



Causes of Secondary Glaucoma among Patients Presenting in Glaucoma Clinic at Al-Ibrahim Eye Hospital, Karachi

Shua Azam^{1*}, Abdul Hameed Talpur², Aqsa Batool³, Nimra Anwer⁴, Zainab Palijo⁵, Sadia Bukhari⁶ and Muhammad Asif⁷

¹Senior Lecturer, Al-Ibrahim Eye Hospital, ISRA School of Optometry, Karachi, Pakistan

²Ophthalmologist, Al-Ibrahim Eye Hospital, ISRA School of Optometry, Karachi, Pakistan

³Optometrist at POB Eye Hospital, Karachi, Pakistan

⁴Optometrist Internee, Al-Ibrahim Eye Hospital, Karachi, Pakistan

⁵Internee Optometrist at Al-Ibrahim Eye Hospital, Karachi, Pakistan

⁶Professor of Ophthalmology, Al-Tibri Medical College, ISRA Postgraduate Institute of Ophthalmology, Karachi, Pakistan

⁷Lecturer, ISRA school of Optometry, Karachi, Pakistan

*Corresponding Author: Shua Azam, Senior Lecturer, Al-Ibrahim Eye Hospital, ISRA School of Optometry, Karachi, Pakistan.

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Abstract

Objective: To determine the causes of Secondary Glaucoma in Glaucoma clinic in Al-Ibrahim Eye Hospital, Malir Karachi.

Materials and Methods: This hospital based, Cross-sectional study was carried out at glaucoma clinic of Al Ibrahim Eye Hospital from June to November, 2019. Non-probability, purposive sampling technique was used. A total of 1000 subjects attended glaucoma clinic. Among 2000 eyes, 40 eyes were diagnosed with secondary glaucoma. All ocular examination belonged to secondary glaucoma were performed. Demographics features and etiologies were recorded. SPSS version 20.0 was used to analyze the data. Research Ethical Committee (REC) of ISRA Postgraduate Institute of Ophthalmology gave ethical approval. SPSS version 20.0 was used to analyze the data.

Results: A total of 80 eyes of 40 subjects with secondary glaucoma were included. Among 80 eyes, 40 eyes were affected with secondary glaucoma (SG). 31 subjects (77.5%) were males while 9 subjects (22.5%) were females. Frequency of secondary glaucoma was found to be 4%. Pseudoexfoliation glaucoma was the most common cause of secondary glaucoma present in 20 eyes (50%), Neovascularization glaucoma was presented in 13 (32.5%) eyes, 4 (10%) eyes were affected by Angle recession glaucoma while 3 (7.5%) eyes were involved in Steroid induced glaucoma.

Conclusion: This study concluded that the common cause of secondary glaucoma was Pseudoexfoliation glaucoma and males were more affected than females.

Keywords: Glaucoma; Secondary Glaucoma; Causes

Introduction

Globally glaucoma affects more than 70 million people [1]. The prevalence of primary open angle glaucoma (POAG) is highest

in Africa (4.20%) and primary angle closure glaucoma (PACG) is highest in Asia (1.09%) [2]. East Asia had the highest number of people with glaucoma (25.20 million), followed by South-Central

Asia (17.06 million) and South East Asia (6.92 million) [3] while in China the prevalence of secondary glaucoma was 0.34 million in 1990 and 0.76 million in 2015 [4]. In India 0.15% had secondary glaucoma [5]. In rural population, 1.45% had primary open angle glaucoma (POAG), 1.15% had angle closure glaucoma (ACG) and 0.10% had secondary glaucoma (SG) [6] while in Japan primary open-angle glaucoma (POAG) is 0.58%, low-tension glaucoma (LTG) is 2.04%, primary angle closure glaucoma (PACG) is 0.34% and other types of glaucoma's accounts for about 0.60% [7]. The prevalence of glaucoma is 5.02% in Nigeria with Open-angle glaucoma is highest (86%), angle-closure glaucoma is (14 %) and secondary glaucoma accounts for about 8% [8] while in Saudi Arabia primary angle closure glaucoma (PACG) is the common type for about 46.6% whereas, primary open angle glaucoma (POAG) is 12.8% and secondary glaucoma is for about (13%) [9]. Different studies from Pakistan reported variations in the prevalence of secondary glaucoma that is 22.8% [10] and 24.5% [11]. The most common cause of secondary glaucoma was inflammatory glaucoma 29.2% [12].

