Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com/sjams/

OPEN ACCESS

Paediatric Surgery

Efficiency YAG Laser PI (Peripheral Iridotomy) in Management of Glaucoma Patients in Bangladesh

Dr. Md. Kamrul Islam[1*], Dr. Md. Nasir Uddin[2], Dr. AKM Shamsuddin[3]

[1]Assistant Professor, (Eye), Patuakhali Medical College, Patualhali, Bangladesh
[2]Assistant Professor, (Eye), Sher e Bangla Medical College, Barishal, Bangladesh
[3]Assistant Professor, Paediatric Surgery, Sir Solimullah Medical College, Dhaka, Bangladesh

DOI: 10.36347/sjams.2020.v08i06.033 | **Received:** 18.06.2020 | **Accepted:** 25.06.2020 | **Published:** 27.06.2020

***Corresponding author:** Dr. Md. Kamrul Islam

Abstract **Original Research Article**

Objective: In this study our main goal is to evaluate the efficiency of YAG laser PI (peripheral iridotomy) in management of glaucoma patients in Bangladesh. ***Method:*** This cross-sectional study was done in the in the National Institute of Ophthalmology & Hospitalfrom March 2019 to March 2020.A total of 180 consecutive patients were included. On the basis of Academy of Ophthalmologyprimary Angle Closure glaucomapreferred practice pattern patients were sub divided into three group: primary angle closure suspect (PACS) (#180° iridotrabecular contact [ITC], normal IOP and no optic nerve damage), n=60: primary angle closure (PAC) ($180° ITC with peripheral anterior synechiae [PAS] or elevated IOP, but no optic neuropathy), n=60; and primary angle closure glaucoma (PACG) ($180° ITC with PAS, elevated IOP and optic neuropathy, n=60. ***Result:*** during the study, 42% percent of the patients had undergone bilateral LPI.2% produced hyphema in 1st year, followed by 1% produced hyphema in 2nd year, no patients found in 3rd year. mean power used in primary angle closure glaucoma was 132±127.8.On the basis of Logmar chart, mean percentage of visual acuity where before treatment visual acuity of the primary angle closure suspect was 81%, which was 3% increased after treatment, 84%. ***Conclusion:*** From our study we can conclude that, laser iridotomy can be use as beneficial tool for the clinical treatment of early primary angle-closure glaucoma which can effectively reduce the intraocular pressure and improves the acuity level of patient. Early treatment by laser iridotomy may also reduce the risk rate to developprimary angle glaucoma.

Keyword: YAG laser PI (peripheral iridotomy), primary angle closure glaucoma, and primary angle closure.

INTRODUCTION

Glaucoma is a group of eye conditions that damage the optic nerve, the health of which is vital for good vision. This damage is often caused by an abnormally high pressure in eye. If the damage worsens, glaucoma can cause permanent vision loss or even total blindness within a few years [1].

Recent studies also have implicated low intracranial pressure (the pressure that surrounds the brain) as one of the risks for glaucoma [2-3].

YAG laser PI (peripheral iridotomy) has been widely used and accepted as a treatment for all forms of angle closure glaucoma in which there is a component of pupillary block and is used as a prophylactic treatment for angle closure suspects[1,2]. During ophthalmology residency training, the Accreditation Council for Graduate Medical Education (ACGME) currently recommends that all residents perform a minimum of 5 LPI procedures prior to graduation [3]. Although LPIs are generally considered safe, complications are known to occur. Complications include transient blurred vision, intraocular pressure (IOP) rise, dysphotopsia, hyphema, closure of the iridotomy and damage to other tissues [1, 2, 4].

In this study our main goal is to evaluate the efficiency of YAG laser PI (peripheral iridotomy) in management of glaucoma patients in Bangladesh.

OBJECTIVE

General objective

- To evaluatethe efficiency of YAG laser PI (peripheral iridotomy) in management of glaucoma patients in Bangladesh

Specific objective

- To detect clinical characteristics of patients.
- To identify complication rates by year of the patients.

