

Optical Super-High Magnification Dermoscopy in the Diagnosis of Equivocal Melanocytic Lesions: Poor Agreement on Current Terminology and Future Perspectives

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#Members Italian Optical Super-High Magnification Dermoscopy Group are listed in the Appendix A

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Introduction

Optical super-high magnification dermoscopy (OSHMD) represents a new advancement in dermoscopy which enables up to 400x magnification, allowing the visualization of structures commonly not observable with 20x conventional dermoscopy [1,2].

OSHMD has been used in the differential diagnosis between nevi and melanomas, highlighting some discriminating criteria, including cell irregularity in shape and size [1,2]. Despite the mounting interest concerning this technique, data are still scarce.

This paper aimed to describe our experience in a cohort of patients with dermoscopically equivocal melanocytic

lesions and to present the previously unreported agreement on OSHMD criteria between different evaluators.

Case Presentation

Flat dermoscopically equivocal pigmented lesions, diagnosed as either nevi or melanoma, were retrospectively analyzed. The diagnosis was confirmed by histopathological examination or by a 2-year follow-up. Data regarding age, sex, and anatomic location were also retrieved. Acral lesions were excluded. OSHMD images of all cases were collected and assessed according to previously described criteria [1,2].

Evaluations, blinded to histopathologic diagnosis, were performed by three evaluators, experts in dermoscopy and trained in OSHMD. The first and the third evaluators had >5 years of experience with OSHMD, and the second evaluator had <5 years of experience with OSHMD. The first evaluator also had >10 years of experience with reflectance confocal microscopy (RCM).

Statistical evaluation was carried out with the STATA software version 17 (StataCorp 2021; Stata Statistical Software: Release 17, StataCorp LLC). Cohen's Kappa was employed to estimate the agreement among evaluators for the recognition of features. Values below 0.2 indicate poor agreement, between 0.21 and 0.40 fair agreement, 0.41-0.60 moderate agreement, 0.61 - 0.80 substantial agreement, and 0.81 - 1.00 indicate almost perfect agreement.

A total of 74 nevi and 20 melanomas, mostly located on the trunk and limbs, were included. The mean age was

47.8±16.4 (range 8-93), with 53% females. The mean Breslow thickness was 0.12 (range 0-0.6).

Data revealed substantial agreement between all evaluators for vessels only (Figure 1A). Fair agreement was observed for cell irregularity and some aspects of network characteristics (Figures 1B,C). Poor-to-moderate agreement was observed for all other parameters, with heterogeneous results between different evaluators (Table 1).

Conclusions

In the current study, the best agreement between the three evaluators was found for vessels, cell irregularities, and network with edged papillae, which are likely the easiest parameters to be identified under OSHMD. On the other hand, overall poor agreement on the identification of other OSHMD features was observed. A potential pitfall may be related to OSHMD terminology, showing some similarities with RCM and conventional dermoscopy features. This similarity can be misleading for evaluators with experience with different imaging tools.

Other potential limitations may be related to the retrospective nature of the study, the inclusion of difficult differential diagnoses of clinically atypical nevi and thin melanomas, and the lack of guidelines for acquiring images enabling the proper identification of OSHMD features.

Taken together, these results show that further efforts should be made for the development of a terminology shared between experts to improve the recognition of OSHMD features.

Table 1. Intraclass Correlation Coefficient According to OSHMD Features.

OSHMD features	k-value 1 vs 2	% of agreement 1 vs 2	k-value 1 vs 3	% of agreement 1 vs 3	k-value 2 vs 3	% of agreement 2 vs 3
Keratinocyte	0.086	72.3	0.157*	67	0.464**	64.9
Roundish melanocytes	0.163	44.7	0.184*	45.7	0.487**	68.1
Dendritic melanocytes	0.033	10.6	0.095	12.8	0.522**	59.6
melanophages	0.388**	10.6	0.230*	18.1	0.171	13.8
Cell irregularity	0.286**	24.5	0.195*	26.6	0.332**	50.0
Cell distribution	0.098	25.5	0.008	12.8	0.402**	12.8
Dots	0.231**	6.4	0.012	5.3	0.084	23.4
Roundish nests	0.026	8.5	0.102	11.7	0.296**	42.5
Structureless area	0.010	5.2	-0.042	51.1	0.365**	68.1
vessels	0.631**	32.9	0.748**	30.9	0.738**	34.0
Hyperkeratotic round concentric structures	0.159	3.2	0.216*	3.2	0.061	2.1
Network with edged papillae	0.191*	34.0	0.187*	47.9	0.340**	45.7
Network without edged papillae	0.025	13.8	0.170*	21.3	0.183*	50.0

