

Clinical Study of Morbidity of Secondary Glaucoma

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Abstract: Aim: Clinical Study of morbidity of Secondary Glaucoma. Objective: To observe and analyse the clinical effect of secondary glaucoma. To know the proportions of Secondary glaucomas, its various causes and mode of presentations, Methodology: Cross sectional Study, done in both Outpatient and in patient department patients in Ophthalmology, With a sample size of 45. Inclusion criteria: All patients in OPD and IPD in Department of ophthalmology with Intraocular pressure more than 21mm Hg with Glaucomatous Optics disc changes with visual Field changes. Exclusion Criteria: Results: The average age of the participants was 63.61 years with a standard deviation of 9.86 years. The study group consisted of 45 patients, comprising 18 females (40.00%) and 27 males (60.00%). Hypertension (HTN) was observed in 14 cases, constituting 31.11%, while diabetes mellitus (DM) was present in 11 cases, accounting for 24.44%. Seven patients (15.56%) had both hypertension and diabetes mellitus concurrently. A total of 13 cases (28.89%) reported no comorbidities. Pseudoexfoliation induced secondary Glaucoma was the most predominant glaucoma with 31.11%. Conclusion: This clinical study highlights the significant morbidity associated with secondary glaucoma, emphasizing the need for early detection and tailored management strategies. The findings demonstrate a wide variation in intraocular pressure, cup - to - disc ratios, and visual field defects across different types of secondary glaucoma, reflecting the complex nature of the disease.

Keywords: PDS - Pigment Dispersion Syndrome, PG - Pigmentary Glaucoma, Pxf - Pseudoexfoliation, HTN - Hypertensive, DM - Diabetes Mellitus

1. Introduction

Secondary glaucoma encompasses a group of eye diseases resulting from ocular disorders or systemic factors that impede the drainage of aqueous humor, leading to elevated intraocular pressure (IOP) and impaired visual function.^{1, 2} It arises when another ocular pathology causes an increase in IOP, which subsequently damages the optic nerve and visual field.³ Common causes of secondary glaucoma include trauma, neovascularization, uveitis, surgery - related complications, lens - induced issues, drug side effects, and tumors.⁴ This condition is a significant risk factor for acquired, irreversible blindness.⁵

Surgery is the primary treatment for secondary glaucoma due to complications arising from its underlying causes. The prevalence and recovery rates of secondary glaucoma are significantly influenced by factors such as education level, local economy, and the availability of medical services. Individuals with secondary glaucoma typically seek prompt attention from an ophthalmologist due to a significant reduction in visual acuity and accompanying pain.

Secondary glaucoma is classified based on its primary cause into several categories: lens - induced (phacomorphic, phacolytic, lens particle, and phacoanaphylactic) glaucoma, neovascular glaucoma, pseudoexfoliative glaucoma, uveitic glaucoma, pigmentary glaucoma, traumatic glaucoma, aphakic/pseudophakic glaucoma, steroid - induced glaucoma, and glaucoma associated with iridocorneal dysgenesis.

