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Widefield swept source optical coherence tomography for the monitoring of choroidal infiltrates

Mariana Vaz [a], João Salgueiro [b], Pedro Carreira [a], Margarida Brízido [a], Daniel Lopes [b], Diogo Cabral [a,c,*]

[a] ULS Almada-Seixal, Almada, Portugal
[b] Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal
[c] NOVA medical School, Universidade NOVA de Lisboa, Lisboa, Portugal

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ABSTRACT

Choroidal Infiltrates (Cis) detection is traditionally done using invasive imaging. We herein report the usage of topographic choroidal thickness maps (ChT maps) and en face swept-source Optical Coherence Tomography (OCT) as a rapid and non-invasive technique to monitor Cis in a patient with Chronic Lymphocytic Leukemia.

1. Case report

A 73-year-old man was referred for myodesopsias and blurred vision (20/30 Snellen equivalent) in his right eye for one week. Medical history was relevant for Chronic Lymphocytic Leukemia (CLL, del 17p) with partial response to ibrutinib (420 mg QD). Anterior segment examination was unremarkable. Fundoscopy revealed posterior vitreous cells and multiple yellowish round nodular lesions at the posterior pole and nasal to the optic disk (Fig. 1A). En-face swept-source OCT slab at the choroid showed lesions with an oval shape distinct from choroidal vessels (Fig. 1B) corresponding in ChT maps to foci of increased choroidal thickness (Fig. 1G). Cross-sectional OCT analysis showed characteristics compatible with Cis (Fig. 1C). A complete blood count (CBC) suggested CLL progression. The patient continued to take the same doses of ibrutinib and observation was advised. Two weeks later, spontaneous resolution of the floaters and visual acuity improvement (20/20 Snellen equivalent) were reported. Fading of choroidal lesions was observed in fundoscopy and OCT imaging (Fig. 1D–F). The ChT map showed normalization of the choroidal thickness (Fig. 1H).

2. Discussion

Choroidal infiltrates, markers of CLL activity, require monitoring for clinical management as they are likely to be benign lymphomas that differ in their natural history and treatment from aggressive choroidal lymphomas.[1] Choroidal lesions usually exhibit distinctive features in optical coherence tomography (OCT).[2] Studies have been published correlating ICG findings with EDI-OCT and FA results, particularly in the detection of choroidal granulomas.[3,4] This study distinguishes itself by making use of wide-field SS-OCT to visualize lesions outside the macula and to track treatment response to ibrutinib in a patient with CLL using ChT maps.

3. Conclusion

ChT maps in addition to the analysis of en face OCT and individual B-scans might be a useful, rapid, and non-invasive technique for monitoring choroidal lesions.

Patient consent

Consent to publish this case report has been obtained from the patient in writing.

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* Corresponding author. Centro de Responsabilidade Integrada de Oftalmologia Hospital Garcia de Orta, E.P.E, Av. Torrado da Silva, 2805-267, Almada, Portugal.
E-mail address: diogo.cabral@hgo.min-saude.pt (D. Cabral).

