

Glaucoma Scenario in Kashmir Valley: A Hospital – Based Study

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Abstract: Glaucoma is the second most prevalent cause of vision loss worldwide. Prevalence is expected to rise from 60 million people worldwide in 2010 to 80million in 2020. Research has shown that the prevalence of glaucoma varies according to both geographical region & race.

Aim: The present study was undertaken to find out the prevalence of glaucoma and its subtypes in a hospital based population in Kashmir valley.

Materials and methods: A prospective, observational study of all the patients referred to the glaucoma clinic of the post graduate deptt. of ophthalmology, GMC, Srinagar was undertaken for a period of one year between June 2011-2012. All the patients underwent a comprehensive ocular examination which included: Demographic data, Detailed history and Comprehensive ocular examination. Slit-lamp was the backbone of our examination.

Observations: A total of 40,012 patients attending the ophthalmology OPD of our hospital were screened for glaucoma from June 2011 to June 2012 out of which 1600 patients were found to have glaucoma, giving an overall prevalence rate of glaucoma as 4% in hospital population. Mean age of patients was 56.8 years at presentation with 86.5% of patients were above 40 years of age. 67.5% patients were males and rest were females with male: female ratio of 9 : 4 (Fig.2). About two-third (66%) of the patients were from rural areas and 66.5% of the patients were doing unskilled work. 71.4 % patients presented with the decreased visual acuity of <6/18 in at least one eye. About 17.7 % of patients had a visual acuity of PL-ive in at least one eye at presentation. 70% of patients had bilateral and 30% had unilateral involvement. Perimetry showed moderate to advanced field loss in 80% cases. 39.2 % had PEX glaucoma, the commonest glaucoma in our study. 31.1% had PAOG, 7.8 % had angle closure glaucoma. Among other types of glaucoma's NVG constituted 1.6%, steroid induced glaucoma 2.25%, congenital glaucoma 1.5%, traumatic glaucoma 1.25%, JOAG & phacomorphic constituted 1% each, and NTG 0.6% of all the glaucoma's. The ratio of PAOG to PACG was 3.96:1

Conclusion: PEX glaucoma is a rapidly progressing and sight-threatening disease and most common type of glaucoma in our valley, so ophthalmic services in Kashmir valley should focus on detecting PEX glaucoma.

Key words: Pseudoexfoliation (PEX) glaucoma, Open angle glaucoma (OAG), Angle closure glaucoma (ACG)

Date of Submission: 04-04-2019

Date of acceptance: 19-04-2019

Glaucoma is the second most prevalent cause of vision loss world wide. Prevalence is expected to rise from 60 million people worldwide in 2010 to 80million in 2020. Largest increase will be in China & India – representing more than 40% of all cases by 2020(1).

Research has shown that the prevalence of glaucoma varies according to both geographical region & race(2). Primary open angle glaucoma accounts for 90% of all glaucoma's in blacks & whites & some Asian populations. Surveys in China & India have observed prevalence of primary angle closure glaucoma to be equal to that of primary open angle glaucoma(3).

I. Aim

The present study was undertaken to find out the prevalence of glaucoma and its subtypes in a hospital based population in Kashmir valley.

II. Materials and Methods

A prospective, Observational and Hospital-based study was conducted on all the patients referred to the glaucoma clinic of the post graduate deptt. of ophthalmology, GMC, Srinagar, which is the only tertiary care eye centre in Kashmir Valley, was undertaken for a period of one year between June 2011-2012.

All the patients underwent a comprehensive ocular examination which included: Demographic data (age, sex, occupation, socio-economic status, residence), Detailed history (regarding chief complaints, past treatment history, history of any systemic disease like diabetes, hypertension etc.) and Comprehensive ocular examination including: Visual acuity (BCVA), Refraction, Slit lamp examination, Fundus examination by slit lamp

biomicroscopy using 78D lens, IOP-recorded by Goldman applanation tonometer, Gonioscopy – by Goldman two mirror gonioscope, Field examination by Humphrey field analyzer. Slit-lamp was the backbone of our examination. Condition of conjunctiva, sclera, cornea, anterior chamber depth, iris, pupil, lens, presence or absence of exfoliation material etc. was noted in detail. The diagnosis of glaucoma was based on the criteria described by International Society for geographic & epidemiological ophthalmology, that includes:

