Original Article

Macular diseases in Ibadan, Nigeria

TS Oluleye, YO Babalola, OI Majekodunmi, MA Ijaduola

Department of Ophthalmology, Retina and Vitreous Unit, University College Hospital, OYO State, Nigeria

Abstract

Background: Retina diseases including the diseases of the macular are underreported in developing countries of sub-Sahara Africa including Nigeria. **Method:** A retrospective review of retinal register of cases presenting to the retinal clinic of the University College Hospital, Ibadan within 4 years (December 2015, to November 2019). Demographics and clinical data of all patients with macula diseases were retrieved. Data were analysed using the Statistical Package for Social Sciences IBM (SPSS-IBM), version 22 (SPSS Inc., Chicago, Illinois, USA), and reported as frequency distributions and percentages. **Results:** A total of 1291 retinal cases were seen during the period under review, out of which 322 cases were diseases of the macula, representing 24.9% of retinal cases seen. The top 3 common causes of macular disease found in the study were dry Age-related Macular Degeneration (AMD) 63 (19.6%); Macula oedema 53 (16.5%) and Non-AMD atrophic maculopathy (from Retinitis Pigmentosa, chloroquine maculopathy and hereditary causes) 51 (15.9%) representing more than 50% of cases. Macular holes 48 (14.9%); Non-AMD macular scar (Toxoplasmosis, Trauma) 37 (11.5%) and choroidal neovascular membrane (CNVM) 26 (8.1%) are other important causes. Idiopathic Polypoidal Choroidal Vasculopathy (IPCV) 17 (5.3%) is an emerging cause of macular disease in the retina unit of the University College Hospital Ibadan. **Conclusion:** Age-related macular degeneration (AMD), Macular oedema and Non-AMD atrophic maculopathy are major causes of macular disease presentation in the retinal clinic of the University College Hospital Ibadan, Nigeria. CNVM and IPCV are emerging causes.

Keywords: *Age-related macular degeneration, atrophic maculopathy, choroidal neovascular membrane, Nigerians*

Received: 01-Jul-2020;
Revision: 04-Sep-2020;
Accepted: 19-Jan-2021;
Published: 15-Mar-2021

Introduction

Macula diseases have become a major source of concern in developed countries of the world due to their adverse consequence on vision, as well as a huge burden on both human and material resources.[1] Also, advancement in healthcare with resultant increase in the population of the elderly enlarges this burden. Furthermore, the association of elderly population growth and systemic risk factors for retinal vascular diseases such as diabetes mellitus, hypertension and hyperlipidaemia due to lifestyle changes and increased urbanisation are also major concerns.[2]

Retinal diseases including the disease of the macula are underreported in developing countries of sub-Saharan Africa including Nigeria. This is due to problems of making accurate diagnosis and the paucity of trained vitreoretinal surgeons. Another major challenge was the channelling of the available limited resources to the prevention of other causes of visual impairment and/or blindness like cataract and refractive errors.[3] The implication of these is the seeming inattention to the potentially blinding diseases of the macula, with its ensuing escalating prevalence.

In an earlier study,[4] we reported the difficulty associated in making a diagnosis and treatment of vitreoretinal

Address for correspondence: Dr. TS Oluleye, Department of Ophthalmology, University College Hospital, OYO State, Nigeria.
E-mail: jeff1oluleye@gmail.com

Access this article online

Quick Response Code:

Website: www.njcponline.com

DOI: 10.4103/njcp.njcp_408_20

How to cite this article: Oluleye TS, Babalola YO, Majekodunmi OI, Ijaduola MA. Macular diseases in Ibadan, Nigeria. Niger J Clin Pract 2021;24:341-4.

diseases and suggested the sponsorship and training of a retinal surgeon. With the help of The International Council of Ophthalmology (ICO) and The International Agency for the Prevention of Blindness (IAPB) in conjunction with Carl Zeiss, ophthalmic subspecialty development including sponsorship for fellowship training in vitreoretinal surgery was done in our center. In the years following the training, database of vitreoretinal diseases including that of the macula was opened in the retina clinic of the University College Hospital, Ibadan. The aim of this review of the database was to report the common macular diseases seen in the last four years at the unit and plan appropriate strategies to reduce the burden of the disease.

