



CONTACT DERMATITIS AND OCCUPATIONAL DERMATOSES

LOSS OF BASAL SWEATING RESPONSES AT THE FOLDS IN THE FINGER AS A POTENTIAL MECHANISM FOR THE DEVELOPMENT OF HAND ECZEMA

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Background: The frequent water exposure has been suggested to predispose individuals to develop hand eczema through a higher risk of skin barrier damage; water exposure appears to trigger skin dehydration, representing a paradoxical effect given the action of water to increase skin hydration. In glabrous skin, such as the finger, contrary to the hairy skin, sweat pores open at the dermal ridges but those at the folds functioning as a water reservoir are lacking, suggesting a loss of a machinery to hold water in fingers.?

Objective: We asked how glabrous skin could maintain water in the stratum corneum (SC) at baseline and under conditions of excessive water exposure.

Materials and Methods: By using an impression mold technique (IMT), which allow an accurate quantification of sweat gland/duct activity to secrete sweat and optical coherence tomography (OCT), we investigated whether there could be a machinery to hold water in the SC in the finger of healthy individuals.

Results: Sweat pores were rarely detected at the folds in the finger at baseline (before water exposure), but, immediately after immersion of hands in 22°C water for 10min, sweat pores at the folds appeared while those at the ridges closed, which was demonstrated by IMT. This finding was also confirmed by OCT, iodine-starch method and histopathology. The numbers of sweat pores at the folds after water exposure determined by IMT decreased gradually with age and skin hydration.

Conclusions: The age-related decrease in basal sweating responses at the folds could explain skin dehydration, which is commonly seen in aged fingers. A profound decrease in basal sweating responses from sweat pores at the folds after water exposure could be a likely predisposing factor to the development of hand eczema through the induction of disrupted skin barrier.

