

Geographic Atrophy (GA): Visual acuity is poorly correlated to lesion size^{1,2}

- Change in visual acuity (VA) may not fully capture disease progression^{1,2}
- Visual function continues to decline as lesions grow²⁻⁴



Isabella C.
80-year-old woman

Hypothetical patient

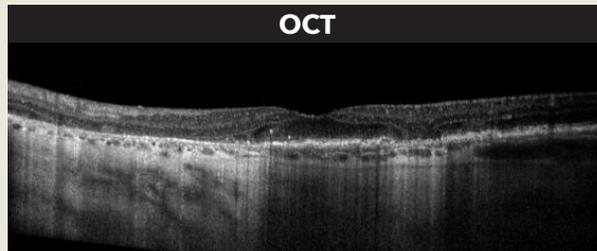
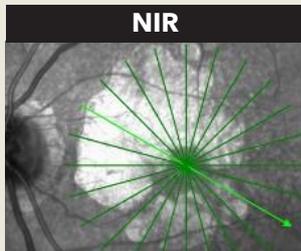
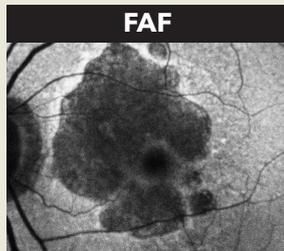
Medical history:

- No family history of AMD
- BMI 28
- Nonsmoker with exposure to secondhand smoke
- Diabetes, hypertension

- A large area of GA is present at baseline examination. However, BCVA is relatively unaffected due to foveal sparing
- Within 4 years, OS GA has progressed, but BCVA has only declined slightly as fovea is still intact

Baseline

- BCVA: **20/25**
- Visual function: **Patient requires assistance from a caregiver on some activities (eg, cooking, driving)**

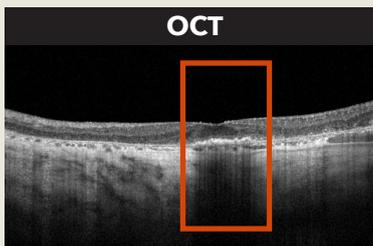
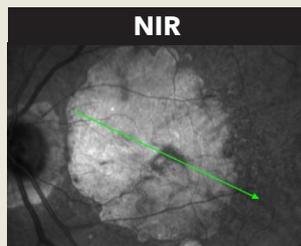
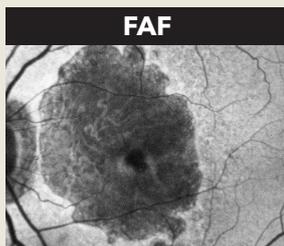


Despite significant atrophy, the fovea is still partially intact

Significant atrophy outside the fovea as shown by choroidal hypertransmission defect

4 Years After

- BCVA: **20/50**
- Visual function: **Although patient maintains relatively good BCVA, they have poor visual quality. Patient relies heavily on caregiver for assistance with many activities of daily living**



Area of atrophy has grown, as shown by larger region of choroidal hypertransmission. The fovea still remains relatively spared

Optometrists play a key role in recognizing and referring GA patients.⁵

Learn more at RecognizeAndReferGA.com

Images courtesy of Mohammad Rafeearty, OD, Charles Retina Institute. **Hypothetical case studies—individual experiences may vary.**

AMD=age-related macular degeneration; BCVA=best-corrected visual acuity; BMI=body mass index; FAF=fundus autofluorescence; NIR=near infrared reflectance; OCT=optical coherence tomography.

References: 1. Heier JS, Pieramici D, Chakravarthy U, et al. Visual function decline resulting from geographic atrophy: results from the chroma and spectri phase 3 trials. *Ophthalmol Retina*. 2020;4(7):673-688. doi:10.1016/j.oret.2020.01.019. 2. Boyer DS, Schmidt-Erfurth U, van Lookeren Campagne M, Henry EC, Brittain C. The pathophysiology of geographic atrophy secondary to age-related macular degeneration and the complement pathway as a therapeutic target. *Retina*. 2017;37(5):819-835. doi:10.1097/iae.0000000000001392. 3. Kimel M, Leidy NK, Tschosik E, et al. Functional reading independence (FRI) index: A new patient-reported outcome measure for patients with geographic atrophy. *Invest Ophthalmol Vis Sci*. 2016;57(14):6298-6304. doi:10.1167/iovs.16-20361. 4. Sadda SR, Chakravarthy U, Birch DG, Staurengi G, Henry EC, Brittain C. Clinical endpoints for the study of geographic atrophy secondary to age-related macular degeneration. *Retina*. 2016;36(10):1806-1822. doi:10.1097/IAE.0000000000001283. 5. American Optometric Association. AOA Comprehensive adult eye and vision examination. Quick Reference Guide: Evidence-Based Clinical Practice Guideline. 1st ed. 2015. https://www.aoa.org/documents/EBO/Comprehensive_Adult_Eye_and_Vision%20QRG.pdf. Accessed June 15, 2023.

