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PROFILE OF JUVENILE-ONSET OPEN ANGLE GLAUCOMA IN PATIENTS VISITING TERTIARY CARE CENTER

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ABSTRACT **Aim:** To assess gender, clinical characteristics, laterality, disc and visual field defects in Juvenile onset open angle glaucoma patients **Methods:** Cross sectional observational study with 70 patients of age group 10-40 year presenting with glaucomatous optic neuropathy. Detailed history, complete eye examination and glaucoma evaluation. Results obtained by using mean, Standard deviation and compared by independent t-test and chi square test. Exclusion secondary Glaucoma; history of surgery; ocular co-morbidity **Result:** Male more affected, mean age of presentation 28.56+7.24 ; 48% patients myopic and having thin cornea(p=0.0001). 45 patients diagnosed with JOAG in both eyes and were of older age group(p=0.043).17 patients presented with MD(dB) 17.2+3.02 and 37 patients with MD(dB) 9.87+3.06. 57% found to have cup-disc ratio of >0.6 **Conclusion:** We conclude that JOAG patients has male preponderance, Bilateral presentation more common; disc and field moderate to severe damage.

KEYWORDS : Juvenile-onset open angle glaucoma, Bilateral presentation

Glaucoma represents a group of diseases defined by a characteristics optic neuropathy that is consistent with remodeling of the connective tissue elements of the optic nerve head(called the optic disc) and with loss of neural tissue associated with the eventual development of the distinctive pattern of visual dysfunction. Although the intraocular pressure (IOP) level is one of the factors for development of glaucoma it does not have a role in the definition of the disease; further, IOP of any level can have an impact on the risk of glaucoma.[1,2]

Juvenile open-angle glaucoma (JOAG) is an uncommon form of primary open angle glaucoma, with earlier onset (3 to 40 years of age), higher IOP, and more severe visual field loss compared with adult-onset primary open-angle glaucoma (POAG).Many studies report that this type of glaucoma typically demonstrates an autosomal dominant inheritance pattern. The myocilin (MYOC) gene is identified abundantly through linkage analysis in the trabecular meshwork (TM) of the affected patients.[3-9] JOAG should be considered a diagnosis of exclusion after excluding secondary glaucoma's like pigment dispersion glaucoma, traumatic glaucoma ,steroid-induce glaucoma and Primary angle-closure glaucoma(PACG).Hence proper history taking is a must in all the cases.[3-9]

This study will help in understanding about occurrence, severity and various parameters affecting patients of younger age group. This can help in early diagnosis and better management of these patients and thus preventing disability caused by the glaucoma in this population.

MATERIALS AND METHODS

This cross sectional (analytical observational) study was carried out at a tertiary health care centre. JOAG was diagnosed when patient met the criteria: elevated IOP>24mmHG on Goldman application tonometry at first visit, open angle on gonioscopy, Glaucomatous optic neuropathy (i.e. neural rim thinning, focal notching or increase in vertical cup-to dial ratio>0.6) and/or glaucomatous visual field defects in the patient between the age group of 10- 40 years.

Detail history of the patient has been taken regarding symptoms its duration, family history of glaucoma(A positive family history of glaucoma was defined as the presence of one or more relatives (first- or second-degree) of the patient who reportedly had been diagnosed with glaucoma by ophthalmologists), history of trauma, any drug taken for longer duration, steroid intake.

This was followed by a comprehensive eye examination in order to gather information including slit lamp biomicroscopy, best-corrected visual acuity, refractive error, and central corneal thickness, were recorded. The IOP was measured on two separate occasions with a Goldmann applanation tonometer under topical anesthesia, and the average value of the two was determined and used. An automated VF test was evaluated by the 30-2 program Swedish interactive threshold algorithm standard on the Humphrey 740 Visual Field Analyzer (HFA 30-2). A dilated stereoscopic examination of the fundus with optic disc and red-free fundus photography for identifying a glaucomatous optic nerve head, retinal nerve fiber layer defects and retinal pathology, was reviewed for all participants. Patients were considered as glaucomatous when the disc showed definitive sign of glaucomatous damage.

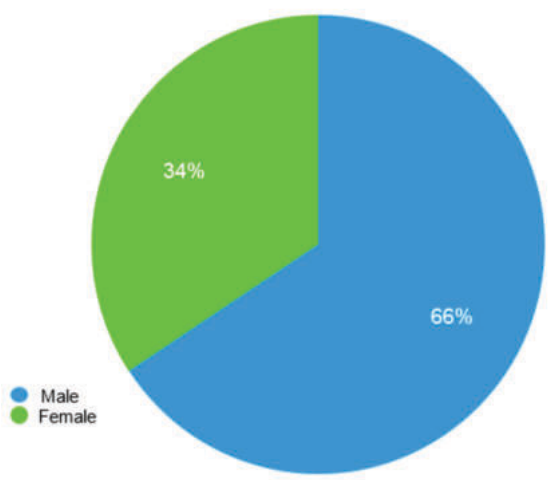
Exclusion criteria were as follows: (1) evidence of secondary causes of elevated IOP; (2) a history of intraocular surgery, including laser treatment and refractive surgery;(3) presence of any other retinal or neurological pathology; and (4) no light perception of visual acuity.

t-test and chi square test were used to compare the mean data with the various subgroup. A p-value less than 0.05 was considered statistically significant. All the test were carried out by Microsoft excel software.

