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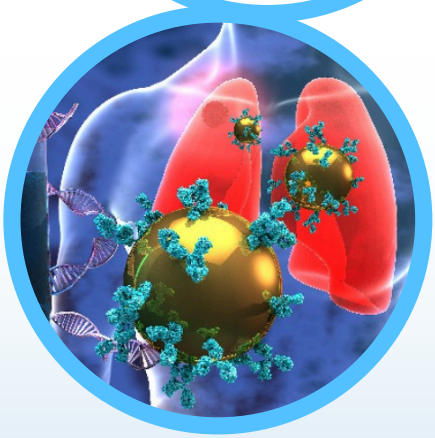

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- Cardiology/Infection Imaging
- Advanced Molecular Imaging / Bone Disease
- Cancer Prostate/ Theranostics

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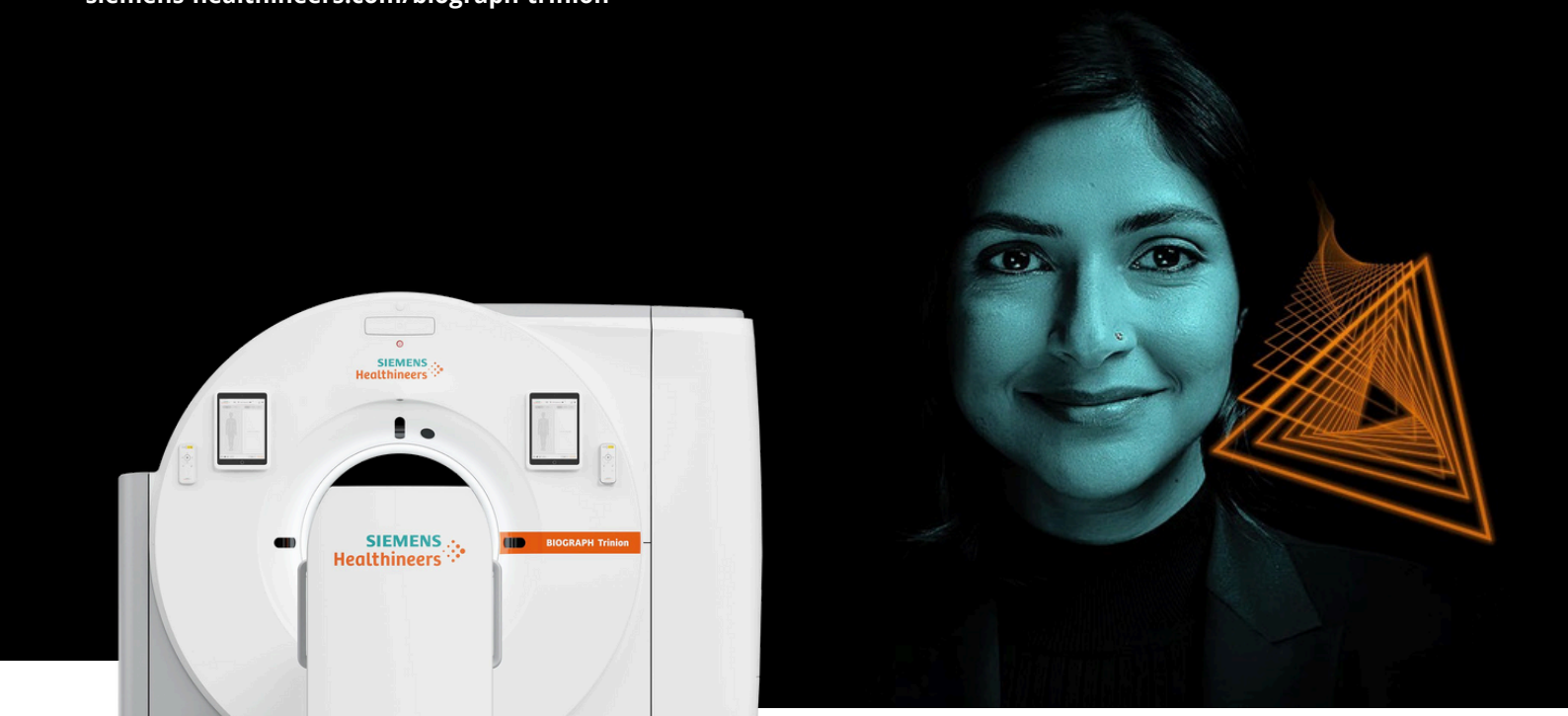

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Princess Fatma Academy – Cairo, Egypt.

