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Titel des Beitrags: High resolution tumor targeting in living mice by means of multispectral optoacoustic tomography.

Abstract: Tumor targeting is of high clinical and biological relevance, and major efforts have been made to develop molecular imaging technologies for visualization of the disease markers in tissue. Of particular interest is apoptosis which has a profound role within tumor development and has significant effect on cancer malignancy. Herein, we report on targeting of phosphatidylserine-exposing cells within live tumor allograft models using a synthetic near infrared zinc(II)-dipicolylamine probe. Visualization of the probe biodistribution is performed with whole body multispectral optoacoustic tomography (MSOT) system and subsequently compared to results attained by planar and tomographic fluorescence imaging systems. Compared to whole body optical visualization methods, MSOT attains remarkably better imaging capacity by delivering high-resolution scans of both disease morphology and molecular function in real time. Enhanced resolution of MSOT clearly showed that the probe mainly localizes in the vessels surrounding the tumor, suggesting that its tumor selectivity is gained by targeting the phosphatidylserine exposed on the surface of tumor vessels. The current study demonstrates the high potential of MSOT to broadly impact the fields of tumor diagnostics and preclinical drug development.

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