MELANOMA AND MELANOCYTIC NAEVI

MEASUREMENT OF ULTRASONIC PROPERTIES OF CUTANEOUS MELANOMA EX VIVO WITH A 110-230 MHZ ACOUSTIC MICROSCOPE

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Introduction: Up to now two studies have been conducted to analyse the ability of Scanning acoustic microscopy (SAM) ex vivo to differentiate the histological components of basal cell and squamous cell type carcinomas in fixed tissue samples with 10% formalin solution.

Objective: To evaluate the properties of normal and damaged skin tissues in different types of cutaneous melanoma (CM) samples ex vivo using SAM in comparison with histological examination.

Materials and Methods: Excised CM (n=5) samples embedded in paraffin blocks were evaluated with 110 and 230 MHz frequency SAM. The paraffin block of CM was submerged and fixed to the bottom of distilled water bath. Formalin-fixed and paraffin-embedded section of CM showing the greatest thickness were stained with hematoxylin and eosin (H&E). Breslow depth (BD) of CM in samples stained with HE was measured by two observers. The histological samples of CM were identified by comparing digitized panoramic image of the light microscopy by one pathologist and other investigator. Overall the number of cells has been counted by ImageJ software within selected 1 mm2 area.

Results: Top-down view, homogeneous high-intensity light zone and heterogeneous structure tissue were observed in all SAM image cases. The image of SAM allows separating the boundaries between the epidermis, dermis and tumour, and skin appendages. Higher resolution images of the tissue structure were obtained by investigating the samples with 230 MHz transducer rather than 110 MHz of the SAM. The intensity of tissues tended to increase, depending on the higher number of total tumour cells of CM.

Conclusions: High frequency ultrasound microscopy enables to differentiate properties of

skin layers, tumour boundaries and skin appendages.