

Original Research Article**Macular disease in a black population.**

Abstract

Aim: This is to examine the distribution of macular disease in our environment in order to advocate possible preventive interventions or address current behaviors that fall within established risk factors.

Methods:

A retrospective study of the data on 42 consecutive new patients with macular disease seen in the eye clinic was done. Patients with age-related maculopathy were classified into wet and dry. Blindness was defined according to the world Health Organization definition.

Results:

Forty two patients (4.17%) were found to have macular disease out of which 29 (69.05%) had ARMD.

There were 19 (45.2%) males and 23(54.8%) female patients with their ages ranging between 10 and 80 years and mean of 58.69 years (SD 15.25).

Two (4.76%) were bilaterally blind while 9(21.43%) were blind in only one eye. Ten (23.81%) had low vision.

Conclusion:

Macular disease is prevalent in this environment and ARMD is the commonest cause of macular disease. It is therefore necessary to educate the populace about the known risk factors in ARMD causation.

Keywords: blacks, maculopathy, age-related macular degeneration, blindness, low vision.

Introduction

Macular disease commonly affects elderly people and these are referred to as age related macular degeneration (ARMD). ARMD, a multifactorial and polygenic disease; is an important cause of global blindness accounting for about 9% of cases^[1].

It is the leading cause of severe visual loss among people aged older than 65 years in the developed world^[2, 3]. It affects more than 1.75 million individuals in the United States and owing to the rapid aging of the US population, it is said that this number will increase to almost 3 million by 2020^[2]. Its prevalence increases with age, affecting up to 25% of the population aged over 75 years. The pathogenesis of this disease is not well known. Apart from aging, varying degrees of genetic and environmental factors are also implied. Several risk factors have been implicated in the pathology of ARMD such as nutrition^[4, 5, 6], smoking^[7, 8, 9] and alcohol^[10].

This progressive late-onset degenerative disease affects central vision, which can impair important activities, such as driving and reading^[11].

In developing countries, some studies have shown that it is more prevalent than earlier believed^[12].

However, younger ages may have other problems like infections such as toxoplasmosis affecting their macular.

This study is aimed at examining the distribution of macular disease in this environment in order to put up strategies to reduce incidence. There has been no such study in this area.

Materials and method

A retrospective study that included all consecutive patients with macular disease over a 2 year period (2011-2012).

Information obtained included the age, sex, visual acuity, ocular co-morbidities, systemic co-morbidities and type of macular disease.

The records staff recorded the age and sex of all patients. Ophthalmic Nurses determined the visual acuities while Ophthalmologists performed the ocular and systemic examinations. Amsler grid chart and ophthalmoscopy were used in assessing the macular. Fundus photograph and fluorescein angiography were not done as these facilities were not available during the study period. Patients with ARMD who had neovascularization, oedema or serous retinal detachment were classified as having wet maculopathy while those with only drusen or atrophy were classified as dry.

Blindness implies a presenting visual acuity worse than 3/60 or visual field worse than 10 degrees from fixation in the better eye.

This methodology was carried out according to the guidelines of the Declaration of Helsinki and Institutional ethical approval was obtained.

Results

A total of 1008 new patients were seen during the study period. Out of these, forty two patients (4.17%) were found to have macular disease. Out of these 42 patients with macular disease, 29 (69.05%) had ARMD.

There were 19 (45.2%) males and 23(54.8%) patients with their ages ranging between 10 and 80 years and mean of 58.69 years (SD 15.25) as shown in table 1.

Two (4.76%) were bilaterally blind while 9(21.43%) were blind in only one eye. Ten (23.81%) had low vision.

Figure 1 shows the type of maculopathy seen. Thirty six (85.7%), 2 (4.8%) and 4 (9.5%) had dry ARMD, wet ARMD and other scars respectively.

The types of ocular co-morbidity are as shown in figure 2. Some patients had more than one problem while figure 3 shows associated systemic morbidities.

Discussion

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97 Macular disease is a frequent cause of visual impairment^[13,14] and mortality^[15] in older people.

