tastasis, although they have limited accuracy in assessment of response to therapy. There is no established standard method for monitoring bone metastases. Recent data suggest the promising performance of 18F-FDG PET/CT (PET/CT) for this purpose. Our aim was to retrospectively determine the prognostic value of sequential PET/CT in monitoring systemic therapy of bone-dominant metastatic (BDM) breast cancer.

Material and methods: Retrospective search of our image database identified 23 breast cancer patients with BDM disease, who underwent treatment and had serial PET/CT studies. In this patient group altogether 32 pairs (baseline and follow-up) of PET/CT imaging datasets were reviewed by two experienced specialists. For quantitative analysis the most FDG avid metastasis was defined as target lesion, in accordance with PERCIST criteria. Therapeutic responses were visually classified into four categories: complete and partial metabolic response (CMR, PMR), stable and progressive disease (SMD, PMD). Target lesion SUV and SUL, maximum and peak values were recorded at each time point. Visual response, target SUV/SUL max/peak on baseline, and the absolute and relative change of quantitative parameters were supposed to be predictive for time-to-progression (TTP), which served as a clinical outcome measure. TTP was clinically established by two oncologists independently from PET results (based on other imaging results, tumor markers, and symptomatic findings). The median follow-up time was 230 days.

Results: Forward stepwise Cox regression analysis was used to test for associations between TTP and both dichotomous and continuous variables. Percentage change in SULpeak ($p = 0.001$), initial SULmax ($p = 0.012$) and SULpeak ($p = 0.030$) were most significantly correlated with the outcome. On Kaplan-Meier analysis the survivor curves of four visual and PERCIST response groups were shown to differ. Responders (CMR + PMR) had significantly longer TTP compared to patients with PMD ($p = 0.02$).

Conclusion: Our retrospective study indicates that PET/CT might have a role in therapy response assessment of BDM breast cancer. Qualitative (visual) evaluation and SUL (rather than SUV) based quantification, as proposed by PERCIST, is feasible to apply when considering a prospective trial to validate these findings.

E4

COMPARING THE DIFFERENTIAL DIAGNOSTIC VALUE OF HIBRID IMAGING TECHNIQUES (SPECT/CT, PET/CT) IN BONE LESIONS

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Background: The purpose of our study is to compare the diagnostic efficacy of 99Tc-MDP bone scintigraphy completed by SPECT/CT and the 18F-FDG PET/CT examinations in evaluation of bone metastases.

Material and methods: Due to the collaboration of two departments we have an opportunity to compare the results of patients who underwent the oncological evaluation program including 99Tc-MDP bone scintigraphy completed by SPECT/CT and the 18F-FDG PET/CT examinations.

Results: We diagnosed with SPECT/CT in 48% of patients some type of benign lesions (degenerative disease, traumatic injury or consequence of operation). In the cases of these patients the results of 18F-FDG PET/CT in the whole bone system concerning the bone metastasis were negative as well. Furthermore bone metastases were found in 22% of patients with the SPECT/CT and PET/CT, too. In the 30% of the patients the results of above mentioned between the two different methods were not concordant.

Conclusions: The 99Tc-MDP bone scintigraphy completed by SPECT/CT can particularly improve the detection of the exact etiology of lesions. The diagnostic value of these two different methods have a good correlation. The possible deviation can be caused by using different mechanisms to detect the pathologic lesions: 99Tc-MDP bone scintigraphy reperesents the phosphate metabolism while the 18F-FDG PET detects the glucose metabolism and the increased activation of osteoblasts are not always accompanied by increased glucose matabolism.

E5

IMPORTANCE OF FDG PET-CT IN DIAGNOSIS AND FOLLOW-UP OF PATIENTS WITH BREAST CANCER

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Background: Our aim was to define extra information of FDG PET-CT examination comparing to the previous diagnostic images; to evaluate the percentage of confirmation of clinically supposed status and to define it's influence on oncologic treatment of patients.

Material and methods: The medical records of 143 consecutive patients with breast cancer referred from three oncologic centers from October 2008 to September 2009 were retrospectively reviewed. PET-CT imaging was performed with GE Discovery ST scanner according to the usual protocol. 143 patients (142 women, 1 man, mean age 56.9 years) have 155 breast tumors. The hystologic subtypes of the primary tumors were infiltrating ductal carcinoma in 102, infiltrating lobular carcinoma in 18, DCIS alone in 9, other/unknown in 26 cases. Hystologically Grade 2 carcinoma occured in largest proportion. 70 conservative operations and 74 mastectomies were performed. In remainder cases the operation was not performed or type of surgical procedure was not known.

