

E10

INTERIM FDG PET/CT EXAMINATIONS IN ADVANCED STAGE HODGKIN LYMPHOMA

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Background: Hodgkin lymphoma (HL) is a highly curable hematologic malignancy. However, it is difficult to estimate the effectiveness of therapy during treatment. According to the literature FDG-PET/CT is the most suitable method for this purpose. The aim of this retrospective study was to summarise our experience with 18F-FDG PET/CT in interim staging.

Material and methods: Twenty five scans were performed in 19 patients between November 2007. and January 2010. Eighteen patients received ABVD combination, 1 patient escalated BEACOPP treatment. Fifty three patients were irradiated at the end of chemotherapy. The number of applied cycles varied between 4 and 8, tailored according to the international prognostic score and the rate of clinical response to treatment. Sixteen examinations were performed after 4–6 cycles, and 9 scans after 1 or 2.

Results: PET/CT results was evaluated using clinical follow-up data. Fourteen scans were true positive, 4 false negative, 4 true positive and 2 false positive. True negativity and false positivity were established by follow up data, true positivity and false negativity by the progression on repeated imaging (CT or PET/CT). Specificity, sensitivity, positive and negative predictive values were found to be 88%, 56%, 71% and 78%, respectively.

Conclusion: However the results are not as precise as in case of restaging, PET/CT may help in treatment personalisation.

E11

PROGNOSTIC VALUE OF STAGING FDG PET-CT IN PATIENTS WITH MALIGNANT MELANOMA IN CORRELATION WITH CLARKE LEVEL

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Background: The aim of this study was to find correlation between early staging PET/CT results, Clark level and progression-free survival (PFS) of patients with primary cutaneous malignant melanoma (CMM) lesions.

Material and methods: 99 CMM patients (57 women and 42 men, mean age: 40.73; 18–61 years) who underwent PET/CT within 6 months from diagnosis were enrolled in this retrospective study. Diagnosis was determined by surgical removal and histological confirmation. PET/CT evaluation was concluded positive or negative depending on the presence of lesions related to CMM. Last clinical appearance was considered as positive or negative depending on the findings related to CMM. The median follow-up period was 19 months (8–45 mo).

Results: Positive PET/CT was found 39 pts/99 pts (37.3%) to be definitely more frequent in patients with higher Clark level lesion (khi-square test: $p = 0.0066$). Unexpectedly, Kaplan-Meier analysis and Mantel-Cox log rank test found no relations between Clark level and progression-free survival ($p > 0.1$). Our data showed a remarkable difference of the progression-free survival curves of patients with positive and negative PET/CT findings on Kaplan-Meier analysis, and Mantel-Cox log rank test ($p < 0.005$). 46% of the patients with initial positive PET/CT result showed progression during the follow-up. The period of progression-free survival was not significantly different between the PET/CT-positive and negative groups which can be the result of relatively short follow-up.

Conclusion: PET positivity shows significant correlation with Clark level rising. Positive PET/CT result within 6 months after surgery indicates significantly higher risk of progression.

E12

IS CONTRAST ENHANCED CT NECESSARY BEYOND FDG-PET/CT FOR PRIMARY STAGING IN HODGKIN LYMPHOMA? — OUR EXPERIENCE

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Background: Several study supported the observation that PET-CT examination with "low dose", non-enhanced CT (PET/CT) is more accurate, than contrast enhanced CT (ceCT) in the staging of Hodgkin disease (HD). The aim of the authors was to compare the accuracy of PET/CT and ceCT for primary staging of HD in their practice, including those cases where ceCT was performed as a supplement to standard PET/CT.

Material and methods: The authors retrospectively analysed data obtained from imaging of 29 patients newly diagnosed with HD. In the evaluation of PET/CT images they used a 5-point scoring system which was developed for interim PET examinations. Two methods were used for each regions. In Method 1 the region was positive, if its uptake was higher than the liver uptake (point 4–5). In Method 2 the region was positive, if its uptake was higher than the mediastinal blood-pool activity (point 3–5). Two comparisons were made between the modalities, too: ceCT vs. PET/CT and PET/CT vs. PET/CT+ceCT.

