RESEARCH ARTICLE

A PROSPECTIVE STUDY FOR ASSESSMENT OF RISK FACTORS OF OPEN ANGLE GLAUCOMA

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ARTICLE DETAILS

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ABSTRACT

To assess cases of risk factors of open angle glaucoma. One hundred fourteen adult patients who were diagnosed with open angle Glaucoma of either gender was enrolled in the study. Parameters such as smoking history, family status of open angle glaucoma, presence of AMD, previous pseudo-exfoliation, previous cataract surgery and intraocular pressure (IOP) was recorded. Of the 114 patients, 70 were males and 44 were females. Age group 40-49 had 24, 50- 59 years had 36 and 60-70 years had 54. Smoking history was present in 46 and previous cataract surgery was seen among 34. Statistical tests showed significant difference ($P < 0.05$). Various risk factors were smoking history, family history, AMD, pseudo-exfoliation and previous cataract surgery.

KEYWORDS

intraocular pressure, cataract surgery, open angle glaucoma

1. INTRODUCTION

Choroid is considered to have copious blood vessel layer in human eye. It carries highest amount of blood (Burr et al., 2007). The fine blood vessels in peripapillary choroid are regarded as essential attention in patients suffering from glaucoma owing to small posterior ciliary arteries providing nutrition to head of second cranial nerve (optic) and choroid. Therefore, for knowing the exact pathological as well as physiologic phenomenon, evaluation of choroid is mandatory (Maier et al., 2005). Glaucoma is collection of eye diseases resulting in advanced optic nerve degeneration. It is the foremost reason of diminished eyesight. Most of the cases requires treatment immediately, however, failure to treat it in time may lead to permanent blindness. It is also considered to be ultimate reason for blindness which is not reversible in nature. Open-angle glaucoma (OAG) is commonest form of glaucoma. Early identification and prompt management is the need of the hour (Sheild, 2008).

Literature reveals that 55% of cases of open-angle glaucoma remain undiagnosed especially in developed countries whereas the count is further higher in non- developed countries. The progression of the disease can be postponed with treatment and large- scale screening of subjects is of paramount importance (Flammer et al., 2002). It is evident that various risk factors need to be considered before planning treatment option for the disease in order to delay the progression of the disease (Li et al., 2013). It is found that removal of potential risk factors may be fruitful in managing this disease (Hosseini et al., 2014). Amongst numerous risk factors, intraocular pressure (IOP) has the highest damaging potential. It is highly dangerous in primary open-angle glaucoma (POAG) cases as

compared to normal-tension glaucoma (NTG) (Suh et al., 2014). Assessment of choroid blood flow should also be done in diagnosing patients of open-angle glaucoma. Considering this, we attempted present study to assess various risk factors of open angle glaucoma

2. METHODOLOGY

A total of one hundred fourteen adult patients who were diagnosed with open angle glaucoma of either gender was enrolled in the study with the written consent. Institutional review and ethical clearance board after reviewing the various aspects of study, approved it. Demographic profile of each patient was recorded. A careful eye examination was carried by an expert ophthalmologist. Parameters such as smoking history, family status of open angle glaucoma, presence of AMD, previous pseudo-exfoliation, previous cataract surgery and intraocular pressure (IOP) was recorded. Results of the study was compiled, and statistical analysis was carried using appropriate statistical test and the value of 0.05 was regarded significant.

3. RESULTS

Table 1: Distribution of patients

Total- 114		
Gender	Male	Female
Number	70	44

Out of 114 patients, males were 70 and females were 44 (Table 1).

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Table 2: Assessment of risk factors

Variables	Parameters	Number	P value
Age	40-49	24	<0.05
	50-59	36	
	60-70	54	
Smoking	Never	30	>0.05
	Current	50	
	Past	34	
Family history	Yes	64	>0.05
	No	50	
AMD	Present	55	>0.05
	Absent	59	
Pseudo-exfoliation	Present	46	<0.05
	Absent	68	
Previous cataract surgery	Yes	34	<0.05
	No	80	

Age group 40-49 had 24, 50- 59 years had 36 and 60-70 years had 54. Smoking history was seen among 50, family history was seen among 64, AMD was present in 55, pseudo-exfoliation was present in 46 and previous cataract surgery was seen among 34. Mann Whitney U test revealed that there was a significant difference between factors ($P < 0.05$) (Table 2, Graph 1).

