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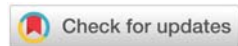
Research Article

Prevalence of age Related Macular Degeneration in A Tertiary Care centre

Abstract

Background: Age-related macular degeneration (AMD) is one of the leading cause of irreversible blindness in elderly population affecting the quality of life and there by general health. AIM: The purpose of the present study was to estimate the prevalence, risk factors and subtypes of AMD in a hospital population attending to ophthalmology outpatient department.

Materials and Methods: This observational study was carried out at tertiary eye institute between November 2017 and April 2018. Newly registered patients of both the sex attending the hospital with complaints of diminution of vision for various reasons were selected for detailed ophthalmic examination and evaluation.

Results: Among the patients attending to our outpatient department, 120 patients were diagnosed with Age related macular degeneration. As the age of subjects increased prevalence also increased and most of them were in the age group of 61-70. Male to female ratio was 1:2.33. Early AMD was seen in 71.7% (n = 86) and Late AMD (n= 34) was seen in 28.3%. Dry AMD was seen in 75.84% (n=91), Wet AMD was seen in 24.16% (n=29).

Conclusion: Study reports prevalence of AMD increases with age. Higher prevalence was noted in females. Early AMD was seen in more cases than Late AMD and Dry AMD was noted more than Wet AMD. So complete ophthalmic evaluation is necessary in order to diagnose and stabilize the progression of AMD especially in the elderly age group of patients who complains of recent onset central visual loss.

Introduction

Age-related macular degeneration (AMD) is the leading cause of irreversible blindness apart from cataract and glaucoma especially in elderly population. The disease adversely affects quality of life and activities of daily living, causing many affected individuals to lose their independence in their retirement years. It accounts for 8.7% of all blindness worldwide and is the most common cause of blindness in developed countries [1-5], particularly in people older than 60 years.

Age- related macular disorder is a degenerative disorder affecting macula, characterized by presence of drusens and RPE changes. Conventionally it is classified in to two types mainly Dry (non-exudative, non-neovascular) form which is more common and presents as Geographical atrophy (GA) in its advanced stage. Wet (exudative, neovascular) form which is relatively less common but is associated with rapid progression to vision loss. Choroidal neovascualarisation (CNV) and Pigment epithelial detachment (PED) are its main manifestations. According to a Recent clinical classification it is divided in to Early AMD (drusen size more than 63μm less than 125μm), Intermediate AMD (drusen size more than 125μm), Late AMD (Neovascualr AMD and geographical atrophy) [6].

Although, there is considerable information on visual impairment in the Western world, to date there are only few studies on the prevalence and risk factors of AMD in Indian subcontinent [7]. It was also included in the action plan of the World Health Organization, to address avoidable blindness in VISION 2020 program [8]. Differences in the prevalence of AMD based on gender, race, or geographic area have been observed. With increasing longevity & shift in demographic profile, prevalence of the disease is expected to rise dramatically in India also.

Recent studies from India account the prevalence of AMD among 70 years and above as 2% and 3.7% which was comparable to Western countries [7,9]. Therefore, the investigation of risk

factors of AMD is important to suggest preventive measures that can retard or control AMD progression. Risk factors such as age, hypertension, smoking, diabetes mellitus, cardiovascular disease, obesity, female sex, sunlight exposure, dietary factors and positive family history [9-14] and their contributions to AMD had already been documented in literature. The purpose of the present study was to estimate the prevalence and identify risk factors and subtypes of AMD in a hospital population. The Early AMD included the presence of drusen and/or retinal pigment epithelium (RPE) abnormalities; and Late AMD, included geographic atrophy of RPE or choroidal neovascular complex.

Materials and Methods

This current observational study was carried out at tertiary care centre, SNMC & HSK hospital, Bagalkot, Karnataka. Study was conducted between November 2017 and April 2018. The institutional review board approved this study and an informed written consent was obtained from the subjects as per the Declaration of Helsinki. Before examination, the study was explained in detail to all the participants. The study population included the patients attending the outpatient department. Data regarding personal, medical history and lifestyle factors was collected and documented. Self-reported hypertension or diabetes and its duration from diagnosis were recorded. Lifestyle factors like smoking and alcohol consumption were explored by means of interview and were categorized as never smokers and smokers. Cases were considered as non-smokers if duration of smoking was less than one year.