Methods

This was a retrospective review of the retina registers of patients that presented to the retinal clinic of the University College Hospital, Ibadan, Nigeria within 4 years (December 2015, to November 2019). Demographics and clinical data of all patients with macula diseases were retrieved. Data obtained and documented comprised of age, sex, clinical diagnosis and treatment methods of patients.

Macula diseases were identified using a Haag-Streit BM 900 slit lamp biomicroscope with a +78D stereoscopic non-contact lens (Volk Optical, Inc. Ohio) after pupillary dilatation with guttae 0.8% Tropicamide and 5% Phenylephrine. Confirmatory investigations that were requested included optical coherence tomography and/or fundus fluorescein angiography.

Data were analysed using the Statistical Package for Social Sciences IBM (SPSS-IBM), version 22 (SPSS Inc., Chicago, Illinois, USA), and reported as frequency distributions and percentages.

The study obeyed the tenets of Helsinki for human research. Consent was obtained from the patients before the fundus pictures were taken.

Results

A total of 1291 retinal cases were seen during the period under review, out of which 322 (24.9%) cases were diseases of the macula. Those 60 years and older bore the burden of macular diseases- accounting for over 50% of cases.

The top 3 common causes of macular disease were dry AMD 63 (19.6%), macula oedema 53 (16.5%) and non-AMD atrophy of the macula 51 (15.9%) (retinitis pigmentosa {RP}), chloroquine maculopathy and hereditary maculopathies) representing more than 50% of cases. Macular hole 48 (14.9%), non-AMD macular scar (toxoplasmosis, trauma) 37 (11.5%) and choroidal neovascularization 26 (8.1%) were other important causes. Idiopathic polypoidal choroidal vasculopathy is an emerging disease 17 (5.3%). Cases of foveal hypoplasia from albinism were also seen together in patients with central serous retinopathy. Other cases

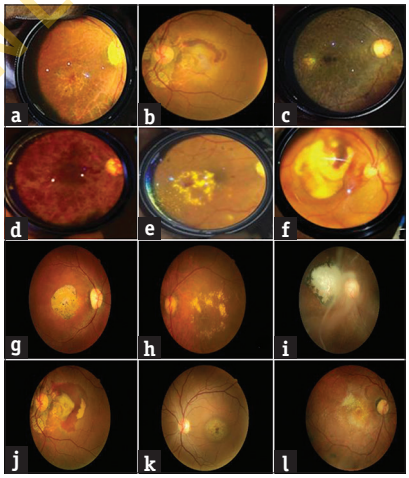

Figure 1: (a) Atrophic maculopathy of dry AMD, (b) Active CNVM of wet AMD, (c) Atrophic maculopathy of chloroquine retinopathy,(d) CRVO with CME, (e) Diabetic maculopathy, (f) IPCV with hemorrhagic detachment, (g) Atrophic maculopathy of hereditary macula degeneration, (h) Diabetic macula edema, (i) Toxoplasmosis scar, (j) CNVM with hemorrhage, (k) Atrophic maculopathy, (l) Macula scar from AMD/IPCV

Table 1: Age distribution of Macular diseases in Ibadan

Disease/Age (years)	0-10	11-20	21-30	31-40	41-50	51-60	60+	Total (%)
Dry AMD	-	-	-	-	-	9	54	63 (19.6)
Macular Edema	-	-	3	-	1	13	36	53 (16.5)
Atrophic Maculopathy (Non-AMD)	-	-	6	7	19	13	6	51 (15.9)
Macular Hole	1		2	4	1	9	31	48 (14.9)
Macular Scar (Non-AMD)	2	4	7	2	5	5	12	37 (11.5)
CNVM	-	-	1	-	-	-	25	26 (8.1)
IPCV	-	-	-	-	1	4	12	17 (5.3)
CSR				2	2		3	7 (2.2)
Others		1	3	3	2	1	10	20 (6.0)
TOTAL	3	5	22	18	31	54	189	322 (100)

AMD=Age Related Macular Degeneration (AMD); CNVM=Choroidal Neovascular Membrane; IPCV=Idiopathic Polypoidal Choroidal Vasculopathy; CSR=Central Serous Retinopathy

Table 2: Sex distribution of Macular diseases in Ibadan

Disease	Males	Females	Total (%)
Dry AMD	38	25	63 (19.6)
Macular Edema	29	24	53 (16.5)
Atrophic maculopathy (Non AMD)	30	21	51 (15.9)
Macular Holes	20	28	48 (14.9)
Macular Scar	22	15	37 (11.5)
CNVM	12	14	26 (8.1)
IPCV	7	10	17 (5.3)
CSR	5	2	7 (2.2)
Others	11	9	20 (6.0)
Total	174 (54.0)	148 (46.0)	322 (100)

AMD=Age Related Macular Degeneration (AMD); CNVM=Choroidal Neovascular Membrane; IPCV=Idiopathic Polypoidal Choroidal Vasculopathy; CSR=Central Serous Retinopathy

included premacular haemorrhage from valsalva retinopathy and Terson's disease; Best's disease, macular tumour secondaries and macular pucker from epiretinal membrane.

