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Profile of Age related macular degeneration in a Kashmiri population-A hospital based study in Tertiary care hospital in Kashmir, India

Tariq Qureshi, MajidNazir*, Nausheen Abdullah*, AnjumFazili**, Rashid Maqbool*, RahilaRamzan**

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***Department of Ophthalmology**
Government Medical College
Srinagar, Kashmir, India
****Departmentof Community Medicine SKIMS**
Srinagar, Kashmir, India

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ABSTRACT

Purpose **To assess the profile of age related macular degeneration**

Material and Methods **In a cross-sectional, prospective study 164 eyes of 100 ARMD patients were taken up for evaluation. Relevant clinical examination and FFA was done.Patients of wet ARMD were taken for OCT. Instruments used were Direct Ophthalmoscope (Heinz) slit lamp biomicroscope (Zeiss), Fundus camera (Zeiss) and spectral domain optical coherence tomography (Zeiss).**

Observation **Out of 100 patients 63 were male and 37 were females. 64 patients had bilateral involvement while as 36 patients had unilateral involvement at presentation. 35 patients were in the age group of 61 to 65 yrs.95% of patients presented with the symptom of diminution of vision. 26% of patients had associated systemic ailments, 29.88% of patients had a visual acuity of < 6/60. On FFA, 82.32% (135 eyes) were having non exudative (dry) ARMD and 17.68 % (29 eyes) had exudative (wet) ARMD. In dry ARMD 95.55% had drusens and only 4.44% had geographic atrophy.Out of 29 eyes of wet ARMD,on FFA, 17 eyes 58.62% had classic CNV, Two eyes (6.9%) had occult CNV and 10 (34.48%) had serous PED. OCT findings suggested classic CNV in 17 eyes (58.62%), occult CNV in 4 eyes (13.79%) and serous PED in 8 eyes (27.58%)**

Conclusion **ARMD is usually a bilateral condition affecting mostly in the early 5th decade. Dry ARMD is commoner than wet ARMD. FFA is the golden tool for screening wet ARMD. OCT is more specific in detecting early sub- retinal neo vascular membrane.**

Keywords: ARMD (Age related macular degeneration), FFA (Fundus Fluorescein Angiography), OCT (Optical Coherence Tomography), CNV (Choroidal Neovascularsation, PED (Pigment epithelial Detachment)

INTRODUCTION

Age related macular degeneration represents a spectrum of gradual ageing resulting in degenerative changes in the human macula[1]. It is a major cause of blindness and severe vision loss in older people in developed countries[2]. With the increase in the life expectancy, ARMD will become a public health concern in our country in near future. It is therefore important to study the various clinical presentations of ARMD. However, no study has been conducted in Kashmir on this sight threatening disorder hence and the need for the present study

OBJECTIVE

To study the clinical profile of patients of ARMD reporting to a tertiary eye care centre.

MATERIALS AND METHODS

This cross-sectional prospective study was conducted in the post-Graduate department of Ophthalmology, Government Medical College,

Srinagar, J&K from 2010-2012. The center is a tertiary level of eye care center.
Patients above 50 yrs with a documented ARMD with a history of gradual or sudden visual loss, metamorphopsia, scotoma, micropsia or defective visionwere included.

A questionnaire was completed regarding the name, age, gender, occupation, residence, duration of symptom, systematic disease and drug history. Both eyes of 100 patients were examined.Complete ocular examination was done. Visual acuity and best corrected visual acuity was recorded. Complete fundus examination was done using direct ophthalmosopic fundus examination and slit lamp biomiroscopic with +90D lens. The patients with fundus findings of hard drusen, soft drusen,calcific drusen geographic atrophic, pigment epithelial detachment were subjected to fluorescence angiography using Zeiss fundus camera.

FFA images of the wet form were classified in to following groups [3, 4]:

1) **Classic CNV**:- Early hyperfluorescence with well demarcated borders with increasing hyperfluorescence and late obscuration of CNV boundaries and details of capillary plexus.Can be :
    1. Subfoveal in which center of foveal avascular zone is involved
    2. Jutafoveal CNV is closer than 200µm from centre of FAZ
    3. Extrafoveal in which CNV is more than 200µm from FAZ
2) **Occult CNV:-** Late leak of undetermined origin or vascularised PED
3) **Serous PED; -**Early area definition with increasing hyper fluorescence.