Conference Language:

Official language of the Conference is English.
No simultaneous translation will be provided.

Projection:

Computer projection is available and Computer data should be handed over to the Conference office one-hour before the session.

Climate:

The weather during February in the Cairo region is generally sunny by day and cool by night.

Visa:

Citizens of most countries require entry visa for Egypt.
The Egyptian Embassy and/or Consulate in your country can inform you if a visa is necessary.

Important Guidelines:

For chairpersons:

- Please be in your session place at least 10 minutes before its start.
- Speakers should be strictly stuck to presentation and discussion time.
- Discussion will be at the end of the session.

For speakers:

- Turn in your data one hour prior to the start of the session.
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- No smoking or using mobile phones in meeting room.

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Congress office:

Prior to and after the meeting

Prof. Dr. Waleed Omar

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Moderator of Conference

Ass. Prof. Elshaymaa Hany Hussein

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Social program:

Wednesday	12/02/2025	08:30 - 09:15	Registration.
Thursday	13/02/2025	15:30 - 16:00	Closing Ceremony

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FIRST DAY

Wednesday 12th February 2025

08:30 - 09:15	**Registration**
09:15 - 09:30	**Presidential Address:** **Prof. Dr. Walid Omar (Conference President)**

09:30- 12:20	Session I: Cardiology/Infection Imaging
Chairpersons: **Prof. Dr. Gaber Ziada** (Egypt) **Prof. Dr.Khalid Taalab** (Egypt) **Prof. Dr. Hala Abo Senaa** (Egypt)	
09:30 – 10:00	**Update on Inflammation/Infection Imaging.** **Prof. Abdelhamid Elgazzar** (Egypt)
10:00 – 10:30	**FDG PET/ CT in Infective Endocarditis.** **Prof. Sherif Elrefaie** (Egypt)
10:30 – 11:00	**Advanced Nuclear Cardiology PET Imaging in Management of CAD Is New Role.** **Prof. Salah Bouyoucef** (Algairea)

Free Papers	
11:00 – 11:10	**Role of 18F-FDG PET/CT and Triphasic Computed Tomography in Detecting Post Thermal Ablation as Early Treatment Response of Malignant Hepatic Focal Lesions.** Nahla Maamoun[1] Hosna Moustafa.[2], Gehan El-Hennawy.[1], Huda Fathy[1], Shady El-Sebai.[3] *[1]NM Unit, National Cancer Institute, [2]NM Unit, Faculty of Medicine, [3]Radiology Department National Cancer Institute, Cairo University, Egypt*
11:10 – 11:20	**Prognostic Value of Initial and Post-Therapy 18F-FDG PET/CT in Patients with Multiple Myeloma.** Aya Ashraf[1], Hosna Moustafa[2], Hoda Fathy[1] Salwa Elgaied[1] and Maha Mehesen[1] *Nuclear Medicine Unit, NCI[1] Nuclear Medicine Unit Faculty of Medicine[2], Cairo University*
11:20 – 11:30	**Added Value of Tc99m-PSMA-SPECT/CT in Assessment of Loco-regional Prostate Carcinoma.** Marwa Fathy[1], Tarek Maghraby[2],Yaser Mohamed[2] Maha Khalil[1] *[1]South Egypt Cancer Institute, Assuit University ,[2] Nuclear Medicine Unit, Faculty of Medicine, Cairo University*
11:30 – 12:00	**"Precision Oncology Tools of Theranostics Care Pathway"** **Thierry Kaeser** " Clinical Marketing Manager MEA" **Eng. Ahmed Sayed:** "Business Manager MI Egypt "
12:00 – 12:20	**Discussion**
12:20 – 13:00	**Coffee Break**

Wednesday 12th February 2025

13:00- 15:30	Session II: Advanced Molecular Imaging/ Bone Disease

Chairpersons:

Prof. Dr. Ahmed Kandeel **(Egypt)**
Prof. Ahmed Zaher **(Egypt)**
Consultant Dr. Adel Khedr **(Egypt)**