Imaging features including multifocal configuration, large size, and nonfoveal involvement are predictors of faster Geographic Atrophy (GA) progression^{1,2}



Carla L.
82-year-old woman
Hypothetical patient

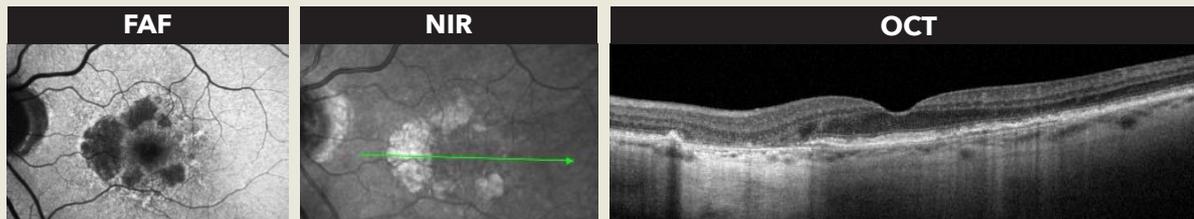
Medical history:

- Family history of AMD
- BMI 33
- Former smoker
- Hypertension, hyperlipidemia

- Patient has GA with multifocal lesions outside the fovea, at baseline. These lesions tend to progress faster than unifocal, foveal lesions
- Within 2 years, the areas of atrophy have grown and coalesced. However, the fovea still remains intact resulting in mild decline of BCVA

Baseline

- BCVA: **20/30**
- Visual function: **Patient has dark adaptation issues and some difficulty reading**



2 Years After

- BCVA: **20/40**
- Visual function: **Patient no longer feels comfortable driving although they are legally able to. Patient relies heavily on assistance from caregiver with some activities of daily living**



Clear progression of perifoveal GA 2 years later

Optometrists play a key role in recognizing and referring GA patients.³

Learn more at [RecognizeAndReferGA.com](https://wwwRecognizeAndReferGA.com)

Images courtesy of Mohammad Rafeetary, OD, Charles Retina Institute. **Hypothetical case studies—individual experiences may vary.**

AMD=age-related macular degeneration; BCVA=best-corrected visual acuity; BMI=body mass index; FAF=fundus autofluorescence; NIR=near infrared reflectance; OCT=optical coherence tomography.

References: **1.** Boyer DS, Schmidt-Erfurth U, van Lookeren Campagne M, Henry EC, Brittain C. The pathophysiology of geographic atrophy secondary to age-related macular degeneration and the complement pathway as a therapeutic target. *Retina*. 2017;37(5):819-835. doi:10.1097/iae.0000000000001392. **2.** Fleckenstein M, Mitchell P, Freund B, et al. The progression of geographic atrophy secondary to age-related macular degeneration. *Ophthalmology*. 2018;125(3):369-390. doi:10.1016/j.ophtha.08.038. **3.** American Optometric Association. AOA Comprehensive adult eye and vision examination. Quick Reference Guide: Evidence-Based Clinical Practice Guideline. 1st ed. 2015. https://www.aoa.org/documents/EBO/Comprehensive_Adult_Eye_and_Vision%20QRG.pdf. Accessed June 15, 2023.



