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Age related changes of human skin investigated with histometric measurements by confocal laser scanning microscopy in vivo.

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ABSTRACT

BACKGROUND/AIMS: The confocal laser scanning microscope Vivascope (Lucid, Henrietta) allows skin to be studied in real-time with a resolution of 0.5 microm horizontal and 1.3 microm vertical in vivo. In this study, we present the results of a comparison between the skin of an older and a younger group of volunteers by in vivo histometric measurements.

METHODS: To investigate changes caused by age, 13 young (18-25years) and 13 older (>65years) volunteers were examined.

The following parameters were measured using the Vivascope at the volar forearm: minimal thickness of the epidermis (E(min)), size of cells in the granular layer (A(gran)), thickness of the horny layer (DSC), thickness of the basal layer (DSB) and number of dermal papillae per area (PapI). The image analysis program image tool was used to measure the size of the cells and the thickness of the basal layer.

RESULTS: The older group of volunteers showed a significant increase in E(min), no significant change in DSC, a significant decrease in dermal papillae and in the thickness of the basal layer, and an increase in A(gran) compared to the younger group.

CONCLUSIONS: Histometric measurements by in vivo confocal laser scanning microscopy are a sensitive and non-invasive tool for characterizing and quantifying histological changes of the epidermis and papillary dermis due to ageing.