13:00 – 13:20	**An IAEA Global Perspective on Theransotics.** **Dr. Anita Brink** (IAEA) (Austria)
13:20 – 13:50	**Interesting Bone Disease Cases.** **Prof. Abdelhamid Elgazzar** (Egypt)
13:50 – 14:10	**OMICS Era and Nuclear Medicine** **Prof. Khalid Taalab** (Egypt)

Free Papers	
14:10 - 14:20	**Pretreatment FDG PET Quantitative Imaging Biomarkers as a Predictor for Unfavorable Clinic-Pathological Indices in NSCLC Patients.** Nada Fadl.[1], Mai Amr[1], Ismail Elantably,[1], Hosna Moustafa,[2], Rasha Allam[3], Mohamed Emam[4]. *[1]NM Unit, National Cancer Institute, [2]NM Unit, Faculty of Medicine, Oncology [3]Department NCI ,[4]Pathology Department NCI, Cairo University, Egypt*
14:20 - 14:30	**^{18}F-PSMA 1007 PET/CT metrics for Assessment of Whole-Body Tumor Burden in Patients with Metastatic Prostate Cancer.** Shymaa Moustafa[1] and Amal Rayan[2] Unit nuclear medicine[1], Unit clinical oncology[2]. *Faculty of Medicine Assiut University.*
14:30 - 14:40	**The Value of Quantitative Data in PEM** **Noha Ali[1], Ahmed Kandeel[1], Mohamed Houseni[2], Mohamed Omar[1]** *[1]Nuclear Medicine Unit Faculty of Medicine-Cairo University, [2]National liver institute- Menoufia University*
14:40 - 15:00	**Discussion**
15:00 - 15:30	**GE Healthcare** Novel PET Tracers in GE Healthcare Portfolio Presenter by: Oraj Dikmen
15:30 - 17:00	**Lunch**

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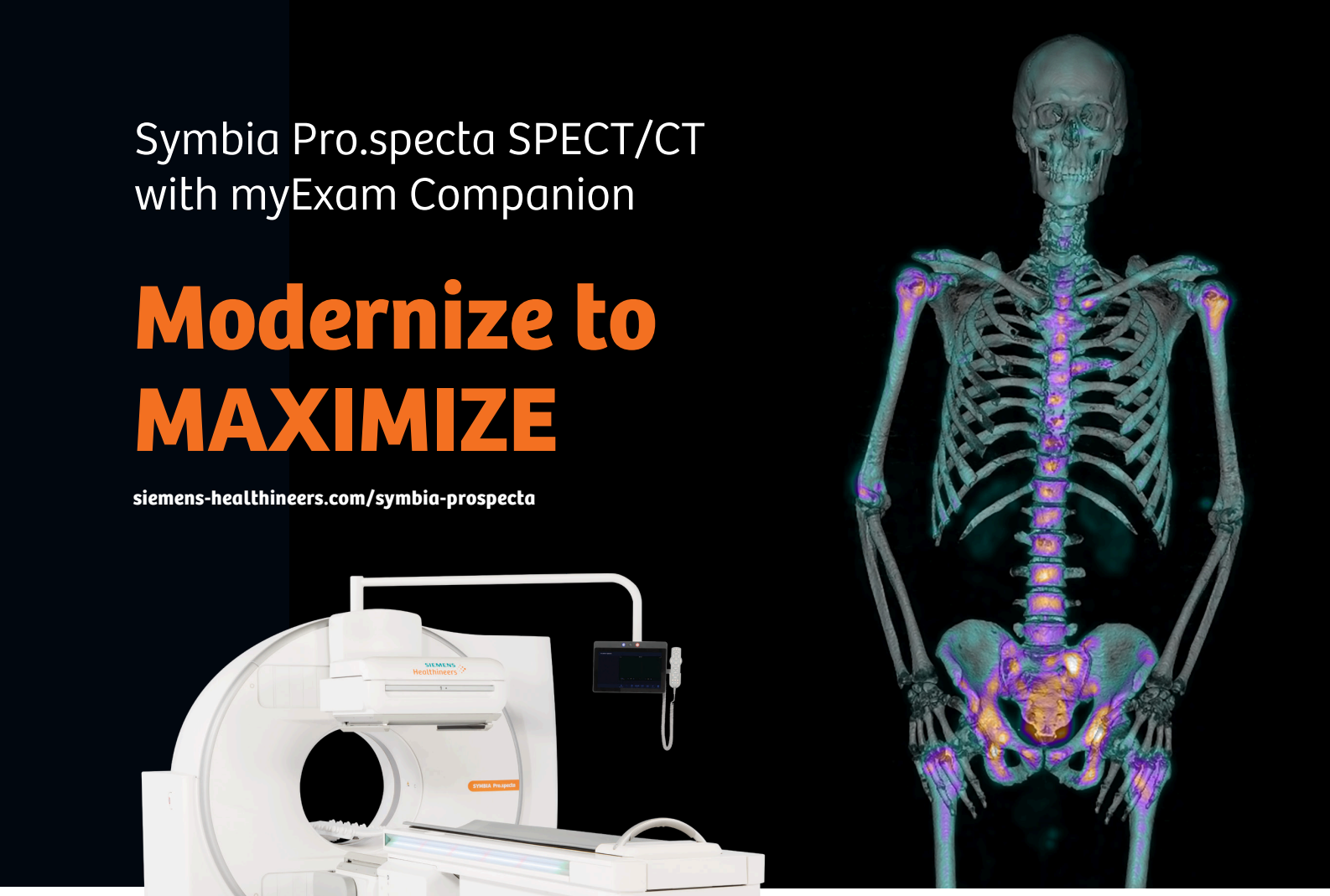