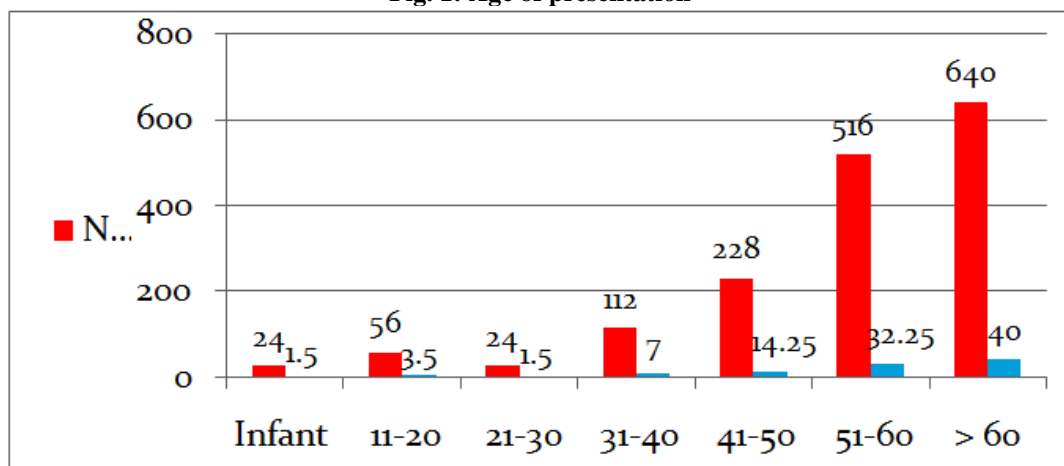
- VCDR of 0.7 or more or asymmetry between right & left VCDRs of 0.2 or more & a visual field consistent with glaucoma.
- VCDR of 0.9 or more in either eye or asymmetry between right & left VCDRs of 0.3 or more & a reliable field test could not be obtained.
- An IOP more than 26 mmHg & a visual acuity worse than 3/60, or evidence of previous filtering surgery when optic disc could not be examined due to media opacity.

Statistical analysis of the data was done using chi-square test was done . p value <0.05 was taken as statistically significant.

III. Results

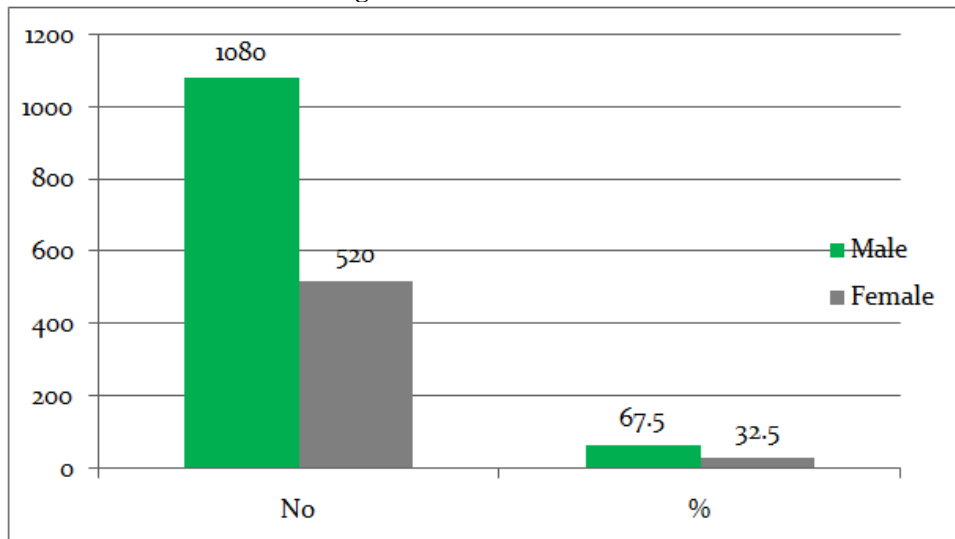
A total of 40,012 (app. 40000) patients attending the ophthalmology OPD of our hospital were screened for glaucoma from June 2011 to June 2012. A total of 1600 patients were found to have glaucoma, giving an overall prevalence rate of glaucoma as 4% in hospital population. Mean age of patients was 56.8 years at presentation. 86.5% of patients were above 40 years of age (p<0.05). As the age advanced, number of patients with glaucoma also increased suggesting that glaucoma is the disease of mainly elderly people (Fig. 1). 67.5% patients were males and rest were females with male: female ratio of 9 : 4 (Fig.2). Two-third (66%) of the patients were from rural areas (Fig.3). 66.5% of the patients were unskilled, 16.2% semi skilled, 15.2% skilled by occupation suggesting that glaucoma is more prevalent in unskilled patients (Fig.4). 71.4 % patients presented with the decreased visual acuity of <6/18 in at least one eye and among them 43.9% had PEX glaucoma. 17.7 % of patients had a visual acuity of PL-ive in at least one eye at presentation. 70% of patients had bilateral glaucoma and 30% patients had unilateral involvement (Fig.5). Majority of the patients, 38.8 % patients had an IOP between 21-30 mmHg at presentation followed by ≤ 20mmHg in 32.5%, 31-40mmHg in 15% and >40mmHg in 14.5%. Highest IOP of 50 mmHg was recorded in phacomorphic glaucoma and lowest in the study was 12.2 mmHg in normal tension glaucoma. Overall the mean IOP was 28.0± 11.8 (8.70) in Right Eye and 27.4 ± 9.9 (8.64) in Left eye (Table 1). On gonioscopy, 89 % had open angles, 3.1 % had narrow angles, 7.8 % had closed angles. The ratio of PAOG to PACG was 3.96:1 (Fig.6). Perimetry showed moderate to advanced field loss in 80% cases showing that presentation was late in maximum number of cases (Fig.7). 39.2 % had PEX glaucoma, the commonest glaucoma in our study. 31.1% had PAOG, 7.8 % had angle closure glaucoma. Among other types of glaucoma's NVG constituted 1.6%, steroid induced glaucoma 2.25%, congenital glaucoma 1.5%, traumatic glaucoma 1.25%, JOAG & phacomorphic constituted 1% each, and NTG 0.6% of all the glaucoma's. The ratio of PAOG to PACG was 3.96:1 (Table 2 & Fig.8)

