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# 뇌종양 환자에서 $^{18}$FDG-PET과 $^{123}$IUdR-monophosphate SPECT의 비교

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**목적** : 종양세포의 증식정도를 평가하면 환자의 예후를 예측 할 수 있으며, 적절한 치료 방법 선택 및 치료효과 판정의 지표가 될 수 있다. iododeoxyuridine(IUdR)은 인산화되어 핵산의 하나인 thymidine대신에 DNA에 결합되므로 IUdR-monophosphate(IUdMP)는 세포의 DNA대사정도를 판정할 수 있어 종양세포의 증식정도를 평가할 수 있다. 본 연구는 뇌종양 환자에서 IUdMP로 측정한 DNA합성 정도와 FDG로 측정한 포도당 대사를 측정하여 임상적 의의를 비교하였다.

**대상 및 방법** : 조직학적으로 진단된 11명의 뇌종양 환자(male:6예, female:5예, mean age:37.6)를 대상으로 하였다. 이 중 악성뇌종양 8명(high grade astrocytoma 4명, Glioblastoma multiforme 5명), 양성신경교종 (Grade I or II) 3명이었다. $^{123}$IUdMP 296-370MBq 정맥 주사 1시간과 20시간 후 SPECT 영상을 얻었고, 1주일 이내에 $^{18}$FDG-PET 영상을 얻었다. 섭취정도는 종양과 반대측의 비 (tumor/non-tumor ratio: T/NT)로 비교하였다.

**결과** : $^{123}$IUdMP SPECT영상은 $^{18}$FDG-PET와 일치되는 부위에 섭취증가 되어 뇌종양의 국소화가 가능하였다. 악성뇌종양과 양성신경교종의 경우 $^{123}$IUdMP의 T/NT 비는 유의한 차이가 있었다 (1 hr: 3.10±0.99 vs 1.70±0.36, 20hr: 3.00±1.93 vs 1.37±0.75, 각각 $p<0.01$, Wilcoxon rank sum test). 특히 양성뇌종양은 1시간 영상에 비하여 20시간 영상에서 T/NT 비가 감소함에 비하여 악성뇌종양의 경우는 차이가 없었다. 반면에 $^{18}$FDG-PET는 뇌종양에서 다양한 섭취 비를 보였다(1.44±0.52, T/NT range 0.7-2.1).

**결론**: $^{123}$IUdMP SPECT는 뇌종양의 병소를 국소화(localization)할 수 있으며, 악성도를 잘 반영하였다.

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# FDG-PET IN PATIENTS WITH THYROID CARCINOMA AS A ROUTINE FOLLOW-UP PROCEDURE

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**Background**: I-131 whole body scan needs discontinuation of thyroid hormone replacement to elevate serum TSH level. FDG-PET showed higher sensitivity than conventional imaging modalities in various cancers. The purpose of this study was to see whether the FDG-PET can be used as a routine follow-up procedure in patients with differentiated thyroid carcinoma without elevated serum TSH level.

**Methods**: 117 patients with differentiated thyroid carcinoma did FDG-PET scan from September 1997 to July 1998 in Korea Cancer Center Hospital, who were treated with 555-740 MBq I-131 more than one time before FDG-PET scan. There were 108 papillary and 9 follicular carcinoma. 38 patients were male and 79 were female. Their age were between 14 and 74, and mean age was 46 years old. Within 3 months after FDG-PET, synthetic thyroxine was discontinued for 6 week to elevate serum TSH level over 30uU/ml. 3 days after 555 - 740 MBq I-131 intake, I-131 whole body scan was done with high energy collimator attached gamma camera

**Results**: Among 117 patients, 62 patients were clinically positive. On FDG-PET, lesions with high FDG uptake were detected in 80 patients, in which 61 patients were clinically positive(sensitivity 98.4 %, specificity 65.5 %). Among 19 patients with positive PET findings only, 10 patients with equivocal uptakes were regarded as clinically negative and put into observation group. Among 9 patients who had positive PET finding without other clinical abnormality, 6 were taken I-131 therapy, and 3 showed hot lesions in I-131 whole body scan. FDG-PET localized lesions in 13 patients out of 17 patients with high serum thyroglobulin level and no other clinical finding. In 30 patients with positive FDG-PET scan, 13 cases(43.3 %) showed hot lesions on I-131 therapeutic scan. In 13 clinically negative patients with serum anti-thyroglobulin antibody, FDG-PET as a routine follow-up procedure revealed 3 patients with hot lesions. After I-131 therapy was given for those patients, one patient had a hot lesion on therapeutic I-131 whole body scan.

**Conclusion**: FDG-PET is useful as a routine procedure for the evaluation of metastasis or recurrence in thyroid carcinoma patients without TSH stimulation.