Multimodal imaging can clearly show the progression of Geographic Atrophy (GA)¹



Linda R.
75-year-old woman

Hypothetical patient

Medical history:

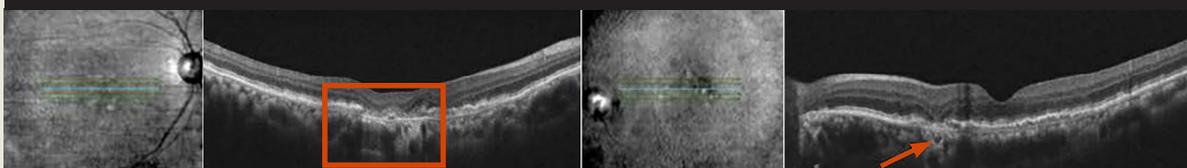
- No family history of AMD
- BMI 39
- History of stroke, hypertension, and hyperlipidemia

Baseline

2018

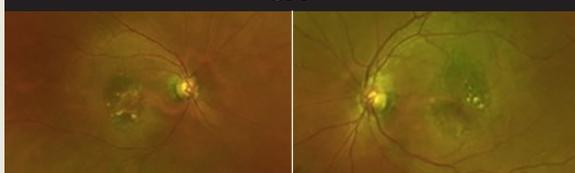
- BCVA OD: **20/40**
- BCVA OS: **20/20**
- Despite atrophy, BCVA is still relatively unaffected due to foveal sparing
- Failed a DMV driving test
- Visual function: **Patient reports distorted vision**

NIR and OCT B-scan



- ▣ Despite significant atrophy, the fovea is still partially intact
- Hypertransmission defect outside the fovea; subsidence of OPL and INL can be seen around the area of atrophy

CFP

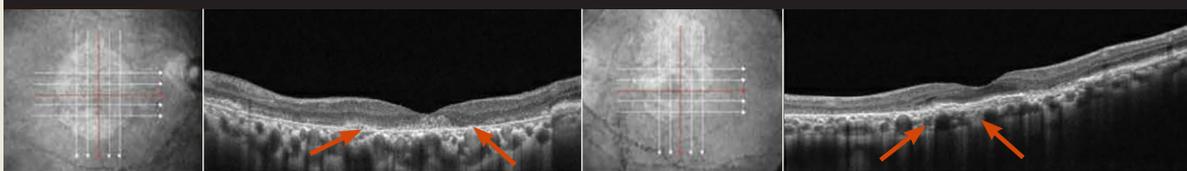


2 Years After

2020

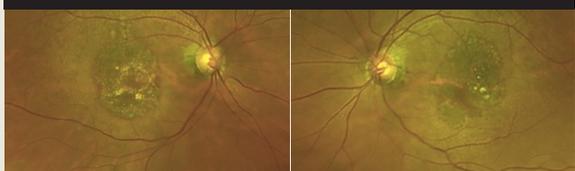
- BCVA OD: **20/100**
- BCVA OS: **20/25**
- Visual function: **Reports seeing horizontal lines in inferior field while watching television OD**

OCT B-scan and en face

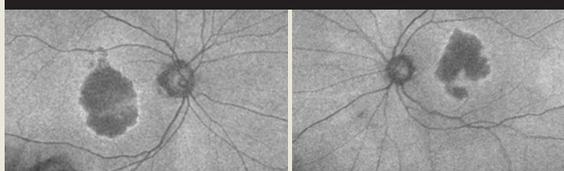


- Complete RPE and outer retinal atrophy (cRORA) parafoveally
- cRORA with choroidal hypertransmission defect. Visual acuity is still somewhat preserved due to partial foveal sparing

CFP



FAF



Optometrists play a key role in recognizing and referring GA patients.²

Learn more at [RecognizeAndReferGA.com](https://www.recognizeandreferga.com)

Images are courtesy of Dr Julie Rodman at the Broward Eye Care Institute. **Hypothetical case studies—individual experiences may vary.**

AMD=age-related macular degeneration; BCVA=best-corrected visual acuity; BMI=body mass index; CFP=color fundus photography; INL=inner nuclear layer; NIR=near infrared reflectance; OCT=optical coherence tomography; OPL=outer plexiform layer; RPE=retinal pigment epithelium.

References: 1. Fleckenstein M, Mitchell P, Freund B, et al. The progression of geographic atrophy secondary to age-related macular degeneration. *Ophthalmology*. 2018;125(3):369-390. doi:10.1016/j.ophtha.08.038. 2. American Optometric Association. AOA Comprehensive adult eye and vision examination. Quick Reference Guide: Evidence-Based Clinical Practice Guideline. 1st ed. 2015. https://www.aoa.org/documents/EBO/Comprehensive_Adult_Eye_and_Vision%20QRG.pdf. Accessed June 15, 2023.