OCT images were classified with the aid of following features[5, 6]:

1. Classic CNV:A sub retinal band corresponding to the retinal pigment epithelium (RPE) and choriocapillaries which is thickened and disrupted, typically a fusiform or cigar shape with / without intraretinal / subretinal fluid (SRF)
2. Occult CNV :A less well defined band than classic CNV but appears to be more sub-RPE with more disorganisation of the retina and sub-retinal and or intra retinal fluid (cystoids)
3. Serous PED: Dome shaped elevation of the reflective band corresponding to RPE with an area of low reflectivity underneath.

Based on FFA pictures ARMD was divided in to dry (non – exudative) and wet (exudative). OCT was done in patients of wet ARMD and any choroidal neo vascular memberane, retinal pigment epithelial detachment, sub retinal fluid was documented.

RESULTS

In the present study164 eyes of 100 patients were taken up for evaluation. Distribution of study subjects by laterality of ARMD (Table 1).

Table 1 reveals that in 64% of patients there was bilateral involvement while 36% showed a unilateral involvement with right eye affected in 55.5% and left eye in 44.5% cases.

Table 1 Distribution of study subjects by laterality

Laterality	N	%
Bilateral	64 patients	64%
Unilateral	36 patients	36%
Right eye	20 patients	(55.5%)
Left eye	16 patients	(44.5%)

Distribution of study subjects by age and gender (Table 2, 2A).

Almost 2/ 3rd(63%) of the study subjects were males and 37% were females.Majority of the cases (78%) were between 56 and 70 years of age with most of them in the age group of 56 to 60 years.

No particular relationship was found with regard to occupation of the patient. Most of them had retired from their jobs.Among the females majority were housewives.

Table 2Descriptive Statistics (Age)

Variable	N	Range	Min.	Max.	Sum	Mean	Std. E	Std. D	Variance	Median
Total	100	24	51	75	6174	61.7400	0.60061	6.00609	36.073	60.50
Male	63	24	51	75	3892	61.7778	0.77712	6.16819	38.047	61.00
Female	37	22	51	73	2282	61.6757	.95393	5.80256	33.670	60.00

Table 2A Distribution of study subjects by age and gender

Age (yrs)	Male		Female		Total		P value
	N	%	n	%	n	%	**P = 0.960 (NS)**
≤ 55	09	14.29	04	10.82	13	13.00	
56-60	21	33.34	14	37.84	35	35.00	
61-65	14	22.23	09	24.32	23	23.00	
66-70	13	20.64	07	18.92	20	20.00	
> 70	06	09.50	03	08.10	09	09.00	
Total	63	100.00	37	100.00	100	100.00	
Mean ± SD (Max,Min)	**61.78 ± 6.2 (51,75)**		**61.67 ± 5.8 (51,73)**		**61.74±6.0 (51,75)**		
Median	**61.0**		**60.0**		**60.5**		

Mann-Whitney Rank Sum Test

The difference in the median values between the two groups is not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.960)

Distribution of study subjects by presenting complaint (Table 3).

Diminution of vision (91%) and metamorphopsia (37%) were the commonest complaints of the patients studied .A significant number also complained of scotomas (26%)

26% patients had associated systemic ailments like hypertension (15%),diabetes (10%) and CRF (1%).

42.8% of male patients were smokers while none of the female patients were smokers.

Table 3 Distribution of study subjects by presenting complaint

Complaint	Percentage of patients
Diminution of vision	91%
Metamorphopsia	37%
Scotoma	26%
Micropsia	2%

Distribution of examined eyes by Visual acuity (Table 4).

Visual acuity of most of the patients was in the range of 6/18 to HM with maximum being 6/60 or worse.Most of the patients(78%) had no improvement of vision, a few improved by one line on Snellen's chart and a few gained two lines.

