中国肿瘤临床 2012, **Vol. 39** Issue (20): 1505-1508 DOI: doi:10.3969/j.issn.1000-8179.2012.20.013

18F-FDG 18F-FLT PET 显像评价肺腺癌放射治疗疗效的实验研究*

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Experimental Research of18F-FDG and18F-FLT PET on Therapeutic Response in Radiotherapy for Pulmonary Adenocarcinoma

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摘要

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全文: PDF (2021 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 目的：评价18F-FDG 和18F-FLTPET 显像在早期评价肺腺癌放射治疗疗效中的作用。方法：40只A549 荷肺腺癌小鼠随机分为对照组、5 Gy组、10Gy组、15Gy组和30Gy组共5 组，分别对5 个剂量组的荷A549 裸鼠模型于放疗前1 天和放疗后3 天、1 周、2 周和4 周行18F-FDG 和18F-FLTPET 显像，测量移植瘤大小、SUV 值和T/N 值。显像后每组随机处死2 只裸鼠，行移植瘤免疫组化法检测Ki-67及TK- 1 表达。分析裸鼠移植瘤放疗前后18F-FDG 、18F-FLTPET-CT 显像T/N 值变化及其与Ki-67表达的相关性。结果：放疗前荷瘤裸鼠18F-FDG 、18F-FLTPET-CT 显像均可清晰显示移植瘤，据其T/N 值（均>1.5）可作出正确诊断。Ki-67、TK- 1 阳性表达率随放疗时间延长和放疗剂量增加而降低。18F-FDG 、18F-FLTPET-CT 显像T/N 值与反应细胞增殖状况的指标Ki-67表达具有较好的相关性。18F FLTPET-CT 显像T/N 值与增殖指标Ki-67及TK- 1 表达相关程度优于18F-FDG 。结论：接受照射后，18F-FLT 在肿瘤内的摄取变化可以反映肿瘤细胞的增殖状态，
18F-FLTPET-CT 显像可以用于肺腺癌放射治疗效果早期评价。

关键词： 肺腺癌放射治疗 疗效评价 脱氧葡萄糖 脱氧胸苷 正电子发射断层计算机成像/计算机断层显像

Abstract: Objective:This study aims to evaluate early the efficacy of 18F-FLT and 18F-FDG PET/CT imaging systems in assessing the tumor response of radiotherapy for pulmonary adenocarcinoma. Methods:A total of 40 A549 xenografts with human pulmonary ad-enocarcinoma were treated with different dosages (0, 5, 10 , 15 , and 30 Gy) of X-ray irradiation (radiotherapy). Changes in tumor volume during the entire experimental period were observed.18F-FDG and 18F-FLT PET/CT imaging systems were employed before radiotherapy and at 3 d, 1 week,2 weeks, and 4 weeks after radiotherapy. SUVmax and T/N were analyzed. Immunohistochemical analysis of the xe-nografts was conducted to detect the proliferation expression of Ki-67 . The T/N values of the 18F-FDG and 18F-FLT PET/CT imaging systems and the corresponding indexes of Ki-67 before and after radiotherapy were compared. Results:Both imaging systems identified the xenografts before irradiation and distinguished malignancy according to the T/N values (T/N>1.5) of xenografts. The positive expression rates of Ki-67
decreased as the radiation time was prolonged and as the dosage was increased. The T/N values of the xenografts in the 18F-FDG and 18F-FLT PET/CT images of each time point were correlated with the positive expression rates of Ki-67 . The correlation in 18F-FLT PET/CT imaging was better than that in
18F-FDG imaging. Conclusion:Changes in 18F-FLT uptake reflected proliferation.18F-FLT PET/CT imaging can be used for the early evaluation of radiotherapy for pulmonary adenocarcinoma.

Key words: Pulmonary adenocarcinoma Radiotherapy 18F-FDG 18F-FLT PET/CT Tumor response

收稿日期: 2012-08-15; 出版日期: 2012-10-31

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本文课题受天津市自然科学基金重点项目（编号：08JCZDJC 23700 ）、天津市教委课题项目（编号：20080133）和天津市卫生局科技基金项目（编号：2010KZ80）资助

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引用本文：

. 18F-FDG 18F-FLT PET 显像评价肺腺癌放射治疗疗效的实验研究*[J]. 中国肿瘤临床, 2012, 39(20): 1505-1508.

. Experimental Research of18F-FDG and18F-FLT PET on Therapeutic Response in Radiotherapy for Pulmonary Adenocarcinoma[J]. Chinese Journal of Clinical Oncology, 2012, 39(20): 1505-1508.

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