Short Communication

Dry Age-Related Macular Degeneration with Unilateral Geographic Atrophy

PJO – Official Journal of Ophthalmological Society of Pakistan

Sivaranjani[1], Shivraj Tagare[2], Manavi D Sindal[3]
[1-3]Aravind Eye Hospital, Cuddalore Main Road, Thavalakuppam, Pondicherry, 605 007, India

ABSTRACT

An advanced form of age-related macular degeneration (AMD) known as geographic atrophy (GA) is typified by atrophic lesions that begin in the outer retina and gradually enlarge, ultimately resulting in irreversible visual loss. We present the case of a 55-year-old male healthy patient who had dry AMD in one eye and unilateral geographic atrophy in the other eye. Clinical examination, optical coherence tomography (OCT), and OCT angiography were used to confirm the diagnosis. Growing older and family history are the two main risk factors for GA. Geographic atrophy can be prevented by managing modifiable risk factors such as smoking, controlling systemic disorders, and maintaining a balanced diet.

Key words: Geographic atrophy, dry AMD, drusen, age-related macular degeneration.

How to Cite this Article: Sivaranjani, Tagare S, Sindal MD. Dry Age-Related Macular Degeneration with Unilateral Geographic Atrophy. 2025;41(1):96-98. **Doi: 10.36351/pjo.v41i1.1869**

Correspondence: Sivaranjani
Aravind Eye Hospital, Cuddalore Main Road, Thavalakuppam, Pondicherry, 605 007, India
Email: drsivaranjani.s@gmail.com

Received: June 04, 2024
Revised: November 28, 2024
Accepted: December 27, 2024

INTRODUCTION

The age-related macular degeneration (AMD) is impacted by numerous hereditary, environmental, and dietary variables. Age is by far the biggest risk factor.[1] Compared to those from other ethnic origins, Caucasians are more likely to be affected.[2] Family history and several genetic markers, specifically the complement factor H (CFH) gene, have been found to be important risk factors for AMD.[3] This report describes a patient who was diagnosed with dry AMD and had unilateral geographic atrophy.

Case Description

A 55-year-old male presented to us with complaints of defective vision in the right eye, which was noticed 2 years ago. He had no significant history of previous systemic or ocular disease. There was no family history of genetic eye disorder or systemic pathology. His Snellen's best corrected visual acuity was 2/60 in OD and 6/12 in OS. The pupils were of normal size and normally reactive. Extra ocular movements were normal. Anterior segment examination was unremarkable. Dilated fundus examination of OD showed a well-circumscribed area of Chori retinal atrophy involving the fovea (Figure 1A) and drusen in the left eye (Figure 2A). OCT angiography of the OD showed a well-circumscribed vascular network of underlying large choroidal vessels in the sub-RPE slab and choriocapillaris slab (Figure 1C, D). OD OCT showed RPE atrophy involving the fovea with hyper transmission of light in the underlying choroidal vessels which confirmed GA (Figure 1E). OS OCT showed drusen involving the macula with normal inner retinal layers in the fovea (Figure 2E).

DISCUSSION

The abnormal accumulation of drusen in the macula, initially observed on fundus examination as discrete yellow-white lesions that may eventually coalesce and confluent, is the hallmark of the clinical presentation of non-exudative AMD.[4] The fundus image exhibits mottling with hyper- and hypopigmentation, which is indicative of pigmentary abnormalities within the RPE. GA is the term for the distinct areas of chorio-retinal atrophy within the macula that results from the

eventual overt loss of the RPE and surrounding photoreceptors.[4] The underlying choroidal vasculature may be visible within these distinct borders. These alterations usually take months to years to develop and are bilateral, though they can also be asymmetrical. To rule out exudative AMD, one can watch for haemorrhages, exudates, or pigment epithelial detachments to appear.[4]