METHODOLOGY

Type of study	**Cross sectional study.**
Place of study	National Institute of Ophthalmology & Hospital
Study period	March 2019 to March 2020
Study population	180 consecutive patients of primary angle closure, primary angle closure suspects and glaucoma who presented to the glaucoma services.
Sampling technique	Purposive

METHOD

- On the basis of Academy of Ophthalmology Primary Angle Closure Preferred Practice Pattern patients were sub divided into three group: primary angle closure suspect (PACS) (#180° iridotrabecular contact [ITC], normal IOP and no optic nerve damage), n=60: primary angle closure (PAC) ($180° ITC with peripheral anterior synechiae [PAS] or elevated IOP, but no optic neuropathy), n=60; and primary angle closure glaucoma (PACG) ($180° ITC with PAS, elevated IOP and optic neuropathy=60.Patient details such as age, sex, socioeconomic status was noted. A detailed history was taken regarding the duration and type of symptoms, systemic associations and treatment taken. Initial evaluation of the patients by history and clinical examination was performed and recorded in patients' data collection sheet.

STATISTICAL ANALYSIS

- Data were processed and analyzed using computer-based software SPSS (Statistical Package for Social Sciences) for windows version 22. Unpaired t-test was used to compare quantitative variables. Variables were expressed as range and mean ± SD. p value < 0.05 were taken significant. Students' t test, Pearson's correlation coefficient test, multivariate logistic regression analysis and Fisher's exact test as applicable.

RESULTS

In table-1 shows age distribution of the patients where most of the patients (47%) belongs to age group 50-60 years. The following table is given below in detail:

Table-1: Age distribution of the patients

Variable	**Distribution**	**Percentage (%)**
Age group	40-50	35
	50-60	47
	60-70	18

In figure-2 shows gender distribution of the patients where male was 70% and female was 30 %. Male patients were 58% higher than female. The following figure is given below in detail:

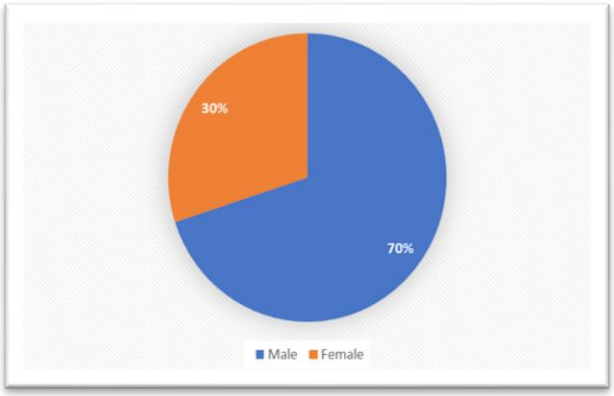

Fig-2: Gender distribution of the patients

In table-3 shows residential area distribution of the patients where 78% patients belong to urban area The following table is given below in detail

Table-3: Residential area distribution of the patients

Residential area	**%**
Urban	78%
Rural	12%

In table-3 shows clinical characteristics of the patients where 42% percent of the patients had undergone bilateral LPI. The following table is given below in detail:

Table-3: Clinical characteristics of the patients

Variable	**mean±SD, %**
% of eye: right eye left eye bilateral eye	23% 35% 42%
Mean baseline iOP (mmhg)	19.49±11.1
Mean post-laser iOP (mmhg)	14.31±7.8
Diagnosis Primary angle closure suspect,	34%
Primary angle closure	11%
Primary angle closure glaucoma	51%
Uveiticglaucoma	6%

In table-4 shows mean power use by year where mean power used in primary angle closure glaucoma was 132±127.8. The following table is given below in detail:

Table-4: Mean power use by year

Variable	1st year	2nd year	3rd year
Mean power used in primary angle closure suspect	76.0±57.9	76.0±57.9	72.3±68.2
Mean power used in primary angle closure	143.5±72.5	143.5±72.5	87.9±41.1
Mean power used in primary angle closure glaucoma	87.9±41.1	136.6±86.4	132±127.8