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SECOND DAY

Thursday 13th February 2025

09:30- 12:20	Session III: Cancer Prostate/ Theranostics

Chairpersons:	
Prof. Dr. Ashraf Fawzy	**(Egypt)**
Ass. Prof. Dr. Medhat Abdlsamiea	**(Egypt)**
Consultant Dr. Abd Elmoneim Omar	**(Kuwiat)**
09:30 – 10:00	**Prostate Cancer Theransotics : Beyond PSMA.** **Prof. Hossein Jadvar** (USA)
10:00 – 10:30	**The Evolving Role of 18F-FDG PET/CT in Prostate Cancer** **Prof. Medhat Osman** (USA)
10:30 – 11:00	**Practical Teaching points with Real Case Scenarios Using 177Lu-PSMA** **Dr. Yehia Omar** (Egypt)
11:00 – 11:30	**Prostate Cancer Theranostics: Beyond Lu177.** **Prof. Medhat Osman** (USA)

Free Papers	
11:30 – 11:40	**The Added Value of PSMA RADS Classification of Prostate Cancer by ^{18}F-PSMA PET-CT in the Initial Staging of Lymph Node Metastases in Intermediate and High-Risk Patients.** Osama El Mogy[1], Nahla Dessoki[2], Hanan Wahba[1], Maha Salama[2] *Nuclear Medicine Unit, Faculty of Medicine-Mansoura University[1], Nuclear Medicine Unit , Faculty of Medicine Cairo University[2]*
11:40 – 11:50	**The Added Value of Volumetric Parameters in PSMA-PET/CT in the Follow-up of Patients with Prostate Cancer.** Asmaa Magdy[1], Ahmed Kandeel[1], Mohamed Houseni[2], Mohamed Omar[1], and Ahmed Abdelhafeez[1], *Oncology and nuclear Medicine Department, Faculty of Medicine, Cairo University[1], Nuclear Medicine Unit , National Liver Institute Menoufia University[2]*
11:50 – 12:00	**Role of PSMA PET/CT in Evaluation of Therapy Response in Patients with Metastatic Prostate Cancer.** Marwa Abdullah[1], Sherif El.Refaei[1], Maha Abd- Elkareem[1], Mohamed Houseni[2], and Ahmed Badawy[1] *Nuclear Medicine Unit, Cairo University[1] National Liver Institute Menoufia University[2], Egypt*
12:00 – 12:20	**Discussion**
12:20 – 13:00	**Group Photo / Coffee Break**