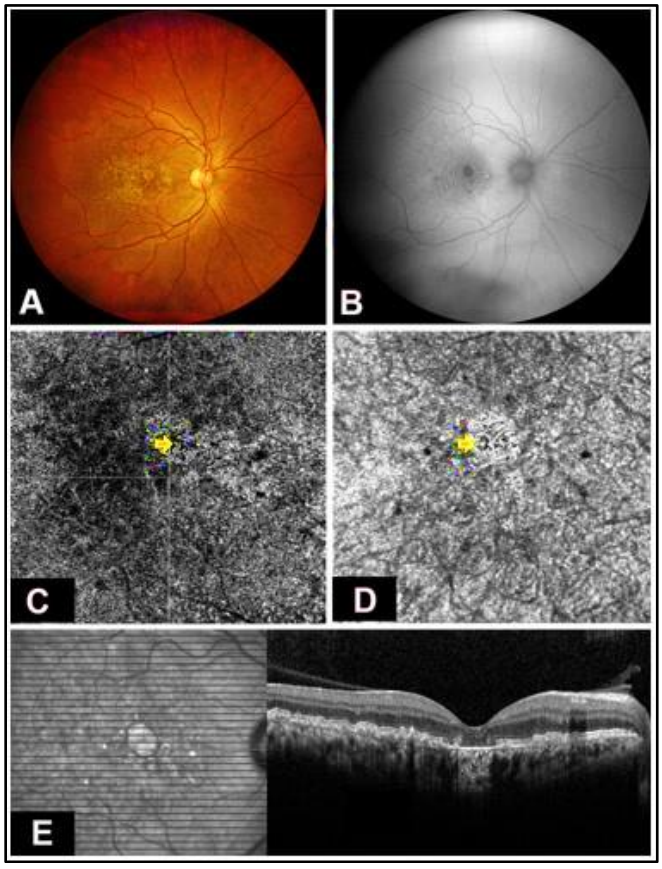

Figure 1: A show the discrete area of chorio-retinal atrophy involving the fovea in OD. B shows OD FAF image with central hypo autofluorescence (AF) due to GA and surrounding discrete areas of hyper AF due to drusen. C and D show OCTA sub RPE slab and choriocapillaris slab respectively with a well-circumscribed vascular network of underlying large choroidal vessels. E shows the OCT macular cube 30° with a line scan showing the GA involving the fovea with hyper transmission of light due to GA.

When evaluating GA in the latter stages of non-exudative AMD, FAF is also crucial because any hyper-fluorescence in the vicinity of atrophy areas, which initially appear hypo-fluorescent indicates a high probability of the atrophic area steadily growing larger.[5] Cigarette smoking is the main modifiable risk factor. Since non-exudative AMD makes up to 90% of cases of AMD, there is currently no treatment at this time.[1,3]

The ophthalmologist can assist these patients by providing visual rehabilitation, identifying treatable exudative manifestations, and lowering the risk of disease progression. There are clinical trials underway. Patients with at least moderate AMD in both eyes can lower their risk of progressing to advanced AMD by taking specific high-dose multivitamins and mineral supplements, according to research from the Age-Related Eye Disease Study (AREDS) and AREDS2.[6] The complement C3 inhibitor pegcetacoplan was recently approved by the FDA to treat GA.[7,8]

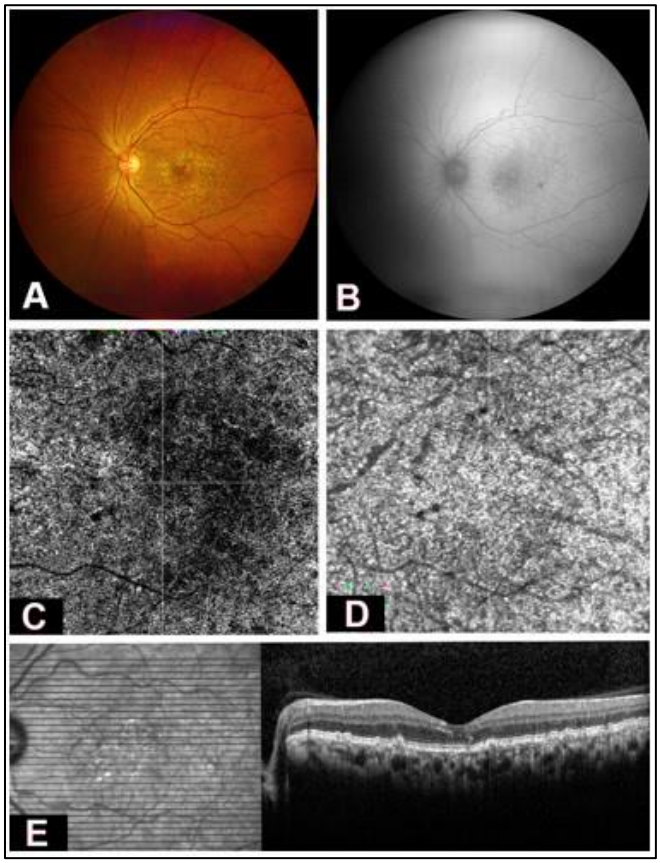

Figure 2: A shows drusen in the macula. B shows an FAF image with hyperfluorescent lesions due to drusen. C and D shows normal sub RPE slab and choriocapillaris slab in OCTA. E shows the OCT macular cube 30° with a line scan showing the fovea with normal inner retinal layers with sub-RPE drusen.