Results: Disease was upstaged by PET/CT in 3 patients with Method 1 and in 4 patients with Method 2 as compared to ceCT. They did not find any case of downstaging with PET/CT. There were no change in stage when comparing PET/CT and PET/CT with ceCT.

Conclusions: The number of patients was rather low, but the results show that PET/CT is more accurate than ceCT in the primary staging of HD. In addition, the authors established that it is not reasonable to supplement standard PET/CT examinations with ceCT in this indication.

E13

IMPORTANCE OF INCIDENTALLY DISCOVERED FOCAL FDG UPTAKE IN THE LARGE INTESTINE

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Background: Incidental focal FDG uptake in the colorectal tract is relatively frequently described (0.6–3%) on PET/CT examinations. According to the relevant literature 13–30% of these findings is caused by malignant tumors. The aim of this study is to evaluate the frequency of malignancy in the background of incidental colorectal focal tracer uptake among our patients.

Material and methods: In 2009 3148 patients underwent FDG PET/CT scan in our center, mostly because of any malignant disease. Patients with known colorectal cancer were excluded from our study. The examinations were carried out by GE Discovery ST8 PET/CT camera. Only 18F-FDG was used as radiotracer and protocols compiled according to international guidelines were applied. In every case we drew the the referring doctor's attention to the detected focal colorectal tracer uptake and we suggested further investigation.

Results: We detected in 55/3148 (1.7%) patients focal incidental colorectal FDG-accumulation. In 43/55 (78%) patients colonoscopy was performed, on colonoscopy 56 circumscribed morphological lesions were described. In these 43 patients we detected 49 focal FDG-uptake, altogether 9/49 (18%) FDG-accumulating lesions proved to be malignant (verified histologically). 19/49 (39%) lesions showing focal tracer uptake were described as polyp on colonoscopy, in 11/19 cases correct histology could be performed indicating dysplasia in 9/11 (82%) samples. In the remaining cases of focal FDG-uptake other lesions (inflammation, diverticel, etc. 9/49, 18%) or nothing (12/49, 24%) were visible on endoscopy.

Conclusions: In our study the frequency of incidental focal FDG accumulation in large intestine upon PET/CT scan and among them the proportion of malignant and premalignant lesions confirmed by histology is equal to data of the literature. Therefore we emphasize the importance of further investigation of patients with incidental focal colorectal FDG uptake.

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PROGNOSTIC VALUE OF INTERIM FDG PET-CT IN NON-HODGKIN'S LYMPHOMAS TREATED WITH COMBINED CHEMO-IMMUNOTHERAPY

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Background: As the individualised personal therapy of lymphomas is getting more widespread, the prognostic value of early (after 2–4 cycles of therapy) fluorodeoxyglucose (FDG) PET-CT (iPET) scans is growing in interest. Several early researches show, that a positive iPET examination indicates poor prognosis in Hodgkin's lymphoma, as well as in non-Hodgkin's lymphoma. Lately, the predictive value of iPET seems to be less obvious in the immunotherapy treated non-Hodgkin's lymphomas. One of the ways of standardised visual assessment of the iPET scans is rating using the London score (LS) system. In our actual research the prognostic significance of iPET was studied in patients with diffuse large B-cell lymphoma (DLBCL) receiving combined chemo-immunotherapy.

Material and methods: 35 patients (age: 23–89 years, 13 male, 22 female) with DLBCL, receiving R-CHOP combined chemo-immunotherapy (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisolone) were included in our research, on whom iPET scan was performed after 2–3 cycles of therapy, and were followed clinically for 114–993 days (median follow-up: 405 days). Based on the PET results alone no change of therapy was introduced. The iPET scans were rated visually by the LS. The correlation between the iPET results and the event free survival (EFS) was examined with Kaplan-Meier analysis, considering scans positive with LS ≥ 3 (assessment A) and with LS ≥ 4 (assessment B). Our study was performed partially in the frame of an International Atomic Energy Agency Coordinated Research Project.

