่ยังจำเป็นต้องได้รับการรักษาโดยการหย่าและ/หรือผ่าตัดในการควบคุมความดันลูกตา ดังนั้นการติดตามผู้ป่วยต้อหินมุมปิดเฉียบพลันโดยทำการตรวจตาข้างที่ไม่แสดงอาการด้วยอย่างต่อเนื่องภายหลังการรักษาโดยเลเซอร์ในระยะยาวเป็นสิ่งจำเป็น **จักษุเวชสาร 2549; กรกฎาคม-ธันวาคม 20(2): 179-183.**

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