In figure-3 shows complication rates by yearwhere 2% produced hyphema in 1st year, followed by 1% produced hyphema in 2nd year, no patients found in 3rd year. The following figure is given below in detail:

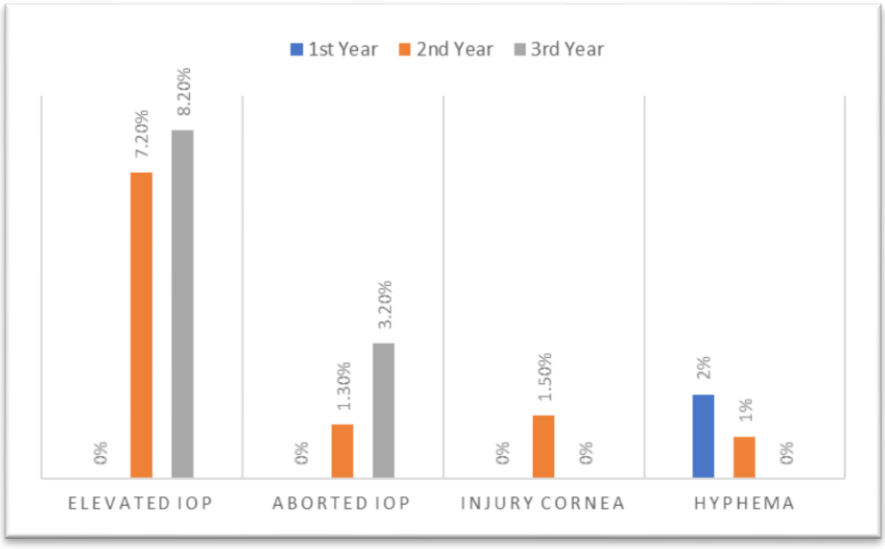

Fig-3: Complication rates by year

In figure-4 shows visual acuity of the patientswhere on the basis of Logmar chart, mean percentage of visual acuity where before treatment visual acuity of the primary angle closure suspect was 81%, which was 3% increased after treatment, 84%.The following figure is given below in detail:

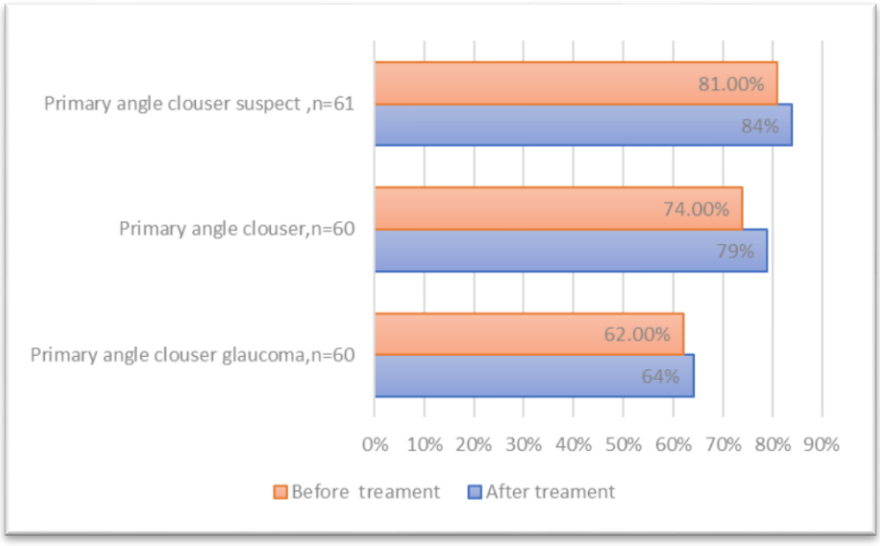

Fig-4: Distribution of the patients on the basis of visual acuity.

