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High-frequency Ultrasound for Torture-inflicted Skin Lesions

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Ojectivity, reproducibility and non-invasiveness are required for a medico-legal evaluation of skin lesions in torture victims. In this report we describe the use of the high-frequency method for imaging of scars presumed to be inflicted by torturing. The extent of scarring and the size of the lesions could be determined precisely and objectively. We suggest that skin ultrasonography may be a useful supplementary method for evaluation of skin changes in torture victims.

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High-frequency ultrasonography is a valuable method in both experimental and clinical evaluation of the skin (1). Almost any body region can be examined with this non-invasive technique. Epidermis, dermis and subcutaneous tissue are clearly distinguished in the ultrasound image, and various pathological changes can be non-invasively examined with this technique.

The evaluation of skin changes in torture is complicated (2). The primary lesion is commonly not available for examination and torture tracking relays on the evaluation of scars. We describe here a case where cutaneous ultrasound scanning was helpful in evaluation of the origin of scars in a suspected torture victim.

CASE REPORT

A 40-year-old man applying for refugee status presented with a 1–5 mm wide and 10.5 cm long scar on the anterior and lateral part of the neck (Fig. 1a). The patient claimed that the lesion had been caused by a sword. On clinical dermatological examination it appeared that most of the scar was rather superficial.

To further define the extent of scarring we imaged the lesion with high-frequency ultrasonography. A 20 MHz scanner (Dermaflex, Cortex Technology, Hadsund, Denmark) was used to obtain transverse, B-mode scans of the lesion and surrounding skin. The method of ultrasound scanning has previously been described (1, 3).

RESULTS AND DISCUSSION

It was relevant to the torture history whether the scar had been caused by a full thickness skin damage or had developed due to minor superficial injury. This could not be resolved upon physical examination and therefore we attempted to image the scar using skin ultrasonography. In high-frequency ultrasound images, scars and keloids present as hypoechogenic areas (1), and this makes possible the determination of the extent of scarring. In this case ultrasound examination revealed a hypoechogenic area, 3.33 mm in thickness, spanning the entire papillary and

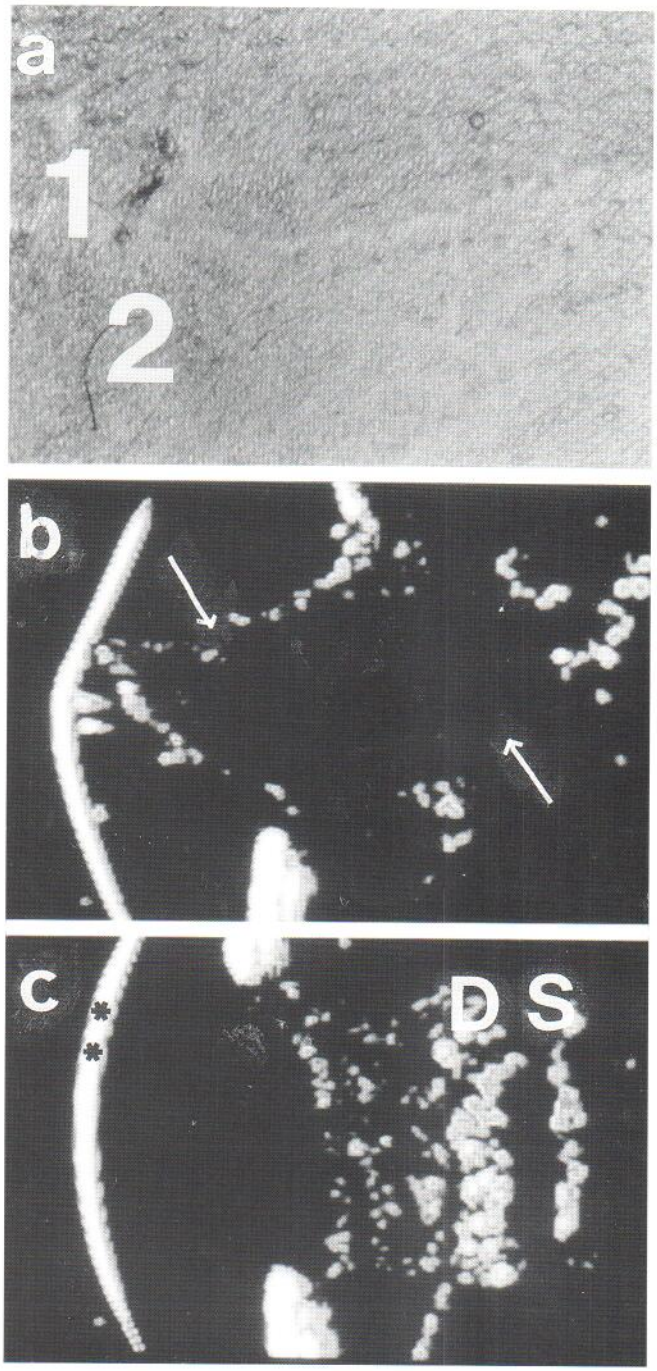

Fig. 1. Ultrasound examination of torture-induced scarring. (*a*) scar on the anterior neck of the torture victim; (*b*) ultrasound structure of the scar (scanned from place marked *1*); (*c*) the control ultrasound scanning performed in the vicinity of the scar (region *2*). *D* – dermis, *S* – subcutaneous tissue, arrows – hypoechogenic scar, ** – membrane of the probe.

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reticular dermis, and expanding to the subcutaneous tissue. In the most pronounced scarring area the thickness of the scar image was 3.72 mm (Fig. 1b). The thickness of normal skin (epidermis and dermis) measured in the vicinity of the scar was 1.14 mm (Fig. 1c). Because of the considerable deepness of the scar, it was conceivable that a full-thickness wound was responsible for its formation. The patient was later granted refugee status.

We suggest that non-invasive ultrasound imaging of the skin may be a useful supplementary examination in torture victims. It is conceivable that other characteristic features of torturing, such as skin calcium deposits due to electrical tormenting (4, 5), could be located with this technique for a following biopsy and diagnostic histological examination.

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