geographic atrophy.eu

Identifying GEOGRAPHIC ATROPHY using OCT

GA progression is constant and irreversible[1–4]

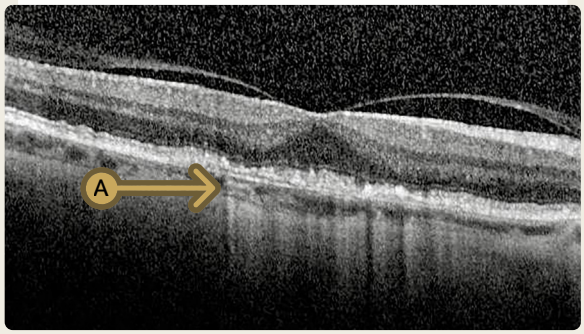
Early diagnosis and regular monitoring enables timely support to help manage geographic atrophy (GA).[5] The CAM (Classification of Atrophy Meetings) group recommend optical coherence tomography (OCT) as the reference standard to diagnose GA and stage atrophy.[6]

GA features observed on OCT

1. Choroidal hypertransmission

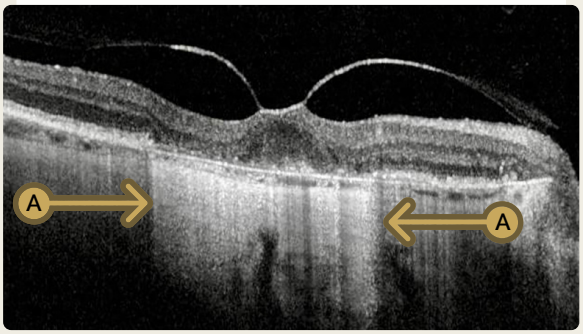
A key sign of GA on OCT is increased reflectivity from the underlying choroid and choriocapillaris, which results in hypertransmission defects.[7,8]

At baseline



Incomplete retinal pigment epithelium (RPE) and outer retinal atrophy, or iRORA (arrow A).

5 years after baseline

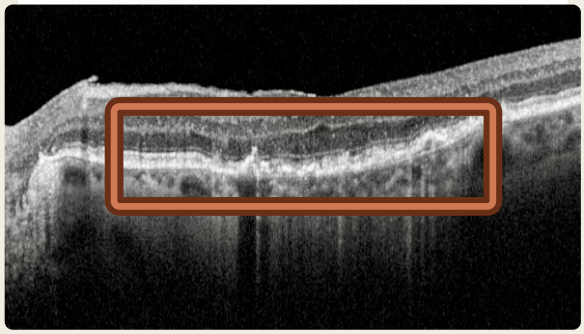


Large area of complete RPE and outer retinal atrophy, or cRORA (arrow A).

2. Foveal involvement

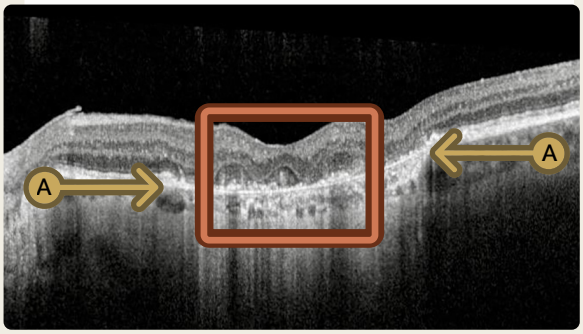
Central visual acuity can be profoundly affected by foveal involvement.[7]

At baseline



The scan shows RPE irregularities (highlighted in the box), with small areas of hypertransmission.

4 years after baseline

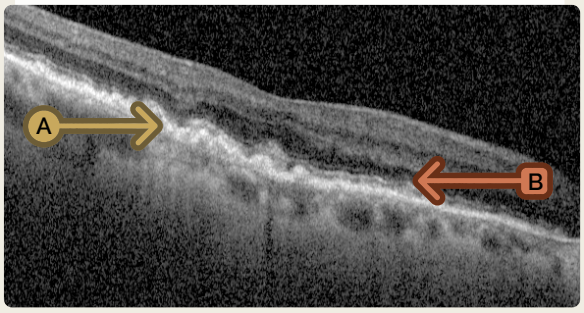


Large areas of cRORA (arrow A) with choroidal hypertransmission and foveal involvement (highlighted in the box).

