

Skin morphology as revealed by High Frequency Sonography. Findings from the skin of legs with venous and lymphatic insufficiency

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The structure of the skin was sonographically evaluated since the mid of '80 by Ultra High Frequency (UHFP) probes. These instruments were very expensive but allowed to evaluate only the cutaneous layers (epidermis and dermis). Recent improvements in ultrasound technology allowed to possibly evaluate the morphology of the cutaneous and subcutaneous layers by the same High Frequency Probes (HFP) used for routine vascular investigations. The epidermis appears as a thin hyperchoic band due to the echoes created between the gel and the skin surface. The papillary dermis (PD) appears as a thin and low-echogenic band parallel to the skin surface, immediately below the hyperechoic epidermis. The reticular dermis (RD) appears as a regular band, with homogenous thickness and echogenicity. The subcutaneous tissue consists of hypoechoic fat lobules separated by echolucent connective trabeculae. In legs with impairment of venous or lymphatic drainage, HFP sonography allows to better define the pathology of the skin changes observed during clinical examination. More importantly, HFP sonography may reveal skin changes not evidenced by clinical examination like dermal edema, dermal thinning or thickening, skin inflammatory infiltration, and other. In legs with venous or lymphatic insufficiency HFP sonography demonstrates different patterns of subcutaneous edema and may reveal skin changes that precede ulcer opening. Finally, HFP sonography may reveal skin lesions related to therapeutic procedures (open or endovascular surgery, sclerotherapy) without the need to perform skin biopsy.