ABSTRACT

BACKGROUND: Real-time, near-infrared confocal laser scanning microscopy may provide a way to diagnose basal cell carcinoma in vivo and might potentially eliminate the need for invasive diagnostic biopsies in the future.

OBJECTIVE: The purpose of this study is to define the in vivo histologic features of basal cell carcinoma by using a high-resolution imaging technique.

METHODS: Five fair-skinned white patients with 8 basal cell carcinoma lesions were recruited for this study. Near-infrared reflectance confocal microscopy imaging was used to characterize the histologic features of these lesions in vivo. Subsequently, the confocal histologic features were correlated with the corresponding routine hematoxylin-and-eosin-stained sections obtained from invasive biopsies.

RESULTS: A uniform population of basal cell carcinoma cells with characteristic elongated nuclei oriented along the same axis was always present. Abundant blood vessels demonstrating prominent tortuosity were seen, as well as prominent, predominantly mononuclear inflammatory infiltrate admixed or in close apposition with basal cell carcinoma cells. Trafficking of leukocytes was visualized in real time.

CONCLUSION: Our results demonstrate that near-infrared confocal microscopy may facilitate diagnosis of basal cell carcinoma with the use of in vivo high-resolution confocal features. Accuracy studies to evaluate these in vivo histologic criteria are warranted.