Investigation of Basal Cell Carcinoma by Confocal Laser Scanning Microscopy In Vivo


ABSTRACT

BACKGROUND/PURPOSE: In vivo confocal laser scanning microscopy (CLSM) allows to study human skin up to 200 micro m deep non-invasively. Aim of this study was to investigate basal cell carcinoma (BCC) using in vivo CLSM, and to compare the micromorphologic features of BCC with uninvolved skin.

METHODS: Twelve patients with histological diagnosis of BCC referred to our department for tumor excision were investigated on the lesion(s) and on clinically uninvolved sites preoperatively by in vivo CLSM using the Vivascope 1000 (Lucid Inc., Rochester, USA). The images were compared to histological examinations of the excised tissue.

RESULTS: Typical changes in vasculature such as increase in number and diameter of the blood vessels, loss of the vascular architecture, parallel and horizontally orientated vessels, and accumulation and rolling phenomena of bright reflecting cells of 11.88 +/- 1.75 micro m in diameter along the vessel wall were observed in all BCCs. The tumor stroma of the BCCs showed a strong reflectance mainly due to numerous bundles of collagen fibers encoating dark, cell-rich areas of tumor parenchym. In five patients, slim basaloid cells with relatively large, elongated dark nuclei were observed in the periphery of the tumor parenchym.

In the fibrosing type of BCC, curled bundles of collagen with large cells represented the tumor stroma.

CONCLUSIONS: BCC can be investigated by CLSM and provide typical features. Besides the tumor parenchym and stroma, typical changes in vasculature seem to be a sensitive criteria for BCC and may in future help in diagnosing BCC by CLSM as well as in assessing the margins of large tumors. We suggest that CLSM is a promising non-invasive tool for the diagnostics of BCC and the assessment of tumor margins prior to surgery.