The age and sex distribution of macular diseases in Ibadan are summarized in Tables 1 and 2.

Discussion

Diseases of the Macula is under reported in developing countries, such as Nigeria. Some diseases hitherto thought to be rare have been shown to be common.[5] In this study, age-related macular degeneration (AMD) is the most common cause of macular disease. This agrees with earlier report where dry AMD was reported as the most common retinal diagnosis at our center.[4] Other workers found AMD to be a common cause of blindness and low vision in Nigeria.[6-8] Aging population is increasing due to increasing life expectancy in Nigeria. However, life expectancy in Nigeria is still below the average of 61.2 years for Africans.[9]

Choroidal neovascular membrane (CNVM) from AMD and other causes is an important cause of macular disease in our study [Figure 1]. CNVM from AMD has been reported to be rare in Africans.[10-14] Patients with dry AMD and intermediate ARM were placed on AREDS multivitamin recommendation, while those with active CNVM were treated with intravitreal anti-vascular endothelial factor (anti-VEGF) injections. Individuals that were in need of low vision devices were referred to our center's low vision clinic for support.

Macula oedema from retinal vascular occlusion, diabetic maculopathy, and inflammatory cystoid macular oedema is an important cause of macular disease in this review or this study. Systemic hypertension and diabetes mellitus are increasingly becoming common causes of morbidity in Nigeria,[15] hence the increased presentation of retinal vascular occlusions and diabetes as causes of macular disease. The increase in number of cataract surgeries may be responsible for cases of pseudophakic and aphakic cystoid macular oedema in this study. Branch retinal vein occlusion with macular oedema was treated with grid laser or antiVEGF injection treatment, while cystoid macular oedema from retinal vein occlusion was treated with intravitreal anti vascular endothelial growth factor.[16] Patients with inflammatory cystoid macular oedema were treated with topical non-steroidal anti-inflammatory agents or sub-tenon triamcinolone.

Macular hole, especially the idiopathic macular hole was responsible for majority of the cases. Three cases of traumatic macular hole were noted especially in the younger age group. Patients presenting early were recommended for vitrectomy, internal limiting membrane peeling and gas tamponade. Non-operable holes were reassured and referred to the low vision clinic.

Atrophic maculopathy in the younger age groups is another emerging and important cause of macular disease in this study. Most of our patients admitted to self- medication with chloroquine over a prolong period of time. The peak of this age group was 41-50 years [see Table 1]. Retina pigment epithelium (RPE) atrophy predominates with a few presenting with the typical bull's eye picture.[17] Another significant cause of macular atrophy was retinitis pigmentosa noted in the younger age groups. Low vision service was recommended in most cases. Toxoplasmosis (congenital and acquired) and trauma were important causes of macular scar after AMD. Most cases were unilateral. Cases of foveal hypoplasia from oculocutaneous albinism were encountered in this study. With best correction, vision was found to be poor. They were referred to the low vision clinic. Idiopathic polypoidal choroidal vasculopathy (IPCV) was noted as an emerging cause of macular disease. Patients presented similarly like AMD, but without drusen. Sub retinal haemorrhagic detachments occur usually resulting in macular scarring.[18]

Cases of central serous chorioretinopathy (CSR) were seen, one of them was an anxious pregnant female staff nurse who had just completed a week-long night duty, while the other was a young man, a resident doctor preparing for his professional exams. The third, a housewife with marital problems. They were reassured and managed conservatively with full recovery of visual function. CSR is thought to be rare in Africans.[19]

Traumatic choroidal rupture involving the fovea was followed up for the development of CNVM amenable to treatment. Premacular haemorrhage from Valsalva retinopathy and Terson's disease were managed

conservatively. Best's disease cases presented at various stages. They were followed up for the development of choroidal neovascular membrane. Macular pucker from epiretinal membranes, and a case of toxocariasis were managed surgically. Tumour secondaries on the macula from a lung carcinoma was seen. Systemic chemotherapy was used for treatment.