98 ARMD is the most important cause of visual impairment in the United kingdom^[16].

99 Approximately 200,000 people aged 75 years and above are visually impaired due to ARMD in
100 the United Kingdom^[16]. In a study by Owen et al, overall prevalence of late AMD was 2.4% (95%
101 credible interval (CrI) 1.7% to 3.3%)^[17].

102 As a result of aging of the population and advances in technology with its antecedent socio
103 economic development, there is now an epidemic of age-related macular degeneration in
104 developed countries.

105 In developing countries, some studies have shown that ARMD is more prevalent than earlier
106 believed^[12]. In our study, 4.17% of patients seen had macular disease and out of these, 69.05%
107 had ARMD. In an Oklahoma Indian population, the prevalence of ARMD was 35.2%^[18].

108 However, there is need for more widespread population studies to determine the status in
109 developing countries especially now that the population is aging.

110 Macular carotenoids such as lutein and zeaxantin are strong antioxidants which act as filters to
111 high energy blue light and also neutralize light-generated free radicals. These carotenoids
112 decrease in concentration in the macular with age which may lead to increased incidence of
113 ARMD with age resulting from harmful effect of the high energy blue light. There may be need
114 to health educate the populace on the need to take supplements of these carotenoids in their
115 diet^[4].

116 Also, various authors have examined the association between smoking, its cessation and the
117 incidence of age-related maculopathy and found that current smoking nearly triples AMD

incidence, while smoking cessation lowers AMD incidence in a non-linear fashion even in the elderly^[8, 19].

In a systematic review and meta-analysis of clinical risk factors for age-related macular degeneration, it was found that Smoking, previous cataract surgery and a family history of ARMD are consistent risk factors for ARMD^[20].

Heavy alcohol consumption (more than three standard drinks or 20g per day) has also been associated with an increased risk of early AMD^[21, 22]. Although this association seems to be independent of smoking, residual confounding effects from smoking cannot be excluded completely^[10].

In this study, 29 (69.05%) out of 42 patients with macular disease had ARMD. There is therefore need for health education of the populace especially the aged and those that have family history of ARMD to avoid risk factors such as smoking and its vapour, alcohol and take recommended dietary supplements.

References

1. Yorston D. What's new in age-related macular degeneration? *Community eye health*. 2006; 19(57): 4-5.
2. Friedman DS, O'Colmain BJ, Muñoz B, Tomany SC, McCarty C, de Jong PT, Nemesure B, Mitchell P, Kempen J. Eye Diseases Prevalence Research Group. Prevalence of age-related macular degeneration in the United States. *Arch Ophthalmol*. 2004;122 (4):564-572.
3. VanNewkirk MR, Nanjan MB, Wang JJ, Mitchell P, Taylor HR, McCarty CA. The prevalence of age-related maculopathy: the visual impairment project. *Ophthalmology*. 2000;107(8):1593-1600.
4. Szostak WB, Szostak-Wegierek D. Nutrition in prevention of age-related macular degeneration. *Przegl Lek*. 2008; 65(6):308-11.
5. Elaine W.-T. Chong, Luibov D. Robman, Julie A. Simpson,; Allison M. Hodge, Khin Zaw Aung, Theresa K. Dolphin, Dallas R. English, Graham G. Giles, Robyn H. Guymer, Fat Consumption and Its Association With Age-Related Macular Degeneration . *Arch Ophthalmol*. 2009;127(5):674-680.
6. Chong EW, Kreis AJ, Wong TY, Simpson JA, Guymer RH. Dietary omega-3 fatty acid and fish intake in the primary prevention of age-related macular degeneration: a systematic review and meta-analysis. *Arch Ophthalmol*. 2008;126(6):826-833.
7. Levai L, Horge I, Genoveva O, Cristina G, Bran L, Monica G. Epidemiological factors in age related macular degeneration. *Oftalmologia*. 2008;52(2):44-5.
8. Neuner B, Wellmann J, Dasch B, Behrens T, Claes B, Dietzel M, Pauleikhoff D, Hense HW. Modeling smoking history: a comparison of different approaches in the MARS study on age-related maculopathy. *Ann Epidemiol*. 2007 17(8):615-21.

