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Non-invasive evaluation of the kinetics of allergic and irritant contact dermatitis.

Astner S, González E, Cheung AC, Rius-Díaz F, Doukas AG, William F, González S.; J Invest Dermatol. 2005 Feb;124(2):351-9.

ABSTRACT

Reflectance confocal microscopy (RCM) allows non-invasive visualization of human skin in vivo. It has been used to describe the histopathological features of acute contact dermatitis (CD). This work was designed to investigate the kinetics of both allergic and irritant CD (ACD and ICD) in vivo. Eighteen subjects with a prior diagnosis of ACD were patch tested with the specific allergen sodium lauryl sulfate as an irritant, and appropriate controls. RCM, transepidermal water loss (TEWL), and fluorescence excitation spectroscopy (FES) were performed at several time points within 2 wk after patch removal. After removal of the Finn chambers at 48 h, superficial epidermal changes, primarily involving the stratum corneum, and increased epidermal thickness were mainly present in ICD. ACD, on the other hand, showed microvesicle formation peaking at 96 h following patch removal. Both ACD and ICD showed exocytosis and similar degrees of spongiosis on RCM. TEWL and FES demonstrated a significant difference between ACD and ICD. RCM, TEWL, and FES are valuable non-invasive tools to quantitatively study the kinetics of the pathophysiology of acute CD reactions in vivo and monitor the changes at a cellular level.