Thursday 13th February 2025

13:00- 16:00	Session IV: Different Clinical Imaging and Theranostics
Chairpersons: **Prof. Dr. Sherin Wagih** **(Egypt)** **Ass. Prof. Phy. Magdy Khalil** **(Egypt)** **Ass. Prof. Dr. Alaa Nagy** **(Egypt)**	
13:00 – 13:30	**FAPI PET CT in Breast, GIT Tumors and non-Oncology Trials.** **Prof. Raef Riad** (Australia)
13:30 – 14:00	**General review in Arifical Intelligence in Radiology** **Prof. Essmaeel Abdel-Dayem** (USA)
14:00 – 14:30	**The use of clinical internal dosimetry in Theransotics approach.** **Prof. Salah Bouyoucef** (Algairea)
Free Papers	
14:30 – 14:40	**Prognostic Value of Metabolic Indices in Baseline ^{18}F-FDG PET/CT for Pediatric Burkitt Lymphoma.** Esraa Roshdy, Marwa romeh,, Aya salah,,Asmaa hamouda, , Ahmed zaher, Eman nasreldin, MD, and Clemens mingel, *[1]Nuclear Medicine Unit, South Egypt Cancer Institute, [2]Children Cancer Hospital, [3]pediatric oncology department NCI, [4]Radiology Department, Helwan University, [5]Nuclear Medicine Unit NCI, [6]department of Nuclear Medicine University of Bern, Switzerland.*
14:40 – 14:50	**FDG PET/CT Versus Conventional Bone Scan for Detection of Bone Metastases in Late Stage Breast Cancer Patients.** Waleed El Hosary[1], Raafat Saber[1,2], Khaled Taalab[1,3] and Maha Salama [1,4] *Armed Forces College of Medicine[1], Medical Oncology and Nuclear Medicine Department, Faculty of Medicine, Menya University[2] ,Medical Military Academy[3], Medical Oncology and Nuclear Medicine Department, Faculty of Medicine, Cairo University[4]*
14:50 – 15:10	**Discussion**
15:10 – 16:00	**Closure & Awards** **Prof. Dr. Hosna Moustafa** **(Egypt)** **Prof. Dr. Walid Omar** **(Egypt)**

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Abstracts

Role of 18F-FDG PET/CT and Triphasic Computed Tomography in Detecting Post Thermal Ablation as Early Treatment Response of Malignant Hepatic Focal Lesions

Nahla Mamoun[1] Hosna Moustafa.[2], Gehan El-Hennawy.[1], Huda Fathy[1] and Shady El-Sebai.[3]

[1]NM Unit, National Cancer Institute, [2]NM Unit, Faculty of Medicine,
[3]Radiology Department National Cancer Institute, Cairo University, Egypt.

Background: Hepatocellular carcinoma (HCC) is, often presenting as advanced disease with limited treatment options. Accurate diagnosis and monitoring of treatment response are crucial for patient outcomes. **Objective**: This prospective study aimed to assess the diagnostic accuracy of 18F-FDG PET/CT in detecting viable tumor tissue in patients with malignant liver tumors treated with radiofrequency ablation (RFA) compared to Tri phasic Computed Tomography (CT) and correlation between metabolic parameters and overall survival (OS). **Methods**: 43 patients with histologically or radiologically confirmed malignant liver tumors (HCC or metastases) were enrolled. All participants underwent baseline PET/CT prior to RFA (n=43) Subsequent PET/CT imaging was performed at 4-6 weeks and at a median follow-up of 12 months. Imaging findings were compared with Tri phasic CT. The study also investigated the value of immediate PET/CT performed 24 hours post-RFA in detecting viable residual tumor tissue at the ablation site. **Results**: Baseline delayed PET/CT Imaging at 2hrs revealed changed from iso metabolic to hyper metabolic lesions in 25% of well differentiated tumor. PET/CT at 24hrs following post-RFA in detecting viable residual tumor tissue in 5 patients. PET/CT demonstrated good agreement with Tri phasic CT in detecting residual or recurrent tumor at 4-6 weeks (Kappa=0.88) and at the median follow-up of 12 months (Kappa=0.85). PET/CT exhibited slightly higher specificity compared to Tri phasic CT in detecting residual tumor at 4-6 weeks (100% vs 95%) and at the median follow-up of 12 months (100% vs 92%).

Conclusions: 18F-FDG PET/CT offers valuable diagnostic and prognostic information in patients with malignant liver tumors as It can detect residual tumor tissue immediately at 24 hrs. after RFA. There were hire correlation between PET/CT metabolic parameters and Tri phasic CT. indention of residual or recurrent.

