Head & Neck Oncology

Oral presentation

Fluorescence kinetics of Foscan, Fospeg and Foslip in the window-chamber model

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Introduction

Foslip and Fospeg are new formulations of the photosensitzer m-THPC, intended for use in Photodynamic Therapy (PDT) of malignancies. Foslip is m-THPC bound to conventional liposomes, Fospeg consists of m-THPC bound to pegylated liposomes. Possible differences in tumour-fluorescence and vasculature kinetics between Foslip, Fospeg and Foscan were studied using the rat window-chamber model.

Materials and methods

In 18 rats a dorsal skinfold window-chamber was installed and a mammary carcinoma was transplanted in the subcutaneous tissue. The dosage used for intravenous injection was 0.15 mg of m-THPC for each formulation. At 7 time-points after injection (5 minutes – 96 hours), mTHPC-fluoresence at its absorption-peak and auto-fluorescence were detected with a CCD. After correction, m-THPC fluorescence images were achieved. Fluorescence intensities of 3 different regions of interest (ROI) were assessed; tumour-tissue, vasculature and surrounding connective tissue.

Results

Shortly after injection vascular m-THPC fluorescence was high for Foscan and Fospeg but not for Foslip. The latter showed a gradual increase in fluorescence. All photosensitizers showed different fluorescence intensity curves in time. Fospeg had higher m-THPC fluorescence in tumour tissue ($p < 0.05$) between 2 and 8 hours and showed this trend at later time-points compared to the other photosensitizers. Maximum tumour fluorescence is reached at 48 hours for Foslip and 24 hours for Foscan and Fospeg. No photosensitizer showed a significant difference between the tumour and surrounding tissue fluorescence.

Conclusion

There are differences in fluorescence intensities of Fospeg, Foslip and Foscan at all time-points. Pegylated liposomes showed higher uptake in tumour. No photosensitizer showed tumour-selectivity.