Fig. 1: Age of presentation



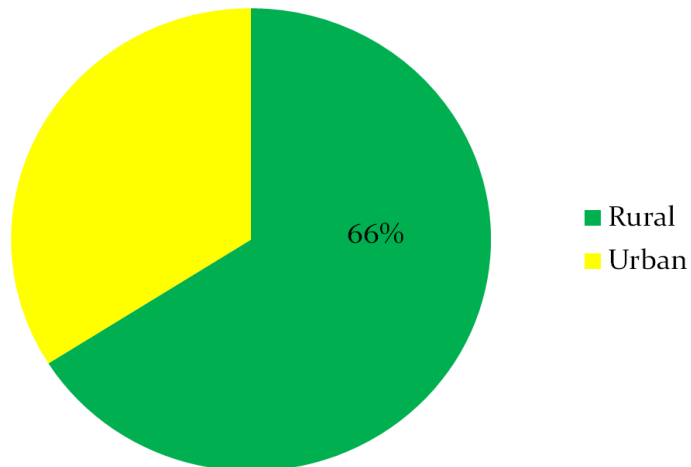
Mean age of patients was 56.8 years at presentation. 86.5% of patients were above 40 years of age. P< 0.001 (Statically significant)

Fig. 2: Gender distribution



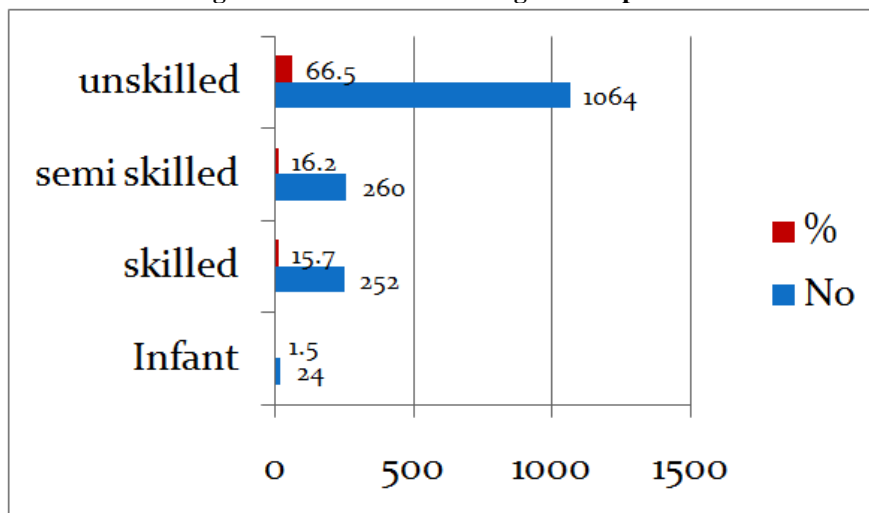
Male:Female=9:4

Fig. 3: Rural/ urban distribution



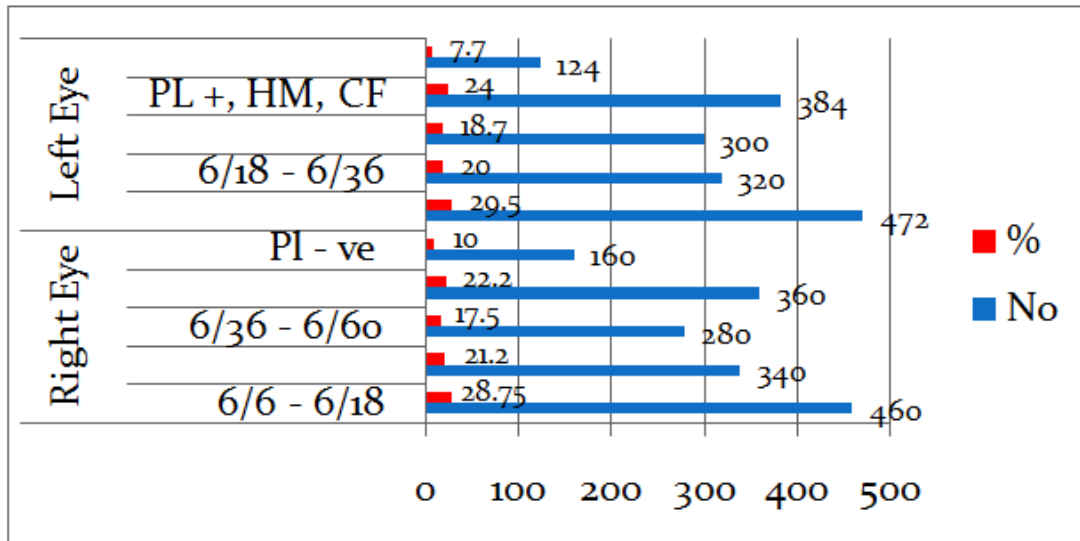
P<0.05 (significant)

