

Medical > In Vivo > Burn Injuries

13

Differentiation of superficial-partial vs. deep-partial thickness burn injuries in vivo by confocal-laser-scanning microscopy.

Altintas MA, Altintas AA, Knobloch K, Guggenheim M, Zweifel CJ, Vogt PM.; *Burns*. 2009 Feb;35(1):80-6. Epub 2008 Aug 8.

ABSTRACT

OBJECTIVE: The current determination of burn depth is based both on a visual and clinical assessment. Confocal-laser-scanning microscopy (CLSM) enables in vivo histomorphological images. We hypothesized that CLSM can differentiate superficial-partial vs. deep-partial thickness burns on a histomorphological level.

METHODS: Thirty-eight burn wounds in 14 patients were clinically divided in three groups from superficial (group 1), superficial-partial (group 2) to deep-partial (group 3) thickness burns. CLSM was performed with the VivaScope 1500 (Lucid Inc., Rochester, NY, USA) 24h after burn. The following parameters were assessed: cell size of the granular-layer, thickness of the basal-layer, minimal thickness of the epidermis and number of perfused dermal papillae.

RESULTS: Superficial burns resulted in a significant increase of the cell size of the granular-layer and a higher increase of the minimal thickness of the epidermis as in superficial-partial thickness burns. The granular-layer in partial thickness burns was destroyed. Superficial burns had an increased thickness of the basal-layer; in superficial-partial thickness burns the basal-layer was partly destroyed with complete destruction in deep-partial thickness burns. In superficial burns the perfused dermal papillae were increased significantly, while decreased in superficial-partial thickness, and completely destroyed in deep-partial thickness burns up to a depth of 350 microm.

CONCLUSIONS: In vivo confocal-laser-scanning microscopy can differentiate superficial-partial vs. deep-partial thickness burns on a histomorphological level.