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Original article:

CLINICAL PROFILE OF PRIMARY ANGLE CLOSURE GLAUCOMA AND ROLE OF ND-YAG LASER PERIPHERAL IRIDOTOMY IN IT

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Abstract:

Background: Glaucoma is the leading cause of irreversible blindness worldwide and is second only to cataracts as the most common cause of blindness overall (14%).

Methods: A prospective observational study of 100 cases of primary angle closure glaucoma was conducted in our hospital. A detailed ophthalmic examination was performed. IOP was measured by Goldman applanation tonometry. Gonioscopy was done by Goldman 3 mirror lens. Nd.YAG laser was performed on all affected eyes & 82 fellow eyes of 100 patients & followed up for six months.

Results: There was improvement of 2 Shaffer's grades in 65%, 1 Shaffer's grades in 25% of patients. In my study 53 (92.2%) of 57 PAC (acute & sub-acute) patients had improved with stable visual acuities and good control of IOP at follow up visits. 21(71.4%) of 28 PACG (chronic) patients had good control of IOP at follow up visits with improvement of stable visual acuities. All the PACS eyes and the fellow eyes with prophylactic laser iridotomy were with good IOP control and visual acuities. 6 (3.4%) eyes out of 172 eyes which underwent iridotomies were found closed at follow up visits with shallow anterior chamber and narrow angles.

Conclusion: Nd.YAG laser iridotomy has now become treatment of choice in angle closure glaucoma. Efficacy of iridotomy depends on IOP at presentation, presence or absence of PAS, stage of the disease & pre-existing glaucomatous optic neuropathy. Effective screening & early intervention may improve visual outcomes.

Keywords: Primary angle closure glaucoma, intraocular pressure, gonioscopy, Nd. YAG laser iridotomy.

Introduction:

Glaucoma is the second leading cause of blindness worldwide & is especially common & morbidity causing among women and Asians. About 60 million persons are estimated to be affected by glaucoma.[1] Of these, an estimated 11.2 million cases are from the Indian subcontinent.[3]The most important modifiable risk factor being raised intra ocular pressure[2]. Primary angle closure (PAC) and PACG are now distinct entities reflecting the severity of the disease [(3,4).] Primary angle closure glaucoma is a condition in which elevation of IOP occurs as a result of obstruction of aqueous

outflow by partial or complete closure of the angle by peripheral iris. The diagnosis depends largely on examination of anterior segment and careful gonioscopy. It is the commonest type of glaucoma in Indian population.[5]

Nd-YAG Laser iridotomy has been shown to be an effective primary therapy for early PACG although advanced cases require further treatment with topical medication or filtration surgery. Unaffected fellow eyes of patients who have had angle closure have a 50% risk of developing an episode of angle closure if not treated with prophylactic iridotomy. Iridotomy acts by eliminating relative pupil block which is the mechanism underlying the development of angle closure.[6,7] Keeping these aspects in view, the present study aims to study primary angle closure glaucoma with respect to its presentation, management with Nd: YAG laser iridotomy and post laser complications.

Material and methods:

The present study was conducted in the department of Ophthalmology in a tertiary care hospital and medical college. The study is undertaken after approval from the institutional ethics committee.

Study design: It is a prospective observational study.

Study population: All the patients attending Ophthalmology OPD and casualty who complaints of Diminution of vision, Pain, redness in eyes,

shallow anterior chamber depth & who fulfill the inclusion and exclusion criteria & those who gave written informed consent over a period of 18 months, i.e., from, May of 2021 to October 2022 were included in this study.

Sample size: By using complete enumeration method, all cases which occurred in data collection period considering inclusion and exclusion criteria were included in my sample size.

1. **Inclusion criteria for the patients:**

- All cases attending ophthalmology OPD and casualty with signs and symptoms of primary angle closure glaucoma
- Patients with increased intra ocular pressure
- Patients with occludable angles as a measure of prophylaxis to prevent acute angles.

2. **Exclusion criteria:**

- Pediatric age group
- All secondary glaucomas
- Any patient who does not give consent to be part of study.

Results:

Total number of primary acute angle closure glaucoma patients who were treated with Nd YAG laser iridotomy was 100. These patients were grouped according to their age from below 30 years to 70 years with interval of 10 years.

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Table 1: Presenting symptoms of primary angle closure disease:

Symptoms	Males	Females	Total patients
Ocular pain	13	27	40
Headache	4	18	22
Halos around light	1	3	4
Diminution of vision	3	8	11
Nausea/vomiting	1	7	8
No symptoms	5	10	15
Total	27	73	100

Discussion:

In our study, most common presenting complaint was ocular pain (40%) followed by headache which was mainly concise to frontal area and sometimes generalized (22%). Other symptoms included diminution of vision (11%) and colored halos (5%), nausea and vomiting which was significantly more in female patients. (7 times more than in males). 15 patients had no specific symptoms suggesting glaucoma but had shallow anterior chamber and occludable angles on gonioscopy & were later diagnosed as PACS. There was a definite improvement of 1 to 2 Shaffer's grades of angle of anterior chamber. There was improvement of 2 Shaffer's grades in 65% of patients. Improvement of one Shaffer's grade was noted in 25%of patients and there was little or no improvement in Shaffer's grades in 10% of eyes with PAS in 3 quadrants of anterior chamber angle.

Nd-YAG laser iridotomy for the Primary Angle Closure Glaucoma was performed in our hospital during the period of 18 months i.e., May of 2021 to October 2022 after taking consent. All stages of glaucoma were treated and followed up during the study period. Average period of follow up was 6 months . Among the patients included in the study 73(73%) patients were females and 27(27%) were males indicating a 3:1 ratio of female: male preponderance. In our study most of the patients were 40 to 60 years of age group. Population based studies like the Vellore eye study(VES) also states that incidence of angle closure is more between 30-60 years group which is in concurrence with my study. Screening first-degree relatives is an effective way to detect glaucoma in a population as

family history of glaucoma is a significant risk factor. Angle closure glaucoma is commonly seen in hypermetropic eyes. Our study included 57(57%) with primary angle closure (acute and sub- acute), 28(28%) patients with primary angle closure with glaucomatous optic neuropathy, and 15(15%) primary angle closure suspects.[8]

Conclusion:

The outcome of the cases in this study was related to the stage of the disease at diagnosis. Once an acute attack has been controlled with anti-glaucoma medication, a Nd YAG laser iridotomy is indicated and it can be safely and successfully done to prevent the attack from recurring.

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