Medical > In Vivo > Other material

95 | Infant skin microstructure assessed in vivo differs from adult skin in organization and at the cellular level.

ABSTRACT

Functional differences between infant and adult skin may be attributed to putative differences in skin microstructure. The purpose of this study was to examine infant skin microstructure in vivo and to compare it with that of adult skin. The lower thigh area of 20 healthy mothers (ages 25-43) and their biological children (ages 3-24 months) was examined using in vivo noninvasive methods including fluorescence spectroscopy, video microscopy, and confocal laser scanning microscopy. Stratum corneum and supra-papillary epidermal thickness as well as cell size in the granular layer were assessed from the confocal images. Adhesive tapes were used to remove corneocytes from the outer-most layer of stratum corneum and their size was computed using image analysis. Surface features showed differences in glyph density and surface area. Infant stratum corneum was found to be 30% and infant epidermis 20% thinner than in adults. Infant corneocytes were found to be 20% and granular cells 10% smaller than adult corneocytes indicating a more rapid cell turnover in infants. This observation was confirmed by fluorescence spectroscopy. Dermal papillae density and size distribution also differed. Surprisingly, a distinct direct structural relationship between the stratum corneum morphology and the dermal papillae was observed exclusively in infant skin. A change in reflected signal intensity at approximately 100 mum indicating the transition between papillary and reticular dermis was evident only in adult skin. We demonstrate in vivo qualitative and quantitative differences in morphology between infant and adult skin. These differences in skin microstructure may help explain some of the reported functional differences.