Prognostic Value of Initial and Post-Therapy 18F-FDG PET/CT in Patients with Multiple Myeloma

Aya Ashraf[1], Hosna Moustafa[2], Hoda Fathy[1] Salwa Elgaied[1] and Maha Mehesen[1]

Nuclear Medicine Unit, NCI[1] Nuclear Medicine Unit Faculty of Medicine[2], Cairo University

Aim of work: In the current study, we aimed to investigate the added prognostic and predictive value of initial 18F-FDG PET/CT in patients with multiple myeloma on early therapy response and overall survival. **Patients and Methods:** This prospective study enrolled 50 adult patients with pathologically proven multiple myeloma, referred for initial pre-therapy, interim and post-therapy FDG-PET-CT studies, between the periods of May 2021 to November 2023 in Nuclear Medicine Unit, NCR. . Semi-quantitative analysis was done with measurement of SUV max, SUV mean, SUV peak, MTV, and TLG. Follow up period was 6 – 24 months. **Results:** Regarding early prediction of treatment response, primary tumor MTV and TLG show significant prediction of non- responders with cutoff value (> 70, p 0.003) and (>350, p value <0.001 respectively). In correspondence to laboratory date or Deauville scoring; no significant value could be detected for prediction of early treatment response. Regarding overall survival, Patients with plasma cell (>10 %) (P value 0.026), CD 138 (>40 %) (P value 0.013) and A/G ratio ≤0.5 had significantly lower overall survival. No PET-CT derived volumetric parameters could be significantly correlated with overall survival.

Conclusion: Primary tumor MTV and TLG provide more accurate and stable parameters for prediction of early treatment response than SUV max alone. While biological data (A/G ratio, pre-therapy plasma cell concentration and CD 138) could have a valuable predictive value for overall survival.

Added Value of Tc99m-PSMA-SPECT/CT in Assessment of Loco-regional Prostate Carcinoma.

Marwa Fathy[1], Tarek Maghraby[2], Yasser Mohamed[2] Maha Khalil[1]

[1]South Egypt Cancer Institute, Assiut University ,[2] Nuclear Medicine Unit, Faculty of Medicine, Cairo University.

Background: Although PSMA-PET tracers have been extensively investigated, less data exist about investigation with PSMA-SPECT radiopharmaceuticals which be a reasonable and cost-effective in assessment of Prostate cancer. **Objective:** The aim of this study was to assess the added value of 99mTc-PSMA SPECT/CT in assessment of loco-regional prostate cancer, and to correlate its findings with the findings of conventional loco-regional imaging and various patient factors to diagnose its value in staging, restaging and detection of recurrence in patients with loco-regional prostatic carcinoma. **Patients and methods:** this prospective study included 64 adult male patients presented with elevated total PSA level and pathologically proven prostatic adenocarcinoma referred for PSMA scan PSMA SPECT/CT scans. In all, 38 patients were referred for primary staging, 16 patients for restaging after Androgen Deprivation therapy and 10 patients for detection of recurrence. Whole body SPECT/CT imaging was carried out 3 to 4 h after intravenous administration of 740 MBq (20 mCi) [99mTc] Tc-HYNIC- iPSMA. Images were evaluated visually. **Results:** In assessing the T stage T2 stage emerged as the most prevalent in 41 patients (64.1%). in patients with N0. 30.7% were in the intermediate risk category, whereas 69.3% were classified as high risk. In contrast, all patients with N1 classification were identified as high risk. The TNM staging, stage II coincided with intermediate risk, while stages IIA, IVA, and IVB were associated with high-risk classifications. There was good agreement in staging between 99mTc PSMA and conventional loco-regional with Kappa Value (0.864). A significant association were observed between 99mTc PSMA findings and Gleason scores, ISUP grades, risk classifications, PSA grades ($p<0.001$), and bone scan findings ($p<0.001$). Also, significant association was found between 99mTc PSMA findings and restaging after androgen deprivation therapy (ADT), 14 patients (87.5%) exhibited positive 99mTc PSMA findings, while only 2 patients (12.5%) were negative for PSMA-avid lesions. Additionally, there was a significant association between 99mTc PSMA findings and biochemical recurrence with, 7 patients had positive for recurrence, whereas 3 patients were negative.