The purpose of this case report is to highlight the clinical presentation and diagnostic process of geographic atrophy (GA). It aims to emphasize the role of clinical examination, optical coherence tomography (OCT), and OCT angiography in diagnosing GA. The report also underlines key risk factors for GA, such as aging and family history, while

suggesting preventive measures, including the management of modifiable risk factors like smoking, systemic disorders, and diet. This case serves to raise awareness about GA's progression and the importance of early detection and prevention.

CONCLUSION

This case highlights the early diagnosis of such cases and also highlights the effectiveness of diagnostic tools like optical coherence tomography (OCT) and OCT angiography in confirming the diagnosis of GA. Overall, it stresses the need for awareness and intervention to prevent irreversible visual loss due to GA.

Funding: This study was not funded by any organization.

Patient's Consent: Researchers followed the guidelines set forth in the Declaration of Helsinki.

Conflict of Interest: Authors declared no conflict of interest.

REFERENCES

1. **Smith W, Assink J, Klein R, Mitchell P, Klaver CC, Klein BE, et al.** Risk factors for age-related macular degeneration: Pooled findings from three continents. Ophthalmology. 2001;**108(4):**697-704. Doi: 10.1016/s0161-6420(00)00580-7.
2. **Wilde C, Poostchi A, Mehta RL, MacNab HK, Hillman JG, Vernon SA, et al.** Prevalence of age-related macular degeneration in an elderly UK Caucasian population-The Bridlington Eye Assessment Project: a cross-sectional study. Eye (Lond). 2017;**31(7):**1042-1050. Doi: 10.1038/eye.2017.30.
3. **Hyman L, Neborsky R.** Risk factors for age-related macular degeneration: an update.Curr Opin Ophthalmol. 2002;**13(3):**171-175. Doi: 10.1097/00055735-200206000-00007.
4. **Mitchell P, Liew G, Gopinath B, Wong TY.** Age-related macular degeneration. Lancet. 2018;**392(10153):**1147-1159. Doi: 10.1016/S0140-6736(18)31550-2
5. **Fleckenstein M, Mitchell P, Freund KB, Sadda S, Holz FG, Brittain C, et al.** The Progression of Geographic Atrophy Secondary to Age-Related Macular Degeneration. Ophthalmology. 2018;**125(3):**369-390. Doi: 10.1016/j.ophtha.2017.08.038.
6. **Gualino V, Tadayoni R, Cohen SY, Erginay A, Fajnkuchen F, Haouchine B, et al.** Optical Coherence Tomography, Fluorescein Angiography, and Diagnosis of Choroidal Neovascularization in Age-Related Macular Degeneration. Retina. 2019;**39(9):**1664-1671. Doi: 10.1097/IAE.0000000000002220.
7. **Liao DS, Metlapally R, Joshi P.** Pegcetacoplan treatment for geographic atrophy due to age-related macular degeneration: a plain language summary of the FILLY study. Immunotherapy. 2022;**14(13):**995-1006. Doi: 10.2217/imt-2022-0078.
8. **Fu DJ, Bagga P, Naik G, Glinton S, Faes L, Liefers B, et al.** Pegcetacoplan Treatment and Consensus Features of Geographic Atrophy Over 24 Months. JAMA Ophthalmol. 2024;**142(6):**548-558. Doi: 10.1001/jamaophthalmol.2024.1269.

Authors Designation and Contribution

Sivaranjani; *Consultant Ophthalmologist: Concepts, Design, Literature search, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing, Manuscript review.*

Shivraj Tagare; *Vitreo retina Fellow: Concepts, Design, Literature search, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing, Manuscript review.*

Manavi D Sindal; *Head of Department: Concepts, Design, Literature search, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing, Manuscript review.*