Fig. 4: Distribution according to Occupation



Majority involved in outdoor activities. P<0.001(significant)

Fig. 5. Visual Acuity

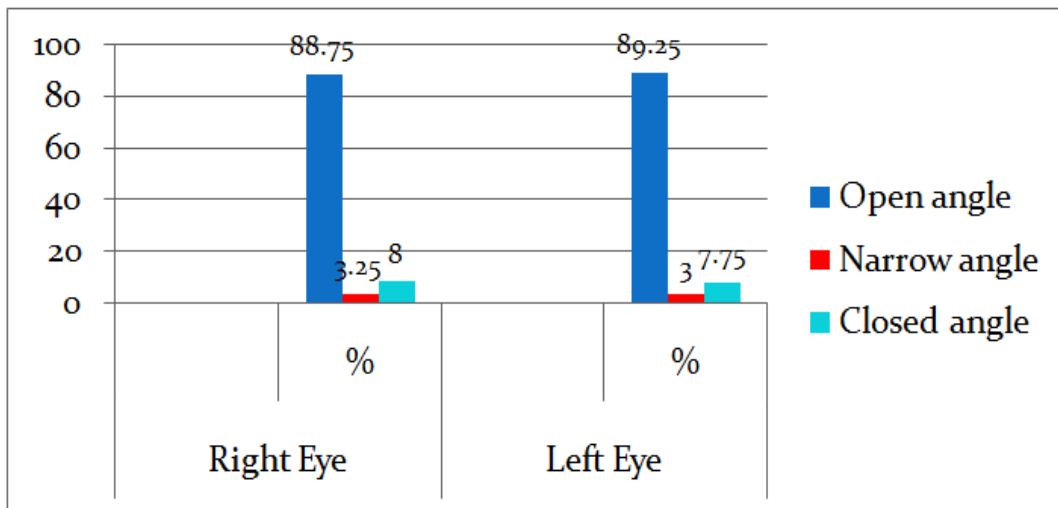


71.4 % patients presented with the decreased visual acuity of <6/18 in at least one eye and among them 43.9% had PEX glaucoma. 17.7 % of patients had a visual acuity of PL-ive in at least one eye at presentation. P<0.001(significant)