All the ophthalmic examination was performed by investigating ophthalmologists. The examination was conducted according to a standardized protocol that included visual acuity for distance by snellens chart, jaeger chart for near vision, autorefractometer (POTEC PRK - 7000), computerized noncontact tonometer (NIDEK NT-510) for intraocular pressure measurement and anterior segment evaluation using slit lamp biomicroscopy, followed by dilation of pupil with tropicamide (0.8%) and phenylephrine (5%). For grading lens opacity, each eye was compared with the Lens Opacities Classification System (LOCS III) photographs [15]. Patients with small pupils, dense corneal and lens opacities precluding the view of retina are excluded from the study. Fundus findings were noted by using Direct, Indirect ophthalmoscopy using 20 D lens and in slitlamp biomicroscopy using 90 D lens. Findings were classified according to an International classification and grading system of Age related macular degeneration [16]. The features were examined for hard and soft drusens, changes in the retinal pigment epithelium (RPE), geographic atrophy, choroidal neovascular membrane, and disciform scar. AMD was classified as late (neovascular or geographic atrophy) or early (soft drusen or retinal RPE abnormalities). The cases of AMD, thus, detected were also confirmed by the principal ophthalmologist. When the both eyes of participants had lesions of different severity, the grade assigned was that of the more severely involved eye. Retinal lesions considered due to high myopia and inflammation were excluded.

Statistical analysis

The data were analysed using the Microsoft excel version MS 2007 software packages. Descriptive statistics was used to determine mean and percentages. Significance was derived by using pearson chi square test. P value <0.05 was considered as significant.

Results

Among the patients attending the out patient department in 6 months duration, 120 subjects were diagnosed with Age related macular degeneration. Prevalence was 0.46%. 36 were males and 84 were females. Male: female ratio was 1: 2.33 (Figure 1). As the age of subjects increased prevalence also increased and most of them were in the age group of 61-70 (47.5%) (Figure 2). Prevalence rate was 0.46 %. Early AMD was diagnosed in 86 cases (71.7%) and Late AMD was seen in 34 cases (28.3%) (Figure 3). Dry AMD was seen in 91cases (75.84%), Wet AMD was seen in 29 cases (24.16%) (Figure4). Geographical atrophy was seen in 5 cases.

Out of 120 patients Early AMD was seen in 86 out of which 24 were males and 62 were females. Late AMD was seen in 34 cases, out of which 12 were males and 22 were females. 91 cases has shown Dry AMD changes out of which 27 were males and 64 were females. 29 cases shown Wet AMD out of which 9 were males and 20 were females (Table 1).

Out of 120 subjects 62 were hypertensive (p = 0.560), 33 were diabetics (p = 0.418), 23 were smokers (p=0.493) 11 were alcoholics (p = 0.23). P values for all were not significant.
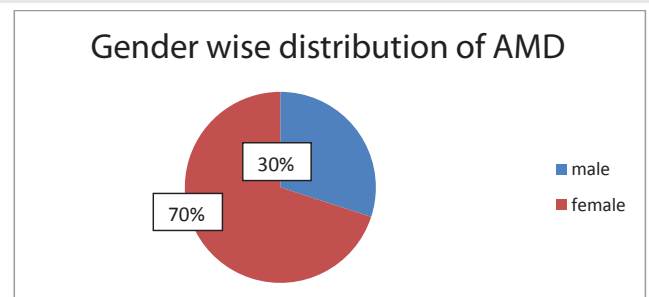

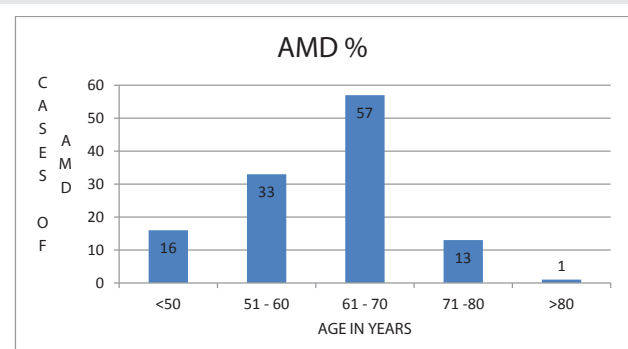**Figure 1:** Gender wise distribution of AMD with male : female = 1: 2.33.

Figure 2: Age wise distribution of AMD in %.

Discussion

Age related macular degeneration is the leading cause of visual disturbance and blindness especially among the elderly population affecting their quality of life. It accounts for 8.7 % of the total blindness globally. As the aging population is rapidly increasing, age related blinding causes will be more important in coming years.

