

In vivo correlation with line-field optical coherence tomography of flat facial lesions

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INTRODUCTION & OBJECTIVES.

Numerous dermoscopic criteria have been identified to distinguish lentigo maligna (LM) from other pigmented flat facial lesions. However, the partial overlap of some diagnostic features can complicate the diagnosis. Recently, line-field confocal optical coherence tomography (LC-OCT), has demonstrated great usefulness in diagnosing both non-melanocytic and melanocytic skin tumours. This study aims to describe for the first time the LC-OCT features associated with the dermoscopic criteria of LM and other flat pigmented simulators.

MATERIALS AND METHODS.

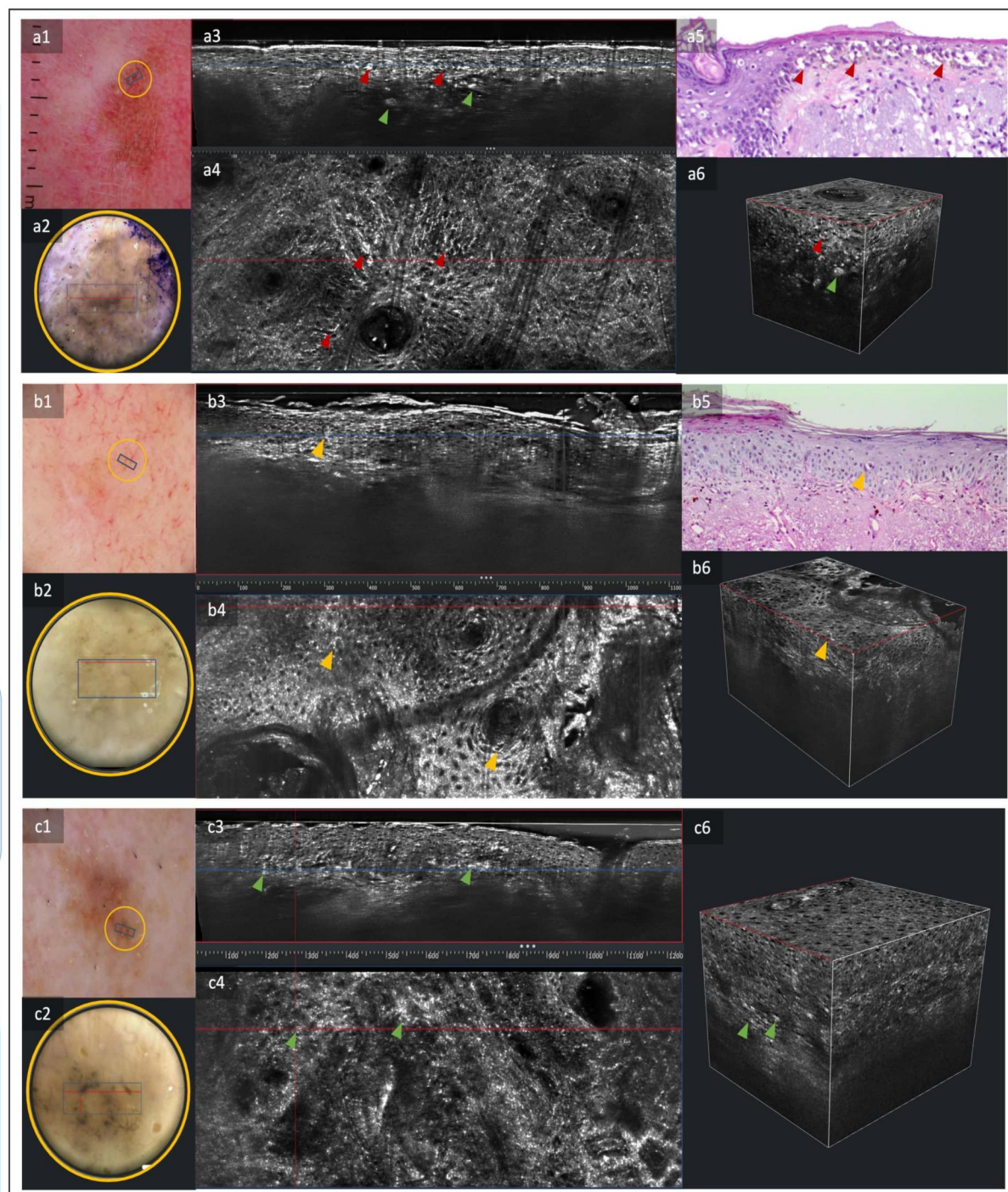
A descriptive, retrospective study was performed, to identify the 3D LC-OCT features associated with the dermoscopic criteria of pigmented flat lesions described in the literature.

RESULTS.