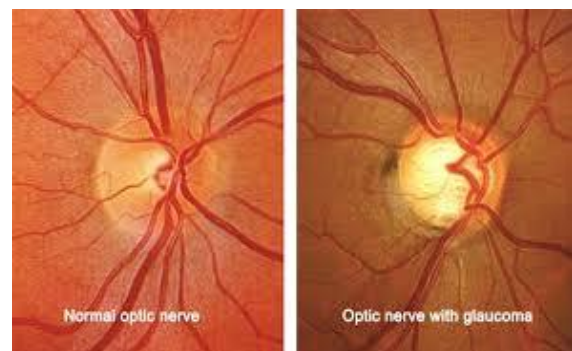


Figure 1: Comparison Between Normal and Glaucomatous Optic nerve head

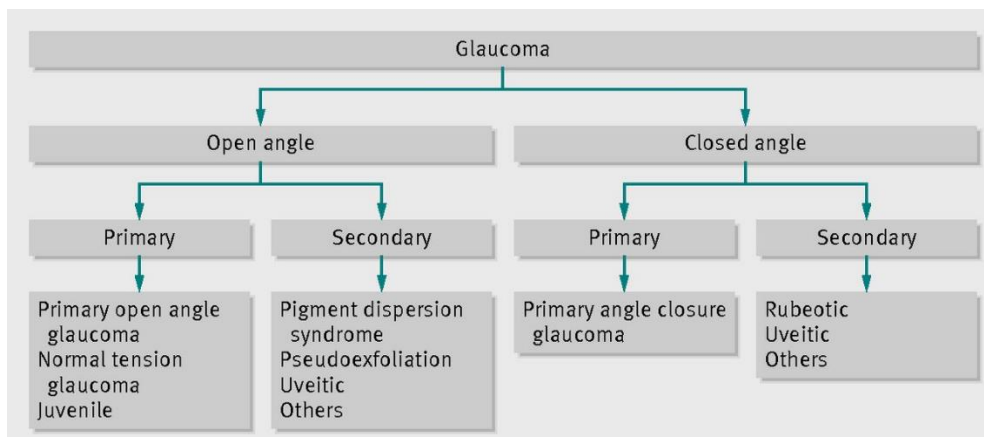
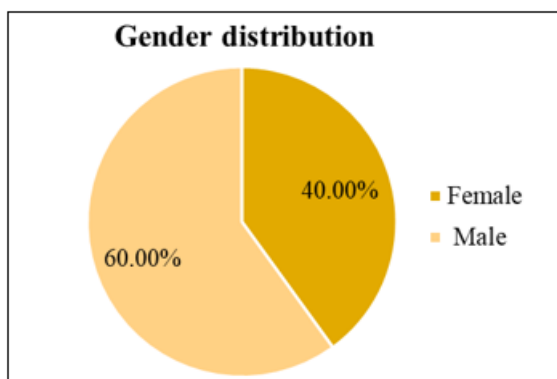


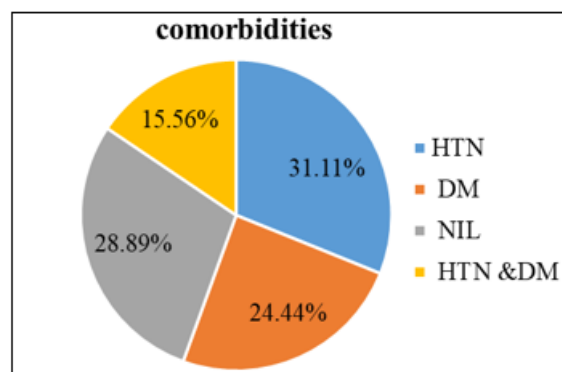
Figure 1: Types Of Secondary Glaucoma

2. Observation and Results



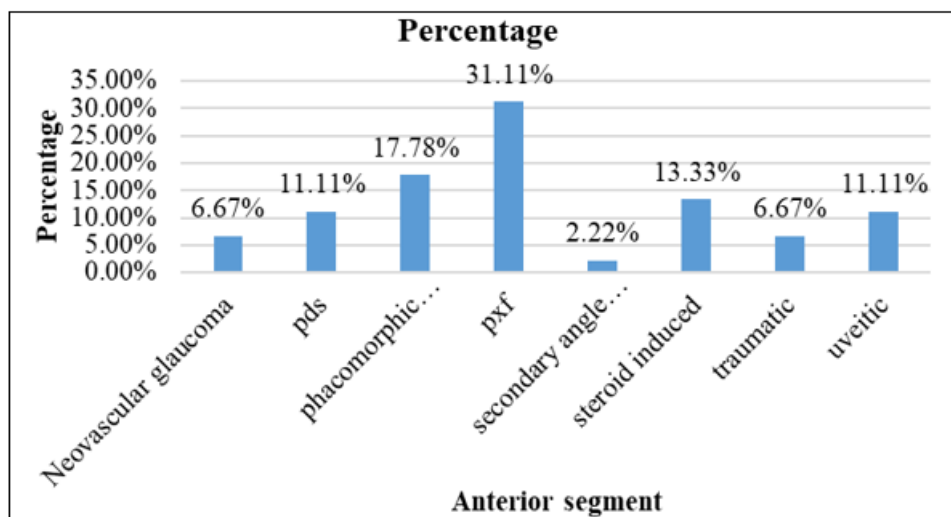
Graph 1: Demographic characteristics of the patients in the study group

The average age of the participants was 63.61 years with a standard deviation of 9.86 years. The study group consisted of 45 patients, comprising 18 females (40.00%) and 27 males (60.00%).