Table 1: Distribution of IOP

IOP	Right Eye		Left Eye	
	n	%	n	%
≤ 20 mmHg	520	32.5	496	31
21-30 mmHg	608	38	636	39.7
31-40 mmHg	240	15	264	16.5
> 40 mmHg	232	14.5	204	12.75
		Mean (8.70)	28.0±11.8	Mean (8.64)

Fig.6: Picture on Gonioscopy



P<0.001(significant)

Fig.7: Field changes

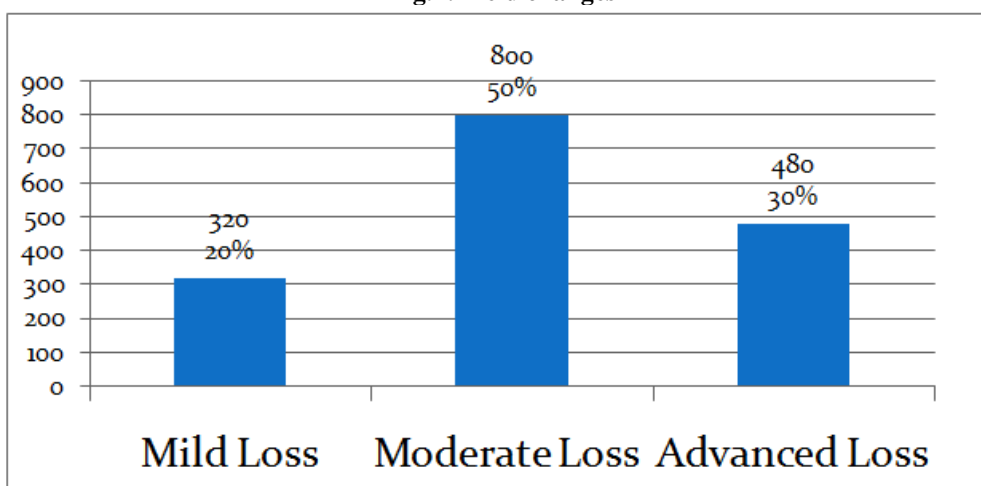
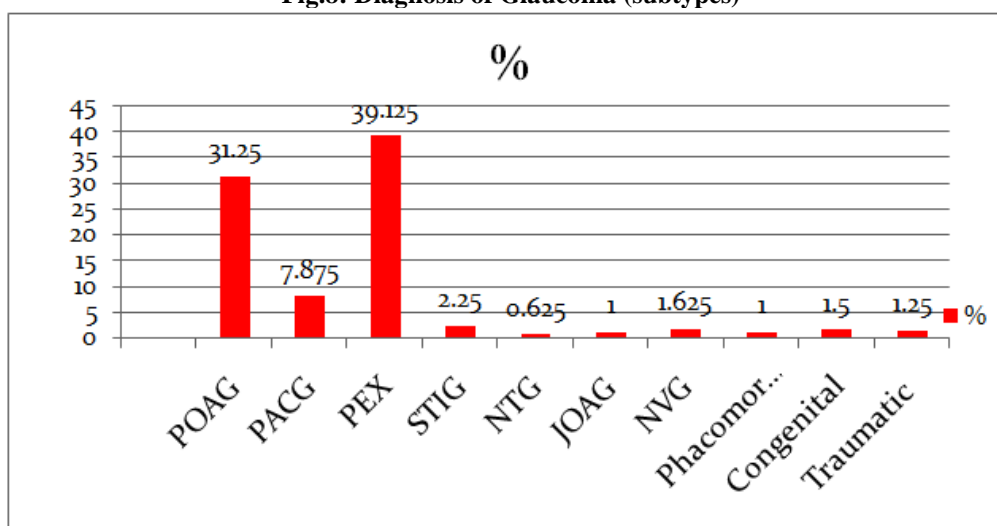