Various previous studies reported the prevalence and riskfactors of AMD. Overall prevalence of AMD was 1.82 % in Andhra Pradesh Eye Disease Study [9], 1.51 % in Beaver Dam Eye Study [7], 1.81 % in Blue Mountain Eye Study [2], 1.38 % in a hospital based study [17] and 2.31% in a study done in Central India [18]. In our study prevalence rate was 0.46%. Differences in this prevalence rates may be due to the differences in the type of study undertaken like community based or hospital based, genetic factors and environment.

As the age of subjects increased prevalence also increased and most of them were in the age group of 61–70. This result is consistent with other studies [2,4,7,9,19]. Increasing age is strongly associated with AMD.

Pooled data from the Beaver Dam Eye Study, Blue

Table 1: Demographic data of the study subjects (120).

Characteristics	Number	%
Age in years		
< 50	16	13.3
51 − 60	33	27.5
61 − 70	57	47.5
71 − 80	13	10.8
>80	1	0.83
Genders		
Male	36	30
Female	84	70
Hypertension		
Present	62	51.6
Absent	58	48.3
Diabetes		
Present	33	27.5
Absent	87	72.5
Smoking status		
Smokers	23	19.1
Non smokers	97	80.8
Alcohol consumption		
Alcoholic	11	9.1
Non alcoholic	109	90.8
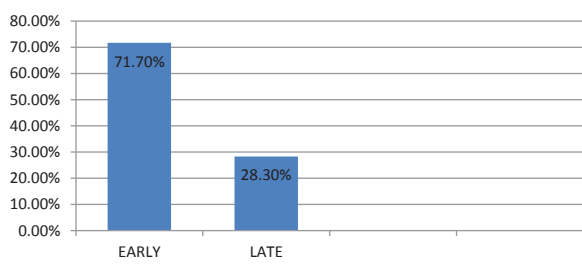
Mountains Eye Study, and the Rotterdam Study revealed no sex differences in AMD risk. However, recent analyses from the Blue Mountains Eye Study suggest that the 5-year incidence of Neovascular AMD among women is double that of men (1.2% vs. 0.6%). Females were having higher risk of AMD than males in our study. However, the difference is not statistically significant (p= 0.486). This was also reported by several other studies. However, there were studies showing prevalence of AMD more in males that is related to smoking habits, sunlight exposure and better longevity among females.

The Aravind Comprehensive Eye Study reported the prevalence of Early AMD and Late AMD were 2.7% and 0.6% respectively [7]. It was 2 % and 1.6% in the INDEYE population [20]. Kulkarni et al had reported the proportion of early and late AMD as 1.34% and 0.37 % respectively [21]. According to Gupta et al it was 47% and 1.4% respectively [22]. The proportion of early and late AMD in south Korean population was 5.1% and 0.34% respectively [23]. In the current study early AMD % was more than late AMD (71.7% and 28.3%) which is similar to forementioned studies.

Hypertension and cigarette smoking were identified as risk factors for AMD constantly apart from age, prior cataract surgery, CVD, obesity and dietary factors. Smoking is an important, independent, modifiable risk factor for AMD. Mechanisms by which smoking may increase the risk of developing AMD include its adverse effect on blood lipids by decreasing levels of high-density lipoprotein (HDL) and increasing platelet aggregability and fibrinogen, increasing oxidative stress and lipid peroxidation, and reducing plasma levels of antioxidants. In the present study 62 cases were

PROPORTIONS OF EARLY AND LATE AMD

	Male	Female	
Early	24	62	86
Late	12	22	34
Total	36	84	120

Figure 3: Proportions of early and late AMD.

PROPORTIONS OF DRY AND WET AMD

	Male	Female	
Dry	27	64	91
Wet	9	20	29
Total	36	84	120

Figure 4: Proportions of dry and wet amd.

noted as hypertensives (p= 0.560), 23 were smokers (p=0.493) but the p value was not statistically significant. And this may be due to the large number of female cases in the study. 33 were diabetics (p= 0.418), 11 were alcoholics. To date the evidence suggests that alcohol doesnot affect the AMD. Many studies have investigated the relationship between diabetes and/or hyperglycemia and AMD, and most have found no significant relationships and this may be due to the coexisting diabetic retinopathy. Limitations of the study includes small sample size and we could not associate the risk factors like smoking, alcohol, diabetes and hypertension as the study was observational and controls were not included in the study and odds ratio was not calculated.

Conclusion

Age related macular degeneration is a common and potential cause of blindness in elderly population that often goes unnoticed without a clear ophthalmological examination. So early detection of cases is important to reduce the progression. Study reports prevalence of AMD increases with age. Higher prevalence was noted in females. Early AMD was common than Late AMD.

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