Visual Acuity	Number of eyes	Percentage
6 / 18 P or 6 / 18	14	08.54%
6 / 24	16	09.76%
6 / 36	41	25.0%
6 / 60	44	26.83%
< 6 / 60	49	29.88%

Table 4 Distribution of examined eyes by visual acuity

164 eyes of 100 patients revealed that 135 eyes(82%) had dry form of ARMD out of which 129 eyes(95%) had Drusen's and 6 eyes(5%) had geographic atrophy.Most of the eyes had soft type of Drusen's(49.62%) with 43.7% having discrete variety and 56.25% as confluent Drusen's.Hard Drusen's were seen in 31% of eyes.Only 29 eyes(18%) had wet form of ARMD.

Table 5 Distribution of eyes by type of ARMD

Types of ARMD	Number of eyes	Percentage
Non exudative (dry)	**135**	**82.32%**
Drusens	129	95.55%
Gepgraphic atrophy	06	04.45%
Exudative (wet)	**29**	**17.68%**
	164	**100**

Distribution of eyes by type of ARMD (Table 5).

Table 6 Diagnosis of type of ARMD by OCT versus FFA

Table- 6					
Type of the Wet AMRD	OCT		FFA		P value
	No.of Eyes	% age	No.of Eyes	% age	
Classic CNV	17	58.62	17	58.62	P = 0.046 (Sig.)
Occult CNV	02	06.90	08	27.59	
Disciform scarring	10	34.48	4	13.79	
Total	29	100.00	29	100.00	

Chi-square Test

χ^2= 6.171with 2 degrees of freedom. (P = 0.046) i.e. P < .05

The proportions of observations in different columns of the contingency table vary from row to row. The two characteristics that define the contingency table are significantly related. (P = 0.046)

DISCUSSION

The main aim of the study was to determine the clinical profile of the patients with ARMD.164 eyes of 100 patients were studied who were clinically diagnosed as having ARMD.

Out of 100 patients 64 had bilateral disease at presentation. Only those patients who had not been treated before were taken up for study. The right and left eyes in case of unilateral involvement were affected with almost equal frequencywith right eye in 20 cases and left eye in16 cases.

GASS J.D.M [7] studied 200 patients of ARMD and found 109 had bilateral disease, which is almost in accordance with our study.

Males were affectedmore than females, 63 out of 100 with male:female ratio being 1.7: 1.
Masanobu U et.al[8] studied 473 eyes of 398 patients and also reported a preponderance of males with a male to female ratio (3:1) .Contrary to this Gass J D M in his study found females to be affected more than males. (87males, 113 females). This may be because women in our part of society are mostly restricted to house hold work and seldom seek medical advice for any ailment. A Longer life expectancy in females is seen less in this part of the world in contrast to the West where females live longer.

The highest number of patients were seen in the age group of 56 to 60 yrs, youngest being 53 and oldest 75 yrs. Our findings are in accordance with those of Gass JDM who found average age in his study to be in the range of 54 to 86 yrs.

Velayuthan V M et.al [9] studied 75 eyes of 40 patients with ARM where majority of the patients belonged to the age group of 61 to 70 yrs (42.5%) .These findings are similar to our study.
Steven S et.al found that out of 40 patients 62% were from the age group of above 70 yrs.This is in contradiction to our study where only 9% of patients were in the aged 70yrs or more. This may be because the life expectancy in our part of world is lower than in the west and thus lessernumber of the elderly patients in our society report with complaints of visual impairment.

The most common complaint in our study was diminution of vision seen in 91% of cases. Metamorphopsia formed the next most important complaint (37%) followed by scotoma (26%).These findings are consistent with those of Velayuthan V M et.al who reported[9] main complaint as diminution of vision followed by Metamorphopsia and scotoma .

26% of patients had associated systemic disorder, with hypertension and diabetes forming the bulk.
Velayuthan V M et.al [9]found 70% of the patients having associated hypertension.

A great majority of eyes had vision < 6 / 36 and BCVA did not show much improvement in 79% as there is usually a small or no refractive error that is responsible for the decrease in visual acuity.