Graph 2: Distribution according to comorbidities in the study group

Hypertension (HTN) was observed in 14 cases, constituting 31.11%, while diabetes mellitus (DM) was present in 11 cases, accounting for 24.44%. A total of 13 cases (28.89%) reported no comorbidities. Seven patients (15.56%) had both hypertension and diabetes mellitus concurrently.



Graph 3: Distribution according to anterior segment in the study group

Among the cases analyzed, neovascular glaucoma was identified in 3 instances (6.67%), while pigment dispersion syndrome (PDS) was observed in 5 cases (11.11%). Phacomorphic glaucoma, associated with cataract - induced angle closure, accounted for 8 cases (17.78%), and pseudoexfoliation syndrome (PXF) was noted in 14 cases

(31.11%). Other identified conditions included secondary angle closure (1 case, 2.22%), steroid - induced glaucoma (6 cases, 13.33%), traumatic glaucoma (3 cases, 6.67%), and uveitic glaucoma (5 cases, 11.11%).

3. Discussion

Secondary glaucoma is a significant cause of visual impairment, arising due to various underlying ocular or systemic conditions that disrupt the normal aqueous humor dynamics. This clinical study aims to elucidate the morbidity associated with secondary glaucoma in patients presenting to the Ophthalmology Outpatient Department over an 18 - month period.

The study population includes individuals diagnosed with secondary glaucoma, classified based on etiology such as uveitic glaucoma, neovascular glaucoma, and steroid - induced glaucoma. Data collection focuses on the clinical presentation, visual acuity, intraocular pressure (IOP) measurements, and the extent of optic nerve damage.

The average age of the participants was 63.61 years, with a standard deviation of 9.86 years. The study group included 45 patients, consisting of 18 females (40.00%) and 27 males (60.00%).

The higher prevalence of secondary glaucoma in males observed in our study may be attributed to several factors. According to Gadhia et. al study the male to female ratio was 2: 1

Hypertension (HTN) was observed in 14 cases, representing 31.11% of the cohort, while diabetes mellitus (DM) was present in 11 cases, making up 24.44%. Additionally, seven patients (15.56%) had both hypertension and diabetes mellitus concurrently. A total of 13 cases (28.89%) reported no comorbidities.

The investigation into the morbidity of secondary glaucoma is crucial due to the significant impact of comorbid conditions on the progression and management of this disease. The presence of systemic conditions such as hypertension and diabetes mellitus, prevalent in a substantial portion of the study cohort, highlights the intricate interplay between these comorbidities and secondary glaucoma.

Hypertension, observed in 31.11% of cases, is known to contribute to vascular dysregulation within the eye, exacerbating the risk of glaucomatous damage. Similarly, diabetes mellitus, present in 24.44% of the cohort, can lead to diabetic retinopathy and neovascularization, further complicating glaucoma management and increasing the risk of vision loss. The co - occurrence of both hypertension and diabetes in 15.56% of patients underscores the compounded risk these individuals face.

This study emphasizes the importance of a comprehensive approach to patient care, considering both ocular and systemic health. Among the cases analyzed, neovascular glaucoma was identified in 3 instances (6.67%), while pigment dispersion syndrome (PDS) was observed in 5 cases (11.11%). Phacomorphic glaucoma, related to cataract - induced angle closure, accounted for 8 cases (17.78%). Pseudoexfoliation syndrome (PXF) was noted in 14 cases (31.11%). Other identified conditions included secondary angle closure in 1 case (2.22%), steroid - induced glaucoma in 6 cases (13.33%), traumatic glaucoma in 3 cases (6.67%), and uveitic glaucoma in 5 cases (11.11%).

Rationale for Sample Size

As per the reference, the Study of secondary Glaucoma prevalence was – 0.2%

Among the study population

Hence

Sample size $N = Z^2PQ/L^2$

Where $z =$ standard normal variation at 95% CI=1.96

$P =$ prevalence of secondary glaucoma

$Q =$ no. of secondary glaucomas

$L =$ allowable error at 95% CI is 0.2

$(100 - p) N = 45$

SAMPLE SIZE FOR MY STUDY IS=45

Period of collection of data - 18 Months

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