*P=0.05. **P<0.001.

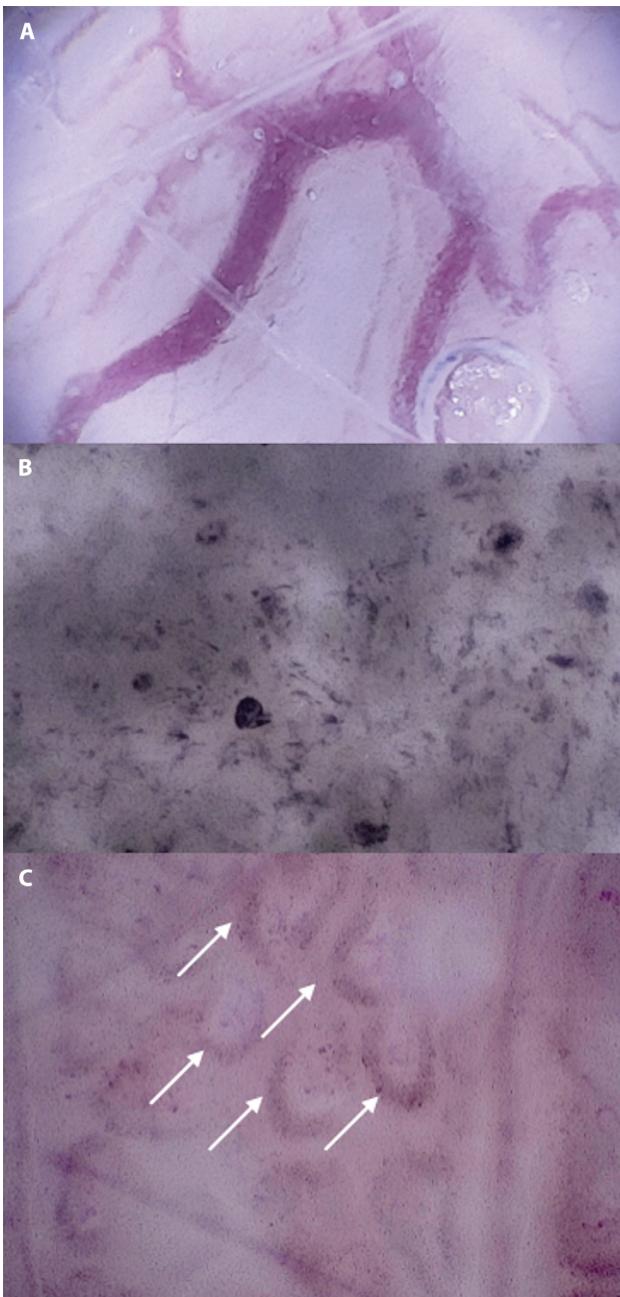


Figure 1. Optical super-high magnification pictures showing: A) vessels, B) cell irregularity, C) network with edged papillae (arrows).

Appendix A-Members of Italian Optical Super-High Magnification Dermoscopy Group: Stefania Guida (School of Medicine, Vita-Salute San Raffaele University, Milan, Italy and Dermatology Clinic, IRCCS San Raffaele Scientific Institute, Milan, Italy), Silvana Ciardo (Dermatology Unit, Surgical, Medical and Dental Department of Morphological Sciences Related to Transplant, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Modena, Italy), Shaniko Kaleci (Dermatology Unit, Surgical, Medical and Dental Department of Morphological Sciences Related to Transplant, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Modena,

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