**ABSTRACT**

**BACKGROUND**: Dysplastic nevi are thought to be precursors of melanoma during a stepwise process. However, this concept is still controversial and precise correlation between clinical and histopathologic features is lacking. In vivo confocal microscopy represents a noninvasive imaging technique producing horizontal sections at nearly histopathologic resolution.

**OBJECTIVE**: We sought to determine whether specific histologic features in dysplastic nevi have reliable correlates on confocal microscopy and to develop an in vivo microscopic grading system.

**METHODS**: Sixty melanocytic lesions with equivocal dermatoscopic aspects, corresponding to 19 nondysplastic nevi, 27 dysplastic nevi, and 14 melanomas, were analyzed by confocal microscopy and histopathology, using the Duke grading criteria.

**RESULTS**: All architectural and cytologic features of the Duke grading score had significant reflectance confocal microscopy correlates. Confocally, dysplastic nevi were characterized by a ringed pattern, in association with a meshwork pattern in a large proportion of cases, along with atypical junctional cells in the center of the lesion, and irregular junctional nests with short interconnections. A simplified algorithm was developed to distinguish dysplastic nevi from melanoma and nondysplastic nevi. The contemporary presence of cytologic atypia and of atypical junctional nests (irregular, with short interconnections, and/or with nonhomogeneous cellularity) was suggestive of histologic dysplasia, whereas a widespread pagetoid infiltration, widespread cytologic atypia at the junction, and nonedged papillae suggested melanoma diagnosis.

**LIMITATIONS**: A small number of cases were evaluated because of the necessity to analyze numerous histopathologic and confocal features.

**CONCLUSION**: The possibility to detect dysplastic nevi in vivo may lead to an appropriate management.
decision.