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Comparison of Digital and Conventional Measurements of the Morphometric Prognostic Parameters in Cutaneous Melanoma

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Introduction/ Background

Measurements for Breslow and TNM staging on proliferations naevi and melanomas are required both by surgeons and patients, with direct interest in terms of prognosis and therapy. The advantages of digital measurements are: less time consuming, the ability to measure longer distances easy, as the possibility to extract meaningful images for clinicians, as they raise the question on the accuracy of the data supplied compared with those obtained in traditional transmission microscopy.

Aims

Cross comparison between conventional optical micrometer measurements versus whole scanned histological sections on paraffin tissue with malignant melanoma or naevi.

Methods

Digital measurements were performed on a series of cases of melanoma and nevi (n = 15) quantifying peripheral margins, deep margin, maximum tumor thickness, including the degree of invasion. Measurements were performed on standard HE staining sections, using Leica equipment (Aperioscan 2) and AperioImageScope 12.2 as software. Data were compared pursuing the gap between the two types of measures and the impact on TNM staging.

Results

The median numerical differences between the two measurements was low (between 0.003 and 0.023mm), the maximum registered was for depth of invasion. The variability was interpreted as human factor and training variability in taking measurements (most fluctuating - maximum invasion point). They have no significant impact in TNM staging scale Breslow and digital measurements allow quantification of border areas, but with uncertain impact if we consider the tissue processing techniques induced changes. Digital measurements are advantageous because of its simplicity and speed, as well as calibration and standardization opportunities to reduce reading errors.