Materials and Methods

A hospital based cross-sectional study was carried out at Al-Ibrahim Eye Hospital Karachi from June to November 2019 and ethical approval was given by Research Ethical Committee (REC) of Isra Postgraduate Institute of Ophthalmology. Non-probability, purposive sampling technique was used and 1000 subjects attended glaucoma clinic during the study period. Inclusion criteria included: age ranged from 16 years and above and all subjects with secondary glaucoma while other types of glaucoma were excluded. Instruments/equipment's used in examining the subjects included VA charts, trial box, trial frame, slit lamp, OCT, Perimeter, Goldman tonometer and gonioscope. All the respondents underwent visual acuity assessment with Snellen acuity chart, RNFL thickness was measured by OCT, Intraocular pressure was checked by Goldman tonometer, Visual fields and angle were assessed by perimeter and gonioscope, respectively. Data analysis was done on Statistical package for social sciences (SPSS) version 20.0. The entire categorical variables were shown as frequency and percentages. Statistical charts were presented in the form of bar chart and pie chart.

Results

A total of 80 eyes of 40 subjects were included. Among 80 eyes, 40 eyes were affected with secondary glaucoma (SG). Gender wise distribution showed that 31 (77.5%) were males while rest of the 9 (22.5%) were females. Affected eyes distribution showed that 19

(47.5%) were the right eyes and 21 (52.5%) were the left eyes (Figure 1). Age was distributed in 3 groups in which the most common age group was 58 - 78 years (65%) (Figure 2). In cross tabulation between the age and cause showed that age between 58 - 78 years is more common and the most common cause is Pseudoexfoliation glaucoma (Figure 3). In cross tabulation between the gender and causes, males are at higher risk of secondary glaucoma than the females and Pseudoexfoliation is the most common cause (Figure 4). Different causes of secondary glaucoma were seen, in which the most common cause of secondary glaucoma was Pseudoexfoliation glaucoma present in 20 eyes (50%). Neovascularization was present in 13 eyes (32.5%), Angle recession glaucoma was present in 4 eyes (10%) and Steroid induced glaucoma was present in 3 eyes (7.5%) (Figure 5).

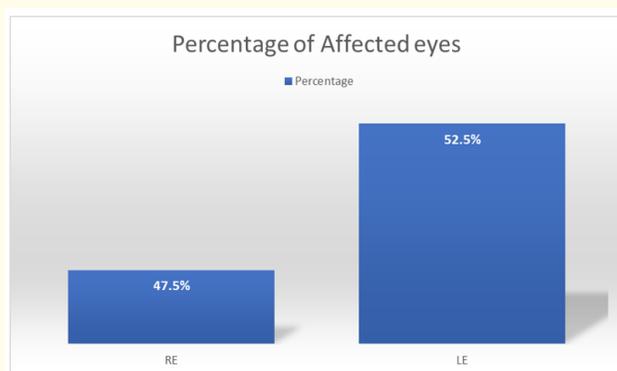


Figure 1: Frequency of affected eyes.

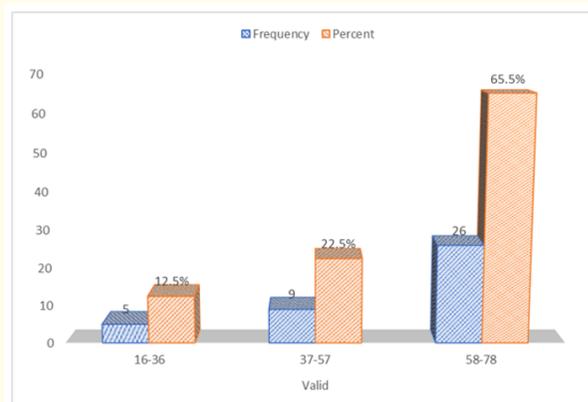


Figure 2: Age wise distribution of the sample.

