Abstract

Background: Cutaneous melanoma develops through a series of evolutionary steps (intraepidermal, radial, and vertical growth phases) that are traceable in specific histologic features. Epiluminescence microscopy (ELM) is an in vivo technique that enables the visualization of morphologic structures in pigmented lesions correlated with specific histologic architectural characteristics. Many ELM criteria associated with cutaneous melanoma have been described, but their correlation with tumor progression has not yet been established. Objective: In this preliminary study our purpose was to explore the possibility of recognizing ELM criteria that allow the in vivo detection of the various phases of melanoma progression as well as tumor depth. Methods: Seventy-two cutaneous melanomas (41 'thin' melanomas [TnM], < 0.76 mm thickness, and 31 'thick' melanomas [TkM], > 0.75 mm thickness) were investigated with ELM for the presence of nine standard ELM criteria; their significance was determined by calculating the chi-square test of independence. Results: A significant association is found between the presence of pigment network and TaM and between the presence of gray-blue areas, vascular pattern, and TkM. Moreover, pigment network plus radial streaming is the most significant association of ELM criteria in TnM, whereas gray-blue areas plus vascular pattern is the greatest in TkM. Conclusion: This study shows a good correlation between certain ELM criteria and the histologic architecture of cutaneous melanoma for a preoperative evaluation of the tumor thickness. Further investigation is needed for verifying on a larger number of cases our pilot estimates of sensitivity and specificity of ELM criteria in thin and thick melanomas.