Results: Definite diagnosis was established in 129 cases (84.3%), the extent of disease was increased in 40 (31%), diagnosis was unchanged in 24 cases (18.6%), it was negative in 65 cases (50%). The PET-CT result was equivocal in 24 cases (15.6%) having caused partly inadequate referral, partly difficulty of differentiation between tumor and inflammation. PET-CT examination gave excess information for physicians in 31%. The therapy was altered in 40 cases (26%) based on PET-CT result.

Conclusion: FDG PET-CT examination is useful in management of patients with breast cancer in case of adequate indication.

E6

FDG PET-CT IN MANTLE CELL LYMPHOMA

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Background: We assessed the potential role of PET-CT in the diagnostic workup of mantle cell lymphoma, which type of lymphoproliferative disease unites the unfavourable characteristics of aggressive and indolent lymphomas.

Material and methods: 122 PET-CT examinations of 56 patients were retrospectively analysed [11 pre-treatment, 17 interim, 20 restaging, 14 pre-, 23 post-Haemopoietic Stem Cell Transplantation (HSCT) evaluations, and 37 PET-CT examinations due to clinically suspected relapse].

Results: 9/11 staging examinations before initial therapy had revealed pathologic FDG accumulating focuses. Among the interim examinations (17) only 6 patients achieved complete metabolic remission (CMR), in 11 cases FDG-avid lesions were found. Among the 10/20 restaging PET-CT examinations indicating CMR, 4 patients relapsed within 1 year. Among the examinations showing CMR on the pre-transplantation PET-CT (9/14), relapse evolved in 1 case in the first year after transplantation. In 1 of 23 examinations CMR was not achieved after HSCT, from the 21 of 23 cases showing CMR on post-HSCT PET-CT, 2 patients relapsed within 1 year. In 1 of 23 post-transplantation examinations clinical signs of relapse did not develop after positive PET-CT. Clinical relapse suspicion was confirmed by PET-CT in 13 cases, in 5 of 37 cases it was found to be false positive, in the remaining patients relapse did not evolve after negative PET-CT (19/37).

Conclusion: FDG PET-CT seems to be an accurate method in the diagnostic workup of mantle cell lymphoma, including pre-treatment staging, interim,

and restaging assessments. Its negative predictive value appears to be acceptable, but remains below the results achieved in Hodgkin- and high grade B cell lymphomas. Regarding the characteristics of the disease its further role may mostly increase in the pre-HSCT prognostic evaluation.

E7

18F-FDG PET/CT IN THE FOLLOW-UP OF BREAST CANCER PATIENTS WITH POSITIVE SLN WITHOUT ALND

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Background: The Hungarian National Institute of Oncology has just closed a randomized clinical phase III study. The OTOASOR (Optimal Treatment of the Axilla — Surgery or Radiotherapy) trial compared the result of the completion axillary lymph node dissection (ALND) and axillary nodal irradiation (ANI) without ALND in patients with early-stage breast cancer after positive sentinel lymph node biopsy (SLNB). In the investigational arm of the trial patients received 50 Gy ANI postoperatively without ALND. Actually we had information only about the sentinel lymph node (SLN) status, but the further nodal involvement remained unknown. Positron emission tomography combined with computed tomography (PET/CT) has been receiving increasing attention recently for restaging and follow-up of breast cancer. The aims of this study were to evaluate the therapeutic effect of the axillary nodal irradiation and to detect early axillary recurrences or residual diseases.
Material and methods: In year 2009, forty-five T1-2 SLNB positive patients were retrospectively selected from the investigational arm of the OTOASOR trial. All patients underwent surgery (breast-conserving or mastectomy) and SLNB, the SLN(s) were found positive and the patients received 50 Gy ANI instead of completion ALND. Six months after the end of the radiotherapy, patients underwent 18F-FDG PET/CT and mammography combined with breast and axillary ultrasound or breast MRI simultaneously. The findings of PET/CT, mammography and/or breast MRI were compared.
Results: Only 5 out of 45 patients had suspicious findings in the axillary tail on mammography combined with breast and axillary ultrasound. In those five patients PET/CT suggested locoregional residual disease in only one patient that was confirmed by core biopsy. In the remaining four cases both the PET/CT and the biopsy showed no evidence of malignity.
Conclusions: Our preliminary data suggest that axillary nodal irradiation (ANI) without completion axillary lymph node dissection (ALND) does not increase the risk of recurrence of the sentinel positive patients. Furthermore, the results of our study demonstrate the benefit of 18F-FDG PET/CT in the follow-up of breast cancer patients with positive SLN without ALND.