4. DISCUSSION

Glaucoma is the disease of adulthood, is one of the neuropathies which is degenerative in nature. It involves second cranial nerve i.e. optic nerve (Cioffi et al., 2004). The optic-nerve cup gets enlarged because there is relative thinning of neuro-retinal rim of the nerve in cases of open angle glaucoma (Roberts et al., 2012; Ikuno et al., 2010). It is called cupping of optic nerve. The reason for optic-nerve cupping is damage to the axons of retinal ganglion cells as well to the soma and the nodes of Ranvier. It is seen that in the pink colour of optic nerve is lost in other forms of optic neuropathies whereas in open angle glaucoma, the colour is not lost (Hirata et al., 2011). This cupping of optic nerve is not seen in other optic neuropathies except arteritic anterior ischemic optic neuropathy (Bayraktar et al., 2019; Rutter and Gatsonis, 2001). The peripheral vision in sufferers of open angle glaucoma may be lost and if it is not timely treated, permanent loss of complete vision may be evident.

In spite of the fact that it progresses without affecting intraocular pressure, it is not put under classification based on anterior-segment variations (Spiegelhalter and Thomas, 2003). Eye lens and cornea get its blood supply from the anterior segment of the eye. Ciliary body of eye generate aqueous humor which circulates throughout the anterior chamber and drains through the trabecular meshwork in the iridocorneal angle (Glas et al., 2003). We performed present prospective study with the aim to assess various risk factors of open angle glaucoma. In present study, of the 114 patients, seventy were and forty-four were females. A study in five years follow up study on 3271 subjects with open angle glaucoma aged above 40 years observed that the major risk factors for the disease were advancing age and increased intraocular pressure (IOP) (Le et al., 2003).

Other risk factors having highest role in the progression of the disease were positive family history, degeneration of macula which is age specific,

more than 0.7 cup-disc ratio and occurrence of pseudo-exfoliation etc. We observed that age group 40-49 had 24, 50- 59 years had 36 and 60-70 years had 54. Smoking history was seen among 50, family history was seen among 64, AMD was present in 55, pseudo-exfoliation was present in 46 and previous cataract surgery was seen among 34. A group researcher conducted a study in which forty-two cases of progressive open angle glaucoma were selected (Kojima et al., 2020). A comparison was carried on fifty-seven healthy disease-free participants. Peripapillary and macular choroidal images were taken using depth imaging optical coherence tomography (EDI-OCT). Authors found no difference in peripapillary choroidal area when compared between both groups. The statistical analysis yielded non-significant difference between both groups ($P > 0.05$).

Similarly, macular choroidal area also revealed non-significant difference between both groups ($P > 0.05$). Results of the study demonstrated that there was a significant relationship between the macular choroidal area, age and axial length. However, attributes and peripapillary choroidal areas in patients had no association ($P > 0.05$). It is further obtained that healthy participants had no statistical difference in the peripapillary or macular choroidal area. Mowatt et al. enrolled a total of 48,000 subjects in 40 studies (Mowatt et al., 2008). In this attempt, the precision of screening tests for open angle glaucoma was checked. Present study showed that frequency-doubling technology was significantly more sensitive as compared to ophthalmoscopy and Goldmann applanation tonometry whereas threshold standard automated perimetry (SAP) and Heidelberg Retinal Tomograph were both more sensitive than GAT. GAT was more specific than both FDT C-20-5 and threshold SAP.

5. CONCLUSION

Various risk factors in open angle glaucoma patients were smoking history, family history, AMD, pseudo-exfoliation, and previous cataract surgery.

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