Velayuthan V M et.al [9] revealed in their study that 66% of eyes had vision 6 / 60 or worse which is similar to our study in which 56% of eyes had visual acuity of 6 / 60 or less.

FFA findings revealed 135 eyes with dry ARMD. Of these 129 eyes had drusensand 6 eyes had geographic atrophy.

The soft variety formed the majority of drusens accounting for 64 eyes (49.61%). Of these 28 eyes (43.75%) had the discreate type of drusens and 36 eyes 56.25% had confluent variety of drusens with ill-defined margins.
Hard drusens were seen in 40 eyes(31%) and calcific drusens in 25 eyes (19.38%)

Gass J.D.M[7] reported about 60 cases of geographic atrophy of the RPE but in our study only 06 eyes had geographic atrophy. This is because geographic atrophy is one of the end results of dry ARMD and usually occurs much later in life. Since the life expectancy in the west is more so more cases of geography atrophy are encountered.

Gregor Z and Joffe L[11]studied 137 patients of Caucasian origin and found that majority (90.5%) had the dry form of ARMD which is similar to our study that revealed 82.32% of dry ARMD. In their study they found that only 2.9% cases had confluent drusens but in our study 27.90 % eyes had confluent drusens.

Contrary to our study, Majji A.B et.al [8]in their study noticed that 142 eyes (56.34%) had exudative ARMD and 110 eyes (44%) had non-exudative ARMD. This might be because the patients in their study were much older than the patients in our study and the CNV develops later in life as one of the end results of dry form of ARMD.

However,out of 110 eyes with dry ARMD which the authors observed,103 eyes (93%) had drusens and 7 eyes (6.4%)had geographic atrophy. This is consistent with our study.

Miyazaki M et.al[12]studied about 248 patients aged 50 yrs and above with ARMD and found that majority (97.2%) had early ARMD and only a small percentage 2.8% had the late variety of ARMD which is consistent with our study. In their study the authors did not find a significant association between smoking and ARMD, also in our study the majority of the males were non smokers and none of the females smoked.

Freund K.B et.al [13] in a study of 67 patients found only 9 patients having classic type of CNV of which 03 (33%) had subfoveal CNV, 03 (33%) had juxtafoveal and 03 (33%) had extrafoveal neovascularisation. In their study occult type of CNV was observed in a large group of patientsi.e 56 (84%). These observations go against our findings where we noticed that out of 29 eyes that had exudative ARMD a higher number of patients had classic CNV i.e 17 (58.62%) followed by 08 eyes with occult CNV (27.58%) and serous PED in 04 patients (13.17%)

Jochen B et.al[11] in a study of 191 patients (292 eyes) with exudative ARMD observed that a very high percentage i.e 91% had the occult type of CNV and only 9% had classic CNV. The author found out that in the eyes with classic CNV 12 eyes (90.58%) had subfovealCNV, 3 eyes (17.64%) hadjuxtafoveal CNV and 2 eyes (11.76%) had extra foveal CNV. This is almost similar to the results of our study.

Koenig F et.al studied 45 patients (50 eyes) of wet ARMD and found that 27 (54%) had classic CNV similar to our study.

The patients with wet ARMD were subjected to OCT. Out of 29 patients 17 had classic CNV, 02 had occult CNV and 10 had serous PED. This is consistent with the study of S.S Sandhu et.al.

CONCLUSION

ARMD is usually a bilateral condition of the eyes often with asymmetric involvement. It can be unilateral affecting either eye with equal frequency especially in the early 5th decade but often progresses with age to become bilateral. Presenting complaint is usually diminution of vision, metamorphosia or scotoma. Visual acuity is usually poorer than 6 /18 with the majority having vision 6 / 60 or less .In a major chunk of patients there is no improvement with glasses. Dry form of ARMD is much more common than wet ARMD. Soft drusen is a good indicator that wet type of ARMD may ensure later in life. There is asymmetric involvement in bilateral cases and one eye may have the dry and the other neovascular form of the disease.OCT is a good screening tool for detecting wet ARMD but FFA is the gold standard tool.

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