E8

PROGNOSTIC VALUE OF INTERIM 18FDG-PET/CT IN PATIENT WITH HODGKIN'S LYMPHOMA, USING DIFFERENT 5-POINT VISUAL SCALE FOR INTERPRETATION

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Background: The results of interim 18FDG-PET/CT examinations have great significance in prognosis of HL patients follow-up. Currently definition of MRU (minimal residual uptake) is not uniform when using 5-point visual scale. The aim of our study is to compare the affect on prognosis of the currently used MRU definition.
Material and methods: Interim 18FDG-PET/CT examination of 82 newly-diagnosed HL patients (male: 40, female: 42, average age: 36 year) were evaluated by London, Hutchings, Gallamini and Barrington criteria. The 18FDG-PET/CT examinations were performed on the same camera according to the standardised protocol. Two experienced specialist analysed the studies. All patients had six courses of ABVB/EBVD and if it was necessary received radiotherapy according to the protocol. The result of interim 18FDG-PET/CT did not affect the later used therapy. The median follow-up period was 24 months (9–47 month). Kaplan-Maier analysis was performed to determine the OS and PFS and Mantel-Cox probe to compare the outcome of the different groups.
Results: During the observation period 78% of patient had no progression (64 pts/82 pts) Compare to the PET negative group PET positive group were measured poor prognosis on the basis of all four criteria. The Barrington and Gallamini methods are more robust in estimating prognosis. By Cox regression, stepwise method [„forward stepwise" (likelihood ratio)] Barrington method has been proved the most effective of the 4 criteria ($p < 10–4$). However compared to PET negative group there wasn't significant difference in survival or PFS in either defined MRU group.
Conclusion: On the base of our study with the Barrington and Gallamini criteria PET + patients with worse prognosis can be clearly divided by the result of the interim PET-CT examinations, conversely the MRU category has no prognostic value in clinical aspect with any recommended definition. However more patients and longer follow-up is required to refine data.

E9

THE PREDICTIVE VALUE OF FDG-PET/CT IN RESTAGING OF HODGKIN LYMPHOMA — WHAT WE CONSIDER AS A POSITIVE REPORT?

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Background: The negative predictive value (NPV) of FDG-PET(/CT) at the end of treatment in Hodgkin lymphoma is high. However, the rather low positive predictive value (PPV) is often leads difficulties in the clinical practice. In the last years a method was developed for the assessment of PET results, which is based on both CT and PET criteria. The use of SUVs are generally not appropriate to correctly judge the dignity of the lesions. In this retrospective study the aim of the authors was to define the predictive value of restaging PET/CT with the help of a 5-point scoring system. This system, which was developed for interim PET exams to assessment of therapy-effectiveness, correlate lesion's intesities to mediastinal blood-pool or to liver uptake and takes no notice of CT-criteria.
Material and methods: They analysed 90 patients, who have PET/CT after the first line treatment between May 2006 and August 2010. The assigment of patients to "positive" and "negative" groups was performed by two different methods. Method 1: "positive" — the highest FDG uptake is higher than the liver uptake (point 4–5). Method 2: "positive" — the highest FDG uptake is higher than the mediastinal blood-pool uptake (point 3–5).
Results: The number of positive patients was 31 with Method 1, 14 out of which came to complete remission (CR) during the follow up. The number of negative patients was 59 out of which 56 came to CR. Based on these data PPV was 56% and NPV was 95%. The number of positive patients was 36 with Method 2 with 17 reaching CR during the follow up. The number of negative patients was 54 with 52 reaching CR. Based on these data PPV was 53% and NPV was 96%. The reason of false positivity mostly was inflammation what was already suggested by the reporting physician in some cases.
Conclusions: The authors concluded that PET/CT has high NPV and low PPV when using this 5-point scale. There was no significant difference between the results of the two methods. Reporting physicians can provide substantial help to the therapists by specifically stating of the most probably false positive lesions in the report, based on morfology, localization, clinical data, etc.