3. Photoreceptor degeneration

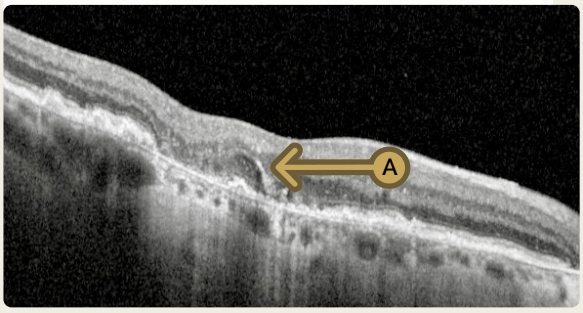
Changes in photoreceptor and RPE layer integrity can act as a clinically meaningful biomarker in GA.[9,10]

At baseline



Signs of intermediate age-related macular degeneration (AMD), with drusen (arrow A) and reticular pseudodrusen (arrow B). RPE is intact, with small areas of ellipsoid zone disruption seen.

3 years after baseline

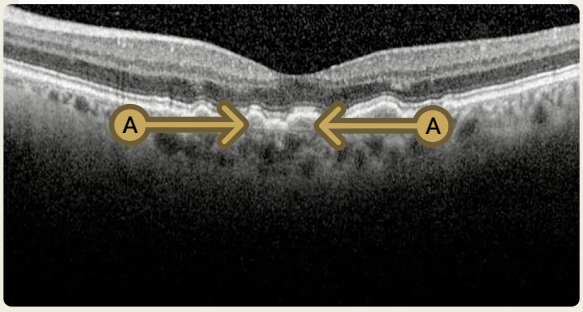


There is now a foveal area of RPE loss with subsidence (arrow A) of the inner nuclear layer (INL) and outer plexiform layer (OPL) representing photoreceptor loss.

4. Increasing drusen volume and reticular pseudodrusen

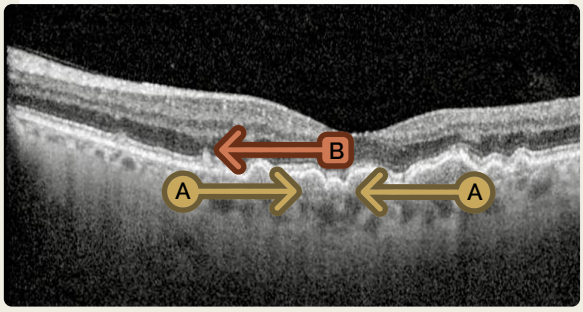
Drusen, reticular pseudodrusen, and change in drusen volume are all risk factors for the progression of AMD to GA and can be observed on OCT.[11]

At baseline



Presence of soft drusen (arrow A) as well as a perifoveal small drusenoid pigment epithelial detachment (PED).

3 years after baseline



Scan shows increase in drusen volume (arrow A) and nasal reticular pseudodrusen (arrow B).

Scan the code or visit https://geographicatrophy.eu/ga-imaging/ to explore detailed patient case studies and learn more about identifying GA using OCT

OCT scan images courtesy of Dr Josef Huemer.

AMD=age-related macular degeneration; cRORA=complete RPE and outer retinal atrophy; GA=geographic atrophy; INL=inner nuclear layer; iRORA=incomplete RPE and outer retinal atrophy; OCT=optical coherence tomography; OPL=outer plexiform layer; PED=pigment epithelial detachment; RPE=retinal pigment epithelium.

References: 1. Boyer DS, *et al. Retina.* 2017;37(5):819–835. **2.** Lindblad AS, *et al. Arch Ophthalmol.* 2009;127(9):1168–1174. **3.** Holz FG, *et al. Ophthalmology.* 2014;121(5):1079–1091. **4.** Sunness JS, *et al. Ophthalmology.* 2007;114(2):271–277. **5.** Legge A. Keeping an eye on geographic atrophy. 2023. Available at: https://www.optometrytimes.com/view/keeping-an-eye-on-geographic-atrophy (Accessed March 2024). **6.** Sadda SR, *et al. Ophthalmology.* 2018;125(4):537–548. **7.** Fleckenstein M, *et al. Ophthalmology.* 2018;125(3):369–390. **8.** Sadda SR, *et al. Retina.* 2016;36(10):1806–1822. **9.** Pfau M, *et al. JAMA Ophthalmol.* 2020;138(10):1026–1034. **10.** American Academy of Ophthalmology. Novel therapies and new biomarkers for geographic atrophy. 2023. Available at: https://www.aao.org/eyenet/article/novel-therapies-newbiomarkers-geographic-atrophy (Accessed March 2024). **11.** Heesterbeek TJ, *et al. Ophthalmic Physiol Opt.* 2020;40(2):140–170.

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Apellis