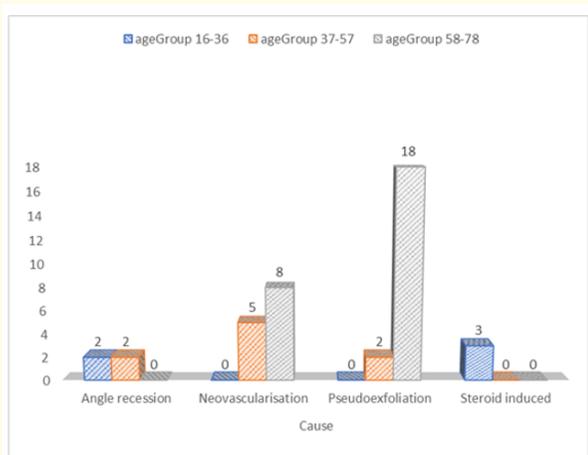


Figure 3: Age and cause cross tabulation.

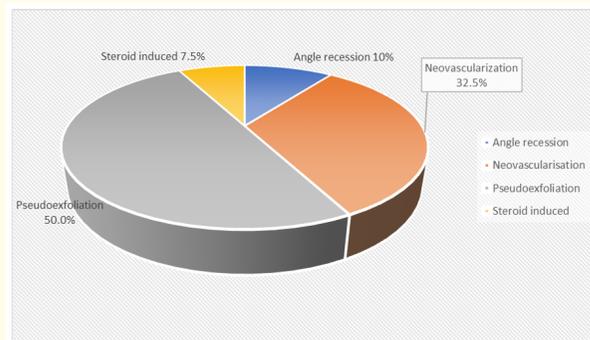


Figure 5: Causes of secondary glaucoma.

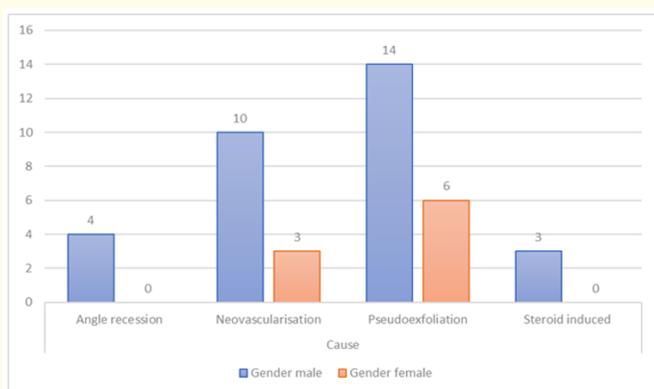


Figure 4: Gender and causes cross tabulation.

Discussion

A total of 1000 subjects attended in glaucoma clinic during study period, out of which 40 (4%) eyes were diagnosed with Secondary Glaucoma. In this study the most common age was 60 years. In the previous studies conducted in Pakistan in which the most common age group was 51 - 60 years [10,11]. As many studies are available which are conducted in different clinics of world and showed variety of results. However, in this study the prevalence of secondary glaucoma was 4%. These results don't correlate with studies

conducted in Pakistan. This might be due to different assessment techniques and time duration of the study.

The frequency of secondary glaucoma found more common among in males (76.5%) than females (22.5%). Similarly, a study conducted in Peshawar, showed the same ratio of males for about 88.89% and females for about 11.11% [13,14].

In our study left eye was more effected (52.5%) than right eye (47.5%). Other studies don't show the involvement of eyes. The most common cause of secondary glaucoma is Pseudoexfoliation glaucoma which correlates with study conducted in Pakistan and South Africa [10,15]. Whereas inflammatory glaucoma was also common cause in another study conducted in Pakistan [11]. While other studies showed that the most common cause were steroid induced glaucoma, post vitrectomy, uveitis and Neovascular glaucoma [12,16,17] while common cause of Neovascular glaucoma was diabetic retinopathy [18]. Secondary glaucoma was greater in anterior uveitis (67%) but was also associated with posterior uveitis [19]. The incidence of glaucoma was greater in the post penetrating keratoplasty PK in phakic eyes which was due to the posterior synechiae and development of cataract [20] while our study didn't included post penetrating keratoplasty.

Conclusion

This study concluded that the Pseudoexfoliation is the commonest cause of Secondary Glaucoma.

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