- 167 9. Leveziel N, Delcourt C, Zerbib J, Dollfus H, Kaplan J, Benlian P, Coscas G, Souied
168 EH, Soubrane G. Epidemiology of age related macular degeneration. *J. Fr.*
169 *Ophtalmol.* 2009 Jun;32(6):440-5.
- 170 10. Chong EW, Kreis AJ, Wong TY, Simpson JA, Guymer RH. Alcohol consumption
171 and the risk of age-related macular degeneration: a systematic review and meta-
172 analysis. *Am J Ophthalmol.* 2008;145(4):707-715.
- 173 11. Nwosu SN. Prevalence and pattern of retinal diseases at the Guinness eye hospital,
174 Onitsha, Nigeria. *Ophthalmic epidemiol.* 2000; 7: 41-8.
- 175 12. Krishnaiah S, Das T, Nirmalan PK, Nutheti R **et al.** Risk factors for age-related
176 macular degeneration: Findings from the Andhra Pradesh Eye disease study in South
177 India. *Invest. Ophthalmol Vis Sci.* 2005; 46: 4442-9.
- 178 13. Pelletier AL, Thomas J, Shaw FR. Vision loss in older persons. *Am Fam Physician.*
179 2009; 79(11):963-70.
- 180 14. Kawasaki R, Yasuda M, Song SJ, et al. The prevalence of age-related macular
181 degeneration in Asians: a systematic review and meta-analysis. *Ophthalmology.*
182 2010;117: 921-7.
- 183 15. Cugati S, Cumming RG, Smith W, Burlutsky G, Mitchell P, Wang JJ. Visual
184 impairment, age-related macular degeneration, cataract, and long-term mortality: the
185 Blue Mountains Eye Study. *Arch Ophthalmol.* 2007;125:917-24.
- 186 16. Owen CG, Fletcher AE, Donoghue M, Rudnicka AR. How big is the burden of visual
187 loss caused by age-related macular degeneration in the United Kingdom? *Br. J.*
188 *Ophthalmol.* 2003; 87: 312-317.

17. Owen CG, Jarrar Z, Wormald R, Cook DG, Fletcher AE, Rudnicka AR. The estimated prevalence and incidence of late stage age related macular degeneration in the UK. *Br. J. Ophthalmol.* 2012; 96 (5). 752-756.
18. Butt AL, Lee ET, Klein R, Russell D, Ogola G, Warn A, Kingsley RM, Yeh J. Prevalence and risks factors of age-related macular degeneration in Oklahoma Indians: the Vision Keepers Study. *Ophthalmology.* 2011;118(7):1380-5.
19. Chakravarthy U, Augood C, Bentham GC, de Jong PT, Rahu M, Seland J, Soubrane G, Tomazzoli L, Topouzis F, Vingerling JR, Vioque J, Young IS, Fletcher AE. Cigarette smoking and age-related macular degeneration in the EUREYE Study. *Ophthalmology.* 2007. 114(6):1157-63.
20. Chakravarthy U, Wong TY, Fletcher A, Piauult E, Evans C, Zlateva G, Buggage R, Pleil A, Mitchell P. Clinical risk factors for age-related macular degeneration: a systematic review and meta-analysis. *BMC Ophthalmol.* 2010 Dec 13; 10:31.
21. La Torre G, Pacella E, Saulle R, Giral di G, Pacella F, Lenzi T, Mastrangelo O, Mirra F, Aloe G, Turchetti P, Brillante C, De Paolis G, Boccia A, Giustolisi R. The synergistic effect of exposure to alcohol, tobacco smoke and other risk factors for age-related macular degeneration. *Eur J Epidemiol.* 2013;28(5):445-6.
22. Tian J, Fang K, Qin XY, Chen Q, Li J, Yu WZ, Hou J, Chen DF, Hu YH, Li XX. Case-control study of risk factors in age-related macular degeneration. Beijing Da Xue Xue Bao. 2012 Aug 18;44(4):588-93.
23. Adams MK, Chong EW, Williamson E, Aung KZ, Makeyeva GA, Giles GG, English DR, Hopper J, Guymer RH, Baird PN, Robman LD, Simpson JA. 20/20--Alcohol and

213 age-related macular degeneration: the Melbourne Collaborative Cohort Study. *Am J*
 214 *Epidemiol.* 2012; 176(4):289-98.