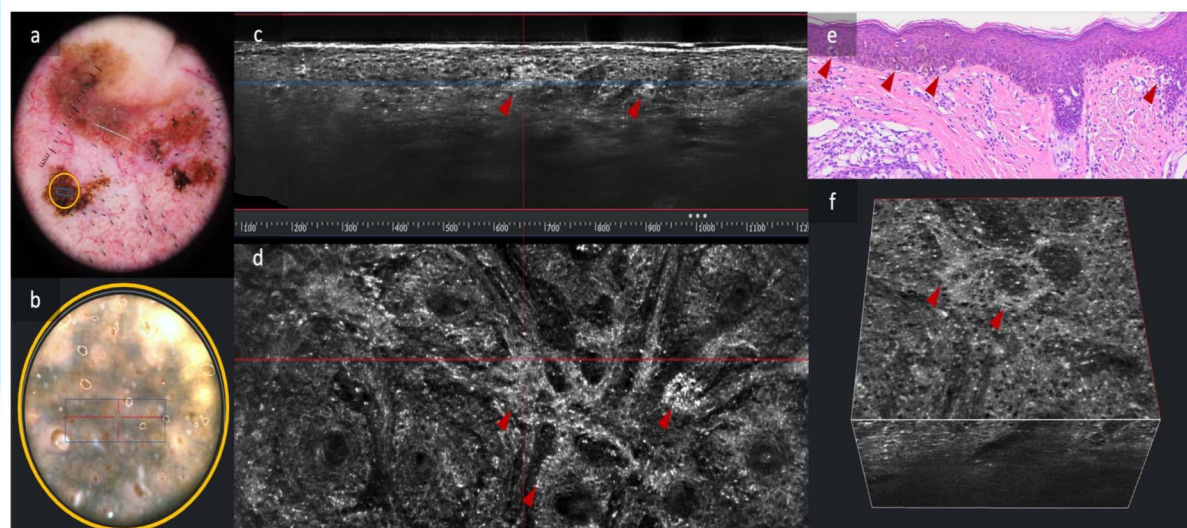
A total of 73 flat pigmented lesions were analyzed, 23 melanomas and 50 benign lesions, including solar lentigo (SL)/seborrheic keratosis (SK), pigmented actinic keratosis (pAK), lichen planus-like keratosis (LPLK) and melanocytic nevi. LM showed atypical melanocytes invading follicles in 63% of cases with pigmented follicular openings, a high density of scattered melanocytes with perifollicular arrangement in 67% of lesions with annular-granular pattern, and the formation of melanocytic aggregates that coalesce into a disorganized, medusa-like pattern in the 86% of observed rhomboid structures.

In the cases where these dermoscopic criteria were not associated with LM, LC-OCT was able to detect key differences, such as the presence of atypical keratinocytes in pAK, a pigmented basal layer without folliculotropism in SL or pAK, or regular nests of melanocytes in melanocytic nevi.

CONCLUSIONS. LC-OCT emerges as a promising non-invasive tool for differentiating lentigo maligna from its mimickers.



Annular-granular pattern. (a1) Dermoscopic images of a lentigo maligna, (b1) pigmented actinic keratosis and (c1) melanocytic nevus. Vertical, (a4-c4) horizontal images (a5,b5) histological images and (a6-c6) 3D reconstruction showing the presence of (a1-a6) pigmented atypical cells in the epidermis (red arrows) with a perifollicular arrangement and melanin-containing cells (melanophages) (green arrows) at the DEJ, (b1-b6) atypical keratinocytes with scattered hyper-refractile dendritic cells in the epidermis (melanocytes and langerhans cells) (yellow arrows) and (c1-c6) the presence of hyper-refractile cells (green arrows), sometimes arranged in nests at the DEJ.



Rhomboid structure / Polygonal lines. (a) Dermoscopic images of a lentigo maligna. (c) Vertical, (d) horizontal images and (e) histological image and (f) 3D reconstruction showing the evidence of aggregates of melanocytes (red arrows) fusing in a disorganized manner.

References

1. Akay BN, Kocyigit P, Heper AO, Erdem C. Dermoscopy of flat pigmented facial lesions: diagnostic challenge between pigmented actinic keratosis and lentigo maligna. *Br J Dermatol* 2010;**163**:1212–17.
2. Soglia, S.; Pérez-Anker, J.; Lobos Guede, N.; Giavedoni, P.; Puig, S.; Malvehy, J. Diagnostics Using Non-Invasive Technologies in Dermatological Oncology. *Cancers*2022;**14**,:5886.
3. Perez-Anker J, Soglia S, Lenoir C, et al. Criteria for melanocytic lesions in LC-OCT. *J Eur Acad Dermatol Venereol*2024. Epub ahead of print.
4. Soglia S, Pérez-Anker J, Albero R et al. Understanding the anatomy of dermoscopy of melanocytic skin tumours: Correlation in vivo with line-field optical coherence tomography. *J Eur Acad Dermatol Venereol*2024;**38**:1191-1201.
5. Tschandl P, Rosendahl C, Kittler H. Dermoscopy of flat pigmented facial lesions. *J Eur Acad Dermatol Venereol*2015;**29**:120-7.