Importance of Both Clinical and Dermoscopic Findings in Predicting High-Risk Histopathological Subtype in Facial Basal Cell Carcinomas

Hannah Ceder1,2, Eva Backman1,2, Ashfaq Marghoob3, Cristián Navarrete-Dechent4, Sam Polesie1,2, Ofer Reiter5, John Paoli1,2

1 Department of Dermatology and Venereology, Institute of Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden
2 Department of Dermatology and Venereology, Region Västra Götaland, Sahlgrenska University Hospital, Gothenburg, Sweden
3 Dermatology Service, Memorial Sloan Kettering Cancer Center, Hauppague, New York
4 Melanoma and Skin Cancer Unit, Department of Dermatology, Escuela de Medicina, Pontificia Universidad Católica de Chile, Santiago, Chile
5 Dermatology Division, Rabin Medical Center and Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

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Corresponding author: Hannah Ceder, MD, Department of Dermatology and Venereology, Grona straket 16, Sahlgrenska University Hospital, SE-413 45 Gothenburg, Sweden. Tel: +46 736 36 96 30 E-mail: hannah.ceder@vgregion.se

Abstract

Introduction: Being able to recognize high-risk facial basal cell carcinoma (BCC) may lead to fewer incomplete excisions and inappropriate treatments.

Objectives: We sought to investigate clinical and dermoscopic criteria for predicting facial BCC subtypes, analyze the interobserver agreement between readers, and develop a diagnostic algorithm to predict high-risk histopathological subtype.

Methods: In this single-center, retrospective investigation, 6 independent readers evaluated predefined clinical and dermoscopic criteria in images of histopathologically verified primary facial BCCs including: topography, border demarcation, vessels, ulceration, white porcelain areas, shiny white blotches and strands, and pigmented structures and vessels within ulceration.

Results: Overall, 297 clinical and dermoscopic image pairs were analyzed. The strongest associations with high-risk subtype were: “bumpy” topography (OR 3.8, 95% CI 3.1-4.7), ill-defined borders (OR 3.4, 95% CI 3.1-4.7), white porcelain area (OR 3.5, 95% CI 2.8-4.5), and vessels within ulceration (OR 3.1, 95% CI 2.4-4.1). Predominantly focused vessels were a positive diagnostic criterion for either nodular (OR 1.7, 95% CI 1.3-2.2) or high-risk (OR 2.0, 95% CI 1.6-2.5) subtypes and a strong negative diagnostic criterion for superficial BCC (OR 14.0, 95% CI 9.6-20.8). Interobserver agreement ranged from fair to substantial (κ=0.36 to 0.72). A diagnostic algorithm based on these findings demonstrated a sensitivity of 81.4% (95% CI, 78.9-83.7%) and a specificity of 53.3% (95% CI, 49.7-56.9%) for predicting high-risk BCC subtype.

Conclusions: Integration of both clinical and dermoscopic features (including novel features such as topography and vessels within ulceration) are essential to improve subtype prediction of facial BCCs and management decisions.