Results: Using assessment A, of the 35 patients 19 were PET+ and 16 were PET-. Of the 19 PET+ patients 7 experienced relapse or progression, and 1 of the 16 PET- patients. The difference of the EFS between PET+ and PET- cases was not significant statistically ($p = 0.0682$). The positive and negative predictive value of the iPET regarding the EFS was 37 and 94%. With assessment B, 11 scans were PET+, and 24 PET-. In 11 PET+ cases relapse or progression occurred in 7 cases, and in the 24 PET- cases, they occurred once. PET+ cases presented with shorter EFS (median: 386 days) than PET- cases (median was not reached). The difference of the EFS between PET+ and PET- cases was statistically significant ($p < 0.001$). The positive and negative predictive value of the iPET was 63 and 96%.

Conclusions: In combined chemo-immunotherapy treated DLBCL patients iPET has significant predictive value regarding the EFS, when the positivity criterion is any FDG avidity greater than liver activity (LS ≥ 4). It is important to use standardised criteria for the visual assessment of iPET scans.

E15

A SIMPLE SEMIQUANTITATIVE TECHNIQUE BY ANALYSING SOMATOSTATIN RECEPTOR SCINTIGRAPHY TO PREDICT THERAPEUTIC EFFECT OF PEPTIDE-RECEPTOR-RADIO-THERAPY

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Background: Peptide-receptor-radiotherapy (PRRT) is an effective palliative treatment options for patients with inoperable progressive neuroendocrine tumours and increased uptake of labelled somatostatin analogues on somatostatin receptor scintigraphy (SRS).

Material and methods: At the Department of Nuclear Medicine of University Basel 51 Hungarian patients of the 2nd Department of Medicine (Semmelweis University) were treated between 2005–2010 with Y-90-DOTATOC or Lu-177-DOTATATE. We have retrospectively analysed correlation between scintigraphic findings (Octreoscan) and therapeutic effect of PRRT in 40 patients. All 40 patients had multiple hepatic metastases of progressive inoperable neuroendocrine tumours originating from the pancreas or lungs or small bowels. We calculated tumour/background ratios (T/BG) of visible liver metastases on pretherapy SRS images taken at 2 and 24 hours after iv. injection of Octreoscan. Patients were followed after PRRT by standard (radiology and laboratory) examinations. Correlation between T/BG values and therapeutic effect of PRRT was calculated.

Results: No complete remission was found. Six months after therapy 23 patients (57%) had partial remission. T/BG values at 2 hours of these patients were significantly higher than in patients without remission (2.07 ± 0.22 vs. 1.84 ± 0.13 , $p < 0.05$). No significant difference of T/BG values at 24 hours was found (2.01 ± 0.24 vs. 1.95 ± 0.11 , n.s.). All 20 patients with no progression at the one-year follow-up evaluation had also significantly higher T/BG values at 2 hours than patients with progressive disease.

Conclusion: Semiquantitative analysis of T/BG of liver metastases at 2 and 24 hours images of pre-therapy Octreoscan scintigraphy is a simple technique to predict therapeutic effect of PRRT in patients with inoperable neuroendocrine tumours. High T/BG at 2 hours predicts good therapeutic effect.

E16

SIGNIFICANCE OF SPECT/CT IN MIBG EXAMINATIONS OF CHILDREN'S NEUROBLASTOMA

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Background: Morphological and etiological verification of the increased activity on the early and delayed static and SPECT images with the help of complementary "low dose" SPECT/CT examination.

Material and methods: All of 28 MIBG examinations of 17 children with neuroblastoma were investigated between September 2007 and March 2011. 1131-MIBG examinations in 12 cases 1123-MIBG examinations in 16 cases were performed. Eleven control studies were made in 7 children, one time in 3 patients and two times in 4 patients. During the examinations of 10 boys (mean age 4 years) and 7 girls (mean age 3.5 years) early and delayed anterior and posterior static and SPECT imaging were performed. In 20 cases complementary SPECT/CT images were made of the skull, the neck, the chest, the abdomen and the extremities.

Results: Pathological increased MIBG activity were found in 18 cases in several regions. Multiplex hot spots were seen in 13 cases of them. Metastases were verified in 14 cases on the base of native CT. There were