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 217 Table 1: Age-sex distribution of 42 patients
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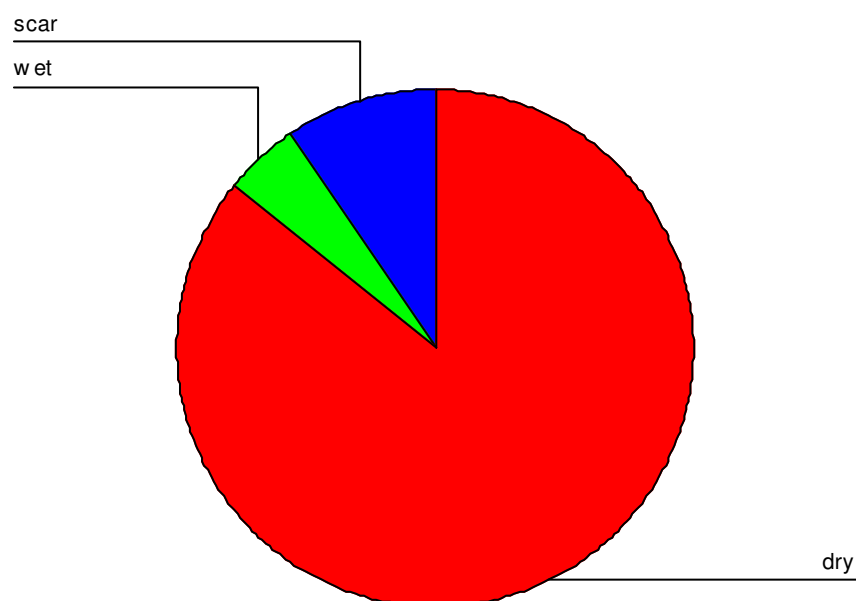
220	Age group	Sex		Total
221		Male	Female	
222	10-19	-	2	2
223	20-29	1	-	1
224	30-39	-	1	1
225	40-49	1	2	3
226	50-59	6	4	10
227	60-69	5	7	12
228	70 and above	6	7	13
229	Total	19	23	42

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240 Figure 1: Pie chart of type of maculopathy

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Figure 2: Pie chart of ocular co-morbidities (%)

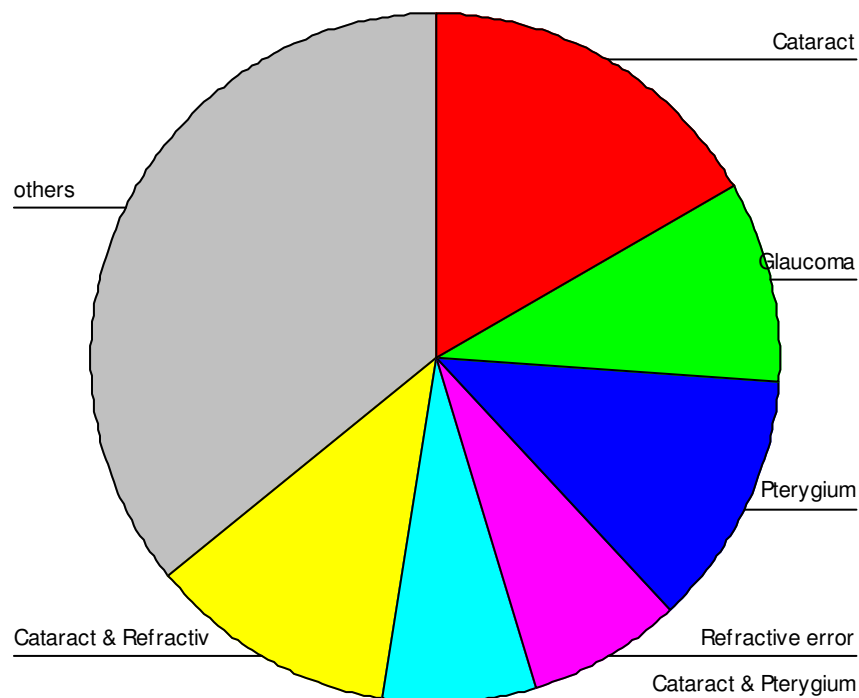


Figure 3: Pie chart of systemic co-morbidity