RESULT

Out of total 70 patients of JOAG there were 46 males and 24 female patients.

Chart-1 sex distribution among JOAG



The mean age group at the time of diagnosis was 28.55+7.23, the mean

CD ratio was found to be 0.8+0.2 with 57% patient having cup-disc ratio >0.6. 22 patients had positive family history.

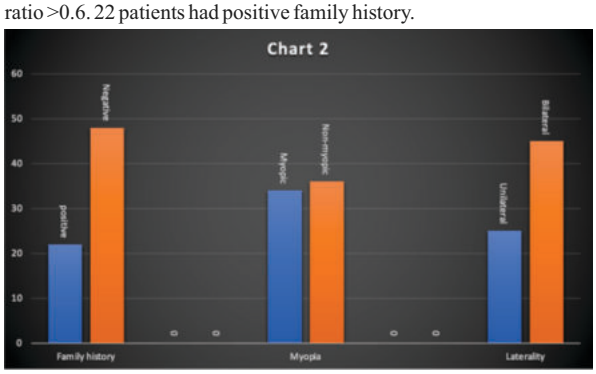


Chart 2: 34 out of 70 patients were myopic with average pachymetry of 502.37+36.12. Of these patients 45 had glaucoma in both the eyes.

17 patients had Mean deviation(MD)(db) of 17.20+3.02 and 37 had MD(db) of 9.87+3.06.

Myopic patients had thin central corneal thickness and was statistically significant($p<0.05$)

Table 1

	Myopia	Non-Myopic	P-value
PACHYMERTY	490.76+36.15	513.34+32.95	0.0001

Table:2 On comparing the unilateral and bilateral group the all parameters where not significantly different between the two groups.

Table 2

	Total (70)		Unilateral (25)		Bilateral (45)		P-value
Male	46(65.71%)		17 (68%)		29 (64.45)		0.07a
age	28.55+7.23		26.52+7.99		29.35+ 6.46		0.1359b
Family history		22		8		14	0.2a
Myopia		34		13		21	0.17a
pachymetery	502.37 + 36.12		503.08 + 32.40		501.99 + 38.38		0.85b
IOP	17.47+4.82		16.68+4.35		17.91+5.04		0.131b
Cup- disc ratio	0.8+0.2		0.8+0.2		0.8+0.2		0.99b

a. t test b-chi square

Table 3- Shows chief complain of patient with JOAG at the time of diagnosis. Asymptomatic patients(42.85%) was most common manifestation followed by blurred vision(22.88%) and pain (18.58%).Other symptoms

Table 3

Presenting Complain	Number(%)
NO symptoms	30(42.85%)
Blurred vision	16(22.85%)
Pain	13(18.58%)
Others*	12(17.14%)

DISCUSSION

Our study showed more male predominance(65.71%). these findings were similar to those of other reports [7,9,10].Causes which lead to male predominance can be due to more male patients in congenital glaucoma which is supported by Anderson 11 and that some cases are really cases of congenital glaucoma in which symptoms and signs are not produced until after childhood.

22 out of 70 patients showed positive family history. Souzeau et al. 12 found that the prevalence of myocilin mutation in glaucoma cases with severe VF loss was significantly greater than in nonadvanced glaucoma patients.12.5% to 36% of JOAG patients are associated with myocilin mutation[13,14] therefore, it is possible that positive family history in JOAG patients is associated with VF progression.

34 out of 70 patients were myopic among the patients of young glaucoma.

In contrast Gupta S et al.(15) showed prevalence of myopia in JOAG to be 70.3%.

The prevalent risk of glaucoma in myopes seem to be higher than in normal population, and CCT may be important in this context.16 .Quigley et al 17 on the morphology of laminate cribrosa correlation with neural loss in open angle glaucoma draws attention to possible predisposition of the people with myopia towards thin scleral bed of laminate cribrosa, and to higher risk of glaucoma.

In contrast to our study , Kwun et al (7) showed bilateral JOAG patients were older and made up a higher proportion of those with a family history of glaucoma than unilateral JOAG patients. It is probable that unilateral JOAG patients were diagnosed earlier than bilateral JOAG patients, because 64% of the normal fellow eyes of unilateral JOAG patients at the initial hospital visit were also diagnosed with JOAG during the follow-up in this study.

Symptoms associated with visual acuity, including blurred vision and decreased visual acuity, were the major manifestation. However, one-third of the patients visited the clinics without definite symptoms and was diagnosed with JOAG by chance. Visual impairment and vision-related quality of life in working-age adults was related with impaired vision as well as with adverse social outcomes [18]. Because JOAG patients have a long life expectancy, the periodic IOP measurements conducted during the school's physical examinations are important despite their rarity

Study limitation, firstly there was no long term follow-up of the patient to study the progress of the disease and secondly relatively small number which made it difficult to detect differences among groups.

In conclusion, we confirmed that JOAG patients presented with a male preponderance, a myopic refractive ,raised IOP and bilateral preponderance. Periodic eye examinations are needed because number of JOAG patients have no definite symptoms. For a definite conclusion, further large-scale prospective studies would be needed.

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