Conclusion: 99mTc-HYNIC-iPSMA SPECT/CT can effectively identifies significant disease stages and it is useful in risk stratification. Also it is able to guide treatment decisions based on comprehensive disease assessment. The study emphasizes the potential for 99mTc PSMA to serve as a cost-effective alternative to PET imaging in clinical practice.

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Pretreatment FDG PET Quantitative Imaging Biomarkers as a Predictor for Unfavorable Clinico-Pathological Indices in NSCLC Patients.

Nada Fadl[1], Mai Amr[1], Ismail Elantably,[1], Hosna Moustafa,[2], Rasha Allam[3] and Mohamed Emam[4].

[1]NM Unit, National Cancer Institute, [2]NM Unit, Faculty of Medicine, Oncology

[3]Department NCI ,[4]Pathology Department NCI, Cairo University, Egypt

Background: Predicting prognosis of NSLC included not only some traditional histologic features such, but also some potential pathological indicators as degree of desmoplasia, tumor necrosis%, tumor budding, tumor nuclear grade, cytological differentiation, tumor infiltrating lymphocytes% and risk stratification pathological scoring. Metabolic PET/ CT avidity is studied to elucidate its relation to tumor invasiveness, aggressiveness and in determining both treatment and prognosis of cancer patients. **The aim of this study** was to examine the predictive value of metabolic PET\CT parameters in correlation to various clinico-pathologic features in non-small cell lung cancer (NSCLC) patient and to elucidate its relation to the extent of tumor aggressiveness. **Material and Methods:** This is a prospective study that carried on fifty one of enrolled patients histologically proven as NSCLC lung cancer were evaluated by initial PET\CT scan for primary lung tumor , lymph nodes and distant metastases status and its correlation to potential pathologic indicators. **Results**: Our findings are quite concordant with other studies regarding the significant association between the maximal SUV of lung tumor and primary tumor subtypes with statistically significant difference ((P=0.023). Regarding MTV and TLG, which positively and significantly correlate with primary tumor diameter with (P=0.003) and (P=0.003) respectively. Also, there were correlation of the cytological differentiation score and SUV mean proved significant correlation with P=0.023. There is possible utility of the peak SUV and mean SUV of lung tumor as a surrogate marker for tumor aggressiveness. The radiological consolidation to tumor ratio proved to positively and significantly correlates with tumor subtype, tumor nuclear grade score, tumor necrosis % score and risk stratifying pathological score (P = 0.006), (P = 0.001), (P = 0.020) and (P = 0.009) respectively. Also, there was significant correlation was found with 1 years PFS and the tumor budding with P=0.043.

Conclusion: Preoperative PET/CT metabolic parameters maybe associated with poor prognostic factors such as lack of cytological differentiation, low CTR ratio, large tumor size as well as worse overall survival.

^{18}F-PSMA 1007 PET/CT metrics for Assessment of Whole-Body Tumor Burden in Patients with Metastatic Prostate Cancer

Shymaa Moustafa[1] and Amal Rayan[2]

Unit Nuclear Medicine[1], Unit Clinical Oncology[2]. Faculty of Medicine Assiut University.

Introduction: Prostate-specific membrane antigen (PSMA)-derived SUVs may be inadequate in determining the overall response in patients with metastatic prostate cancer. PSMA-derived volumetric parameters such as PSMA-total volume (PSMA-TV) and PSMA-total lesion parameters (PSMA-TL) are hypothesized to be a tool for quantification of whole-body tumor burden. **The aim** of this study to investigate PSMA-derived volumetric parameters, in comparison with PSA levels as a surrogate marker of tumor load. **Patients and methods**: We enrolled 39 patients with prostate cancer and had PSMA avid metastatic lesions, from all suspected pathological lesions (n = 313), the mean and maximum SUV (SUV mean, SUV max) and the tumor volume of each lesion were determined in VOIs with is contours set at 41% of the maximum uptake within the respective focus; that is called PSMA-TV and finally, PSMA-TL calculated by multiplying the respective TV and mean SUV. **Results:** Whole body PSMA parameters (SUV max, PSMA-TV, SUV mean, PSMA-TL) exhibited significant correlations with PSA (r=0.55 & p=0.001, r=0.31& p=0.05, r=0.6 & p=<0.001, r=0.6 &p<0.001 respectively) as well as with Gleason score (r=0.4 & p=0.03, r=0.4 & p=0.02, r=0.3 &p=0.046, r=0.4& p=0.006 respectively) Interestingly, when we analyzed only metastatic osseous lesions we found, osseous PSMA parameters (SUV max and SUV mean) lost their association for the current population with PSA, but significant positive correlations between PSA and TV PSMA & TL-PSMA with P value (p=0.024 and p=0.02) respectively.

