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Characterization of age-related effects in human skin: A comparative study that applies confocal laser scanning microscopy and optical coherence tomography.

Neerken S, Lucassen GW, Bisschop MA, Lenderink E, Nuijs TA.; J Biomed Opt. 2004 Mar-Apr;9(2):274-81.

ABSTRACT

Skin structure and age-related changes in human skin were characterized in vivo by applying confocal laser scanning microscopy (CLSM) and optical coherence tomography (OCT).

The overall effect of aging skin, derived from studies of volunteers belonging to two age groups, was found to be a significant decrease in the maximum thickness of the epidermis and flattening of the dermo-epidermal junction.

At a certain depth in the dermis, well below the basal layer, a reflecting layer of fibrous structure is observed in CLSM images. The location of this layer strongly depends on age and is situated much deeper below the skin surface in younger than in older skin. In addition, large structural changes were observed with age. The OCT images show two bright reflecting layers.

The first one is due to scattering at the skin surface.

The second band appears to be caused by a layer of fibrous structure in the dermis.

Direct comparison of CLSM and OCT suggests that the same fibrous layer is imaged by the two techniques. This layer might be due to the transition between the papillary and reticular dermis.

A comparison of CLSM and OCT enables a better understanding of the images.