OCT and FAF can provide better visualization of Geographic Atrophy (GA) than CFP¹⁻³



Adam P.

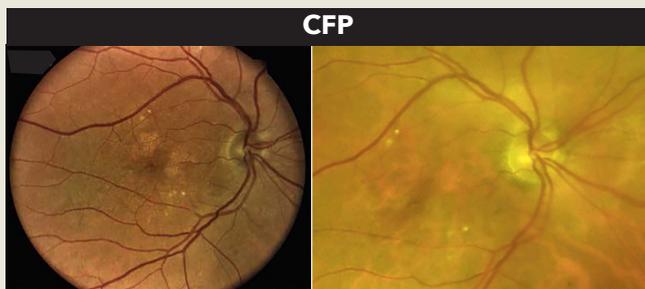
71-year-old man

Hypothetical patient

Medical history:

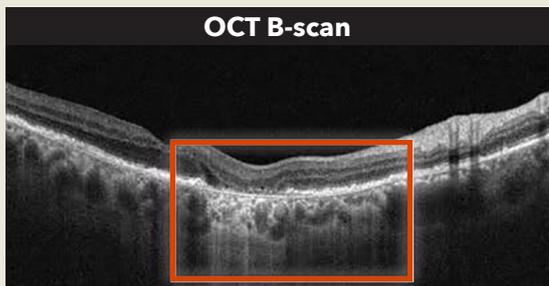
- Family history of AMD
- BMI 37
- Current smoker (40 years); smokes 1 pack/day

- BCVA OD: **20/30**
- Patient has RPE mottling, drusen, and parafoveal patches of atrophy with minimal foveal involvement on CFP OD
- Visual function: **Patient reports decreased vision, particularly at night, and “pinhole-like” black spots in his center vision**



Shows some areas of GA

GA is less apparent



■ Complete RPE and outer retinal atrophy (cRORA) with increased hypertransmission into choroid

➤ Lesion without subfoveal involvement; hyperfluorescent border around the GA lesions indicating areas that are at risk for further progression

- GA is apparent in both OCT and FAF images
- On OCT, there is a presence of hypertransmission and an area of complete atrophy
- CFP does not show the full extent of GA, and the severity of the disease can be underestimated when only using CFP

Optometrists play a key role in recognizing and referring GA patients.⁴

Learn more at [RecognizeAndReferGA.com](https://www.recognizeandreferga.com)

Images are courtesy of Dr Julie Rodman at the Broward Eye Care Institute. **Hypothetical case studies—individual experience may vary.**

AMD=age-related macular degeneration; BCVA=best-corrected visual acuity; BMI=body mass index; CFP=color fundus photography; FAF=fundus autofluorescence; OCT=optical coherence tomography; RPE=retinal pigment epithelium.

References: 1. Fleckenstein M, Mitchell P, Freund B, et al. The progression of geographic atrophy secondary to age-related macular degeneration. *Ophthalmology*. 2018;125(3):369-390. doi:10.1016/j.ophtha.08.038. 2. Holz FG, Sadda SR, Staurenghi G, et al; CAM group. Imaging protocols in clinical studies in advanced age-related macular degeneration: recommendations from Classification of Atrophy Consensus Meetings. *Ophthalmology*. 2017;124(4):464-478. doi:10.1016/j.ophtha.2016.12.002. 3. Wu Z, Luu CD, Ayton LN, et al. Optical coherence tomography-defined changes preceding the development of drusen-associated atrophy in age-related macular degeneration. *Ophthalmology*. 2014;121(12):2415-2422. doi:10.1016/j.ophtha.2014.06.034. 4. American Optometric Association. AOA Comprehensive adult eye and vision examination. Quick Reference Guide: Evidence-Based Clinical Practice Guideline. 1st ed. 2015. https://www.aoa.org/documents/EBO/Comprehensive_Adult_Eye_and_Vision%20QRG.pdf. Accessed June 15, 2023.