Table 2: Diagnosis of glaucoma

Glaucoma subtypes	Right Eye		Left Eye		Total	
	n	%	n	%	N	%
Normal	208	13	192	12	400	12.5
POAG	492	30.75	508	31.75	1000	31.25
PACG	128	8	124	7.75	252	7.875
Pseudoexfoliation glaucoma	624	39	628	39.25	1252	39.125
Steroid – induced glaucoma	36	2.25	36	2.25	72	2.25
Normal tension glaucoma	12	0.75	8	0.5	20	0.625
Juvenile open angle glaucoma	12	0.75	20	1.25	32	1
Neovascular glaucoma	28	1.75	24	1.5	52	1.625
Phacomorphic glaucoma	24	1.5	8	0.5	32	1
Congenital glaucoma	24	1.5	24	1.5	48	1.5
Traumatic glaucoma	12	0.75	28	1.75	40	1.25
	1600		1600		3200	

Fig.8: Diagnosis of Glaucoma (subtypes)



IV. Discussion

Glaucoma is one of the most common causes of irreversible blindness in the world, majority of which remains undetected. In our study the prevalence of glaucoma was found to be 4% ,though actual prevalence in population would be higher as many patients are undetected & are not referred to hospital. In order to find the real prevalence , population based studies are required. PEX glaucoma was the largest type of glaucoma in our study (39.2%) which is quite higher than studies conducted in other parts of India where it varies from 1.6 to 13%(4,6,7), but lower than those conducted in Scandinavian countries. Arvind et al and Lindblom and Thorborn found PEX glaucoma to be present in 50% cases of all glaucomas in Sweden (5,9).Montes Monterres found PEX glaucoma in 44.5% patients of all glaucomas in Spain. Two earlier studies in our valley by Sufi AR et al and Rashid W et al found PEX glaucoma in 26.32% and 40.25% patients respectively(13,17). The low prevalence in study by Sufi AR et al can be explained by the fact that it was conducted in patients attending eye camps and included only those patients who had to undergo cataract surgery, The vast difference in the prevalence of PEX glaucoma in different parts of the world and in our country indicates that PEX glaucoma is related to climatic , geographical, ethnic and genetic factors. POAG was the second largest group(31.1%), followed by PACG (7.8%). The ratio of POAG to PACG was higher (3.96:1) than found in rest of India, suggesting that PACG may be less prevalent in Kashmir. Furthermore , our study showed glaucoma to a disease of mainly elderly age group (Mean age 56.8 years), which is quite consistent with other studies (13,14,17,18). There was male preponderance in our study with male: female ratio of 9:4 , which is consistent with study by Rashid W et al(13) but contrary to other studies(14, 15). This difference in gender distribution may be due to regional and ethnic diversity in various study groups. Similar findings by Rashid W et al are because our study was carried out in same population group.

Majority of patients in our study were unskilled (66.5%) who mainly work outdoors and from rural areas (66%) who are dependent on agriculture as source of income, which is consistent with observations by other studies (13, 14, 15, 17). Both are exposed constantly to external environment. This shows that there is association between environmental factors and Pseudoexfoliation as documented by other studies (19). Also our valley mainly consists of rural population , so rural preponderance is expected.

There was decreased visual acuity (<6/18) in 71.41% in at least one eye in our study 17.7 % were PL –ve at presentation. Out of these 43.9 had PEX glaucoma which was also seen in other studies (13,14,17,20),suggesting that PEX glaucoma is rapidly progressing disease. Mean IOP was 28.0 ±11.8 and 27.4±9.9 in right and left eye respectively which is quite high and majority of these had PEX glaucoma, the finding being consistent with other studies(13,17). Gonioscopy showed open angle in 88.75% cases in right eye and 89.25% in left eye suggesting that angle closure glaucoma is less common in the valley as compared to other parts of the country as explained earlier. Other studies conducted in the valley showed the same (13,17). Moderate to advanced field loss was seen in 80% cases which shows that majority of the patients report late for the treatment.

V. Conclusion

PEX glaucoma is a rapidly progressing and sight-threatening disease and most common type of glaucoma in our valley, so ophthalmic services in Kashmir valley should focus on detecting PEX glaucoma. Thus early detection & proper training of medical professionals & awareness about glaucoma is the need of hour. In short, there is a need for action as PEX glaucoma in our valley is common on the rise, poorly diagnosed distressing and disabling, thus affecting the quality of life. So in order to overcome its impact on the quality of life, we need to diagnose it early and accurately as well as treat it early and effectively.

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Prof. Manzoor Qadir Keng. “Glaucoma Scenario in Kashmir Valley: A Hospital – Based Study.” IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 04, 2019, pp 08-14.