DISCUSSION

In our study most of the patients (47%) belongs to age group 50-60 years. Which is supported by other study where 50% patients belong to age group 50-60 years [5]. In this study 42% percent of the patients had undergone bilateral LPI. Which similar to many studies [6-7].

Where 2% produced hyphema in 1st year, followed by 1% produced hyphema in 2nd year, no patients found in 3rd year which is comparable to the 8.9%–34.6% reported in the literature [8-10].

When the overall complication rates between the groups were analyzed, there was no significant difference betweenthe groups. In one study reported that, inflammation, hyphema, corneal decompensation, cataract formation, IOP elevation, retinal detachments and cystoid macular edema is more common with higher total Nd: YAG energy use in LPI procedures [1, 2, 7].

During the study, on the basis of Logmar chart, mean percentage of visual acuity before treatment in primary angle closure suspect was 801%, which was 3% increased after treatment, 84%. But in primary angle closure glaucoma before treatment it was 62%, after treatment only 2% was increased. Which was quite similar to other studies [6-8].

Several studies over the years have shown that as IOP rises above 21 mm Hg, the percentage of patients developing visual field loss increases rapidly, most notably at pressures higher than 26-30 mm Hg. A patient with an IOP of 28 mm Hg is about 15 times more likely to develop field loss than a patient with a pressure of 22 mm Hg [7-9]. It is recommended that the iridotomies are created using the lowest laser energy necessary to minimize complications [10].

CONCLUSION

From our study we can conclude that, laser iridotomy can be use as beneficial tool for the clinical treatment of early primary angle-closure glaucoma which can effectively reduce the intraocular pressure and improves the acuity level of patient. Early treatment by laser iridotomy may also reduce the risk rate to develop primary angle glaucoma.

REFERENCES

1. Laser Peripheral Iridotomy for Pupillary-block glaucoma. American Academy of Ophthalmology. Ophthalmology. 1994;101(10):1749–1758.
2. Robin AL, Pollack IP. A comparison of neodymium: YAG and argon laser iridotomies. Ophthalmology. 1984;91(9):1011–1016.
3. Accreditation Council for Graduate Medical Education. ACGME oph-thalmology surgery case logs national data report: 2014–2015. 2015. Available from: http://www.acgme.org/Portals/0/PDFs/240_National_Report_Program_Version.pdf. Accessed May 1, 2017.
4. Vera V, Naqi A, Belovay GW, Varma DK, Ahmed II. Dysphotopsia after temporal versus superior laser peripheral iridotomy: a prospective randomized paired eye trial. Am J Ophthalmol. 2014;157(5):929–935.
5. Tarongoy P, Ho CL, Walton DS. Angle-closure glaucoma: the role of the lens in the pathogenesis, prevention, and treatment. Survey of ophthalmology. 2009 Mar 1;54(2):211-25.
6. Lewis R, Perkins TW, Gangnon R, Kaufman PL, Heatley GA. The rarity of clinically significant rise in intraocular pressure after laser peripheral iridotomy with apraclonidine. Ophthalmology. 1998;105(12):2256–2259.
7. Jiang Y, Chang DS, Foster PJ, He M, Huang S, Aung T, Friedman DS. Immediate changes in intraocular pressure after laser peripheral iridotomy in primary angle-closure suspects. Ophthalmology. 2012 Feb 1;119(2):283-8.
8. Schwartz LW, Moster MR, Spaeth GL, Wilson RP, Poryzees E. Neodymium-YAG laser iridectomies in glaucoma associated with closed or occludable angles. Am J Ophthalmol. 1986;102(1):41–44.
9. World Health Organization. Fact Sheet No. 282. Visual impairment and blindness June 2012. http://www.who.int/mediacentre/factsheets/fs282/en.Google Scholar
10. Alsagoff Z, Aung T, Ang LP, Chew PT. Long-term clinical course of primary angle-closure glaucoma in an Asian population. Ophthalmology. 2000 Dec 1;107(12):2300-4.