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PREOPERATIVE NON INVASIVE DEPTH DETECTION OF DERMAL INFILTRATION OF TATTOO REACTIONS BY HIGH-FREQUENCY ULTRASOUND SCANNING**Jakob Tolstrup**¹, Katrina Hutton Carlsen¹, Jørgen Serup¹¹*Bispebjerg University Hospital, Dept. of Dermatology, the "Tattoo Clinic"; (Copenhagen, Denmark).*

Aim: The dermal depth of the pathology of tattoo reactions is a parameter when treatment with lasers or surgery is decided. We aimed to study this non-invasively and preoperatively with 20 MHz ultrasound.

Methods: In total 73 patients with adverse tattoo reactions were studied, using the Dermascan C 20Mhz ultrasound scanner of Cortex Technology, Denmark. In 58 patients scans could be compared to blinded histological rating of dept of infiltration by histology rated as 1, 2 and 3 representing infiltration of the outer, middle and deep dermis respectively.

Results: Mean thickness of reactions was 1.91 mm (SD 0.62) contra 1.18 mm (SD 0.27) in adjacent normal skin, $p < 0.01$. Reactions consistently showed a sub-epidermal echo-lucent band. The thickness of this band correlated with skin thickening. Accordingly, the echo-density (measured as 0-30 low-echogenic band) of the outer dermis of reactions was reduced versus normal skin, explained by inflammatory edema. Pathologist's rating of level of cellular infiltration correlated with the thickness of the echo-lucent band by ultrasound.

Conclusions: 20 MHz ultrasound scanning is important in the preoperative diagnostic assessment of tattoo reactions, displaying the undisturbed micro-anatomical structure of the entire dermis and measuring the depth and invasion of tattoo reactions accordant with histology. Ultrasound should be used preoperatively in the routine to guide treatment by lasers, surgery and other treatment modalities.