Multimodal imaging of Geographic Atrophy (GA) can show clear progression



Samuel D.
73-year-old man

Hypothetical patient

Medical history:

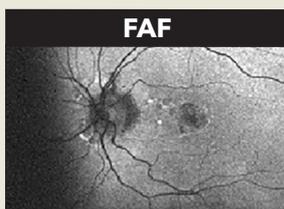
- No family history of AMD
- BMI 30
- Hypercholesterolemia, thyroid disease, gastritis, and hypertension

Baseline

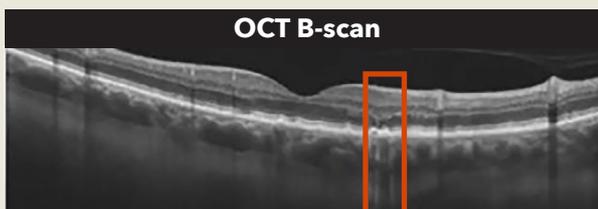
- BCVA OD: **20/70**
- BCVA OS: **20/40**
- GA detected in both eyes
- Visual function: **Patient reports difficulty watching TV and has expressed interest in getting "magnifying" glasses for reading**



Baseline CFP shows medium-sized lesion and hyperpigmentation



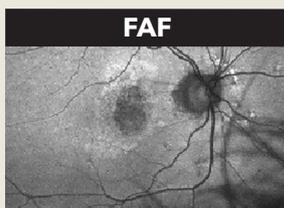
FAF shows areas of hypo and hyperautofluorescence



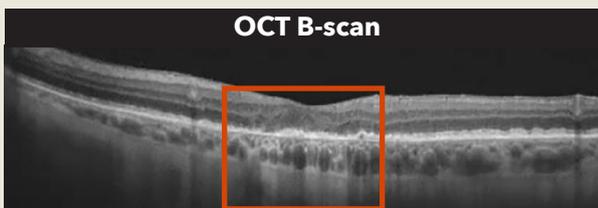
Increased transmission signal below the RPE into the choroid resulting from attenuation of overlying RPE; fovea spared



Baseline CFP shows a medium-sized lesion and hyperpigmentation



FAF shows areas of hypo and hyperautofluorescence



Area of atrophy associated with choroidal hypertransmission

7 Years After

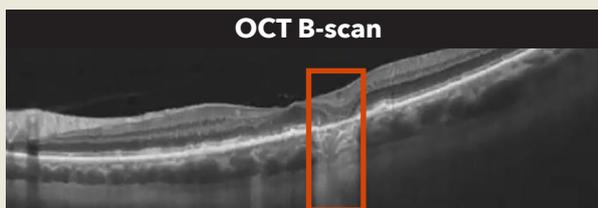
- BCVA OD: **20/125**
- BCVA OS: **20/70**
- Visual function: **Patient reports a blurry spot in the center of his vision; has trouble reading and avoids the computer**



CFP shows modest lesion progression



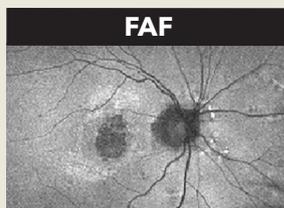
FAF shows areas of hypo and hyperautofluorescence



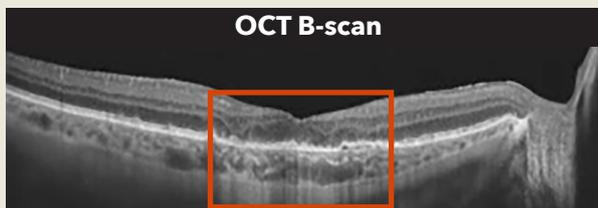
Complete RPE atrophy and choroidal hypertransmission with foveal sparing



CFP shows modest lesion progression



FAF shows areas of hypo and hyperautofluorescence



Enlargement of atrophic area associated with choroidal hypertransmission

Optometrists play a key role in recognizing and referring GA patients.¹

Learn more at [RecognizeAndReferGA.com](https://www.recognizeandreferga.com)

Images are courtesy of Dr Julie Rodman at the Broward Eye Care Institute. **Hypothetical case studies—individual experience may vary.** AMD=age-related macular degeneration; BCVA=best-corrected visual acuity; BMI=body mass index; CFP=color fundus photography; FAF=fundus autofluorescence; OCT=optical coherence tomography; RPE=retinal pigment epithelium.

Reference: 1. American Optometric Association. AOA Comprehensive adult eye and vision examination. Quick Reference Guide: Evidence-Based Clinical Practice Guideline. 1st ed. 2015. https://www.aoa.org/documents/EBO/Comprehensive_Adult_Eye_and_Vision%20QRG.pdf. Accessed June 15, 2023.