This has shown that age-related macular degeneration, macular oedema and non-AMD atrophic maculopathy are the top 3 causes of macular disease in the retinal clinic of University College Hospital Ibadan, Nigeria. Choroidal neovascular membrane and idiopathic polypoidal choroidal vasculopathy are emerging causes. Careful and detailed examination with a dilated fundus lens examination is mandatory in all cases. Also, low vision services should be made available and accessible to those that may require it.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Li JQ, Welchowski T, Schmid M, Letow J, Wolpers AC, Holz FG, *et al.* Retinal diseases in Europe. European Society of Retina Specialists (EURETINA). 2017.
2. Sobngwi E, Mauvais-Jarvis F, Vexiau P, Mbanya J, Gautier J. Diabetes in Africans. Part 1: Epidemiology and clinical specificities. Diabetes Metab 2001;27:628-34.
3. Yorston D, Jalali S. Retinal detachment in developing countries. Eye 2002;16:353-8.
4. Oluleye T, Ajaiyeoba A. Retinal diseases in Ibadan. Eye 2006;20:1461-3.
5. Onakpoya OH, Olateju SO, Ajayi IA. Retinal diseases in a tertiary hospital: The need for establishment of a vitreoretinal care unit. J Natl Med Assoc 2008;100:1286-9.
6. Uhumwangho O, Itina E. Retinal diseases in a tertiary hospital in Southern Nigeria. J West Afr Coll Surg 2015;5:1-16.
7. Amoni S. Pattern of macular diseases in Nigerians: A preliminary report. Ann Ophthalmol 1983;15:384-8.
8. Nwosu SN. Prevalence and pattern of retinal diseases at the Guinness Eye Hospital, Onitsha, Nigeria. Ophthalmic Epidemiol 2000;7:41-8.
9. World Health Organization. Increasing Life Expectancy in Nigeria Through Higher Health Investments. Available from: https://www.proshareng.com/news/NIGERIA%20ECONOMY/Increasing-Life-Expectancy-in-Nigeria-Through-Higher-Health-Investments/43320#. [Last accessed on 2020 Jun 26].
10. Gregor Z, Joffe L. Senile macular changes in the black African. Br J Ophthalmol 1978;62:547-50.
11. Maylahn C, Gohdes DM, Balamurugan A, Larsen BA. Age-related eye diseases: An emerging challenge for public health professionals. Prev Chronic Dis 2005;2:A17.
12. Frank RN, Puklin JE, Stock C, Canter LA. Race, iris color, and age-related macular degeneration. Trans Am Ophthalmol Soc 2000;98:109-15.
13. Leske MC, Wu S-Y, Hyman L, Hennis A, Nemesure B, Schachat AP; Barbados Eye Studies Group. Four-year incidence of macular changes in the Barbados Eye Studies. Ophthalmology 2004;111:706-11.
14. Makwanga EKJ, Kilangalanga J, Ngweme G, Kilangalanga J, Hopkins A, Matondo F. Age related macular disease in the DR Congo-Demographic and clinical aspects 104th DOG Annual Meeting; 2006.
15. Akinkugbe O, Akinyanju O. Non-Communicable Diseases in Nigeria: Final Report of a National Survey. Lagos: Federal Ministry of Health—National Expert Committee on Non-Communicable Diseases; 1997. p. 1-12.
16. Campochiaro PA, Brown DM, Awh CC, Lee SY, Gray S, Saroj N, *et al*. Sustained benefits from ranibizumab for macular edema following central retinal vein occlusion: Twelve-month outcomes of a phase III study. Ophthalmology 2011;118:2041-9.
17. Oluleye T, Babalola Y, Ijaduola M. Chloroquine retinopathy: Pattern of presentation in Ibadan, Sub-Sahara Africa. Eye 2016;30:64-7.
18. Oluleye T, Babalola Y. Pattern of presentation of idiopathic polypoidal choroidal vasculopathy in Ibadan, Sub-Saharan Africa. Clin Ophthalmol (Auckland, NZ) 2013;7:1373-6.
19. Uhumwangho OM, Momoh RO. Central serous chorioretinopathy in Benin City, Nigeria. Ann Afr Med 2015;14:163-8.