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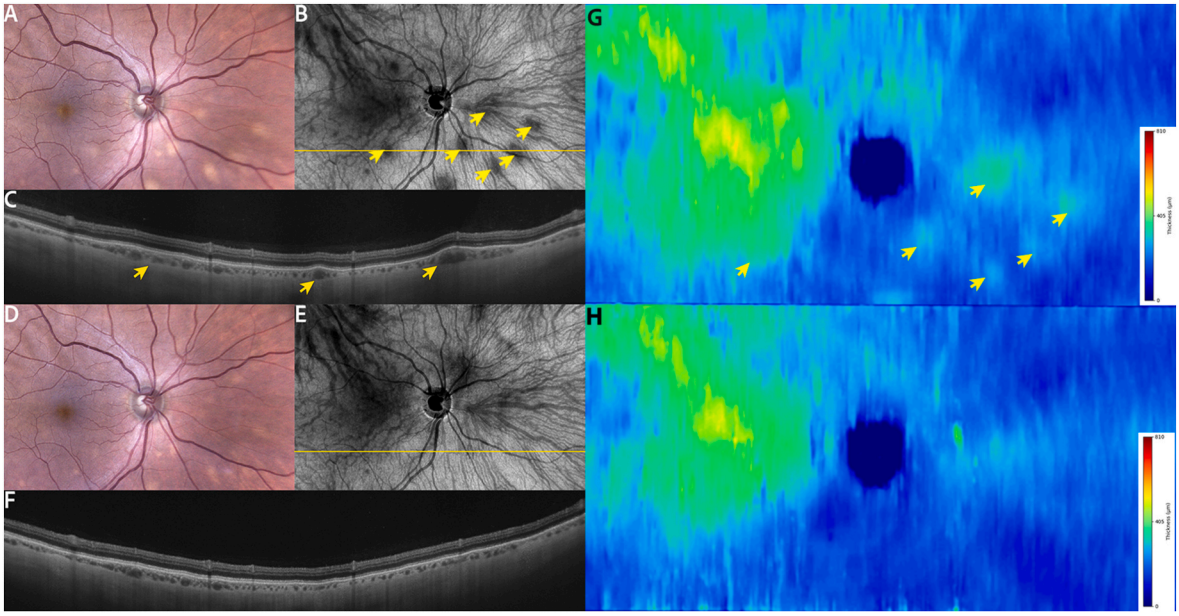

Fig. 1. Monitoring of choroidal infiltrates using the widefield swept-source Optical Coherence Tomography (OCT). (A) Fundus photography of the right eye at presentation shows multiple yellowish lesions at the posterior pole and nasal to the optic disk. (B) Widefield en face OCT slab at the choroid showed lesions with an oval shape distinct from choroidal vessels (yellow arrows). (C) Topographic choroidal thickness map (ChT map) shows multiples foci of increased choroidal thickness corresponding to the lesions seen in Fig. 1B (yellow arrows). (D) Cross-sectional OCT B-scan (yellow line at mosaic B) shows a homogenous internal pattern of the lesions overlying an area of increased transmission of the signal (yellow arrowheads). (D) Fundus photograph at follow-up (two weeks after the first evaluation) exhibits fading of choroidal lesions. The same inference was perceived with the analysis of en face OCT at the choroid (E), in the ChT map (F) and in the cross-sectional slab tracked with the prior exam (G).

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

CRediT authorship contribution statement

Mariana Vaz: Writing – review & editing, Writing – original draft, Validation, Data curation, Conceptualization. **João Salgueiro:** Software, Formal analysis. **Pedro Carreira:** Writing – review & editing, Validation, Investigation. **Margarida Brízido:** Writing – review & editing. **Daniel Lopes:** Supervision. **Diogo Cabral:** Writing – review & editing, Supervision, Investigation, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Nothing to disclose.

References

1. Carroll WJ, Deak G, J Daily M, et al. INDOLENT, nonprogressive, multifocal choroidal lesions: a presumed benign choroidal lymphoid disease. *Retina*. 2020 Oct;40(10): 1980–1987. https://doi.org/10.1097/IAE.0000000000002865.
2. Invernizzi A, Mapelli C, Viola F, et al. Choroidal granulomas visualized by enhanced depth imaging optical coherence tomography. *Retina*. 2015;35:525–531. https://doi.org/10.1097/IAE.0000000000000312.
3. Pichi F, Smith SD, Neri P, et al. Choroidal granulomas visualized by swept-source optical coherence tomography angiography. *Retina*. 2021;41:602–609. https://doi.org/10.1097/IAE.0000000000002864.
4. Parrulli S, Invernizzi A, Monteduro D, et al. Longitudinal follow-up of choroidal granulomas with indocyanine green angiography and optical coherence tomography angiography. *Retina*. 2022;42:906–914. https://doi.org/10.1097/IAE.0000000000003405.