Conclusion: PSMA-TV and PSMA-TL are promising quantitative imaging parameters defining a real volumetric assessment of the lesion's size and intra-lesional PSMA expression. We assume that they could refine better stratification with subsequently appropriate treatment strategies for metastatic prostate cancer.

The Value of Quantitative Data in PEM

Noha Ali[1], Ahmed Kandeel[1], Mohamed Houseni[2] and Mohamed Omar[1]

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Background: Breast cancer is the most common cancer among women. The incidence of this cancer is increasing, especially in developing countries. FDG PET/CT is established imaging modality for diagnosis and staging of breast tumors. However, PEM focuses on breast imaging rather than imaging the entire body. PEM has a higher spatial resolution. **Aim of work:** is evaluate the role of the quantitative measurements of PEM compared to quantitative measurements of PET/CT in the risk stratification of post-interventional breast lesions. **Material and Methods:** This prospective study enrolled 36 patients in a period between 12/2022 and 4/2024 for assessment after intervention for breast cancer. Patients mean age was 47.3 ± 11.3 All patients underwent FDG PET/CT imaging and FDG/PEM examination in the same day. Quantitative analysis of primary tumor FDG uptake by PET/CT we calculated using SUV max for each lesion. For the quantitative analysis of PEM we calculated PEM uptake value (PUV max) and lesion to background ratio (LTB) for each lesion. we classified risk of breasts lesions in PET as low risk SUV max < 2.5, intermediate risk SUV max between 2.6 and 4.0 and high risk SUV max > 4.0. **Results**: The PUV max were ranging from 1.4 to 19.6, the mean PUV max was 6.3 ± 4.1. The LTB were ranging from 1.4 to 17.4, the mean LTB was 6.2 ± 4. , Regarding FDG PET/CT imaging results, 4 patients had no residual breast lesions, The other 32 patients showed 43 lesions. One patient had lesion in the contra-lateral breast. Within the 43 lesions, according to PET/CT fining, 26 lesions were classified as high risk, 17 lesions were classified as intermediate risk and no patients as low risk. Regarding FDG PEM imaging results, the 4 free patients in PET/CT imaging were free in PEM imaging. The total lesions detected by PEM imaging were 42 lesions. PEM findings within the detected 42 lesions, 30 lesions (71.4%) were classified as high risk, 9 lesions (21.4%) were classified as intermediate risk and 3 lesions (7.1%) were classified as low risk. By adding quantitative data for change in risk stratification. PEM had changed risk stratifications of 10 patients (21.7 %), with down staged 4 lesions (7.8%). PEM imaging upstaged 6 lesions (11.8%) from intermediate risk to high risk. 3 lesions were detected by PEM and not detected in PET. 4 lesions were missed in PEM (All lesions were adjacent to chest wall). PEM changed in disease stage/ management in 10 patients (27.7 %).

Conclusion: PEM and PET might provide complementary information. When PEM results are consistent with PET findings this reinforces the reliability of both modalities in lesion detection and management, whoever where PEM led to upstaging (13.0%) or detected new lesions not seen by PET, highlight the importance of using multiple diagnostic tools to get a comprehensive view of the disease.

The Added Value of PSMA RADS Classification of Prostate Cancer by ^{18}F-PSMA PET-CT in the Initial Staging of Lymph Node Metastases in Intermediate and High-Risk Patients

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Background: 18F-PSMA PET/CT is a promising imaging modality in the initial staging of intermediate and high-risk prostate cancer patients in order to guide every patient to the best management plan. **Aim of work:** The aim of the study is to assess the added value of PSMA RADS classification by 18F-PSMA PET-CT in the initial staging of lymph node metastasis in intermediate and high-risk prostate cancer patients in relation to diagnostic gold standard postoperative histopathology and compare the results with preoperative multiparametric MRI in trial to achieve proper staging and management plan and improve the outcome. Patients and methods: Our retrospective study included 50 treatment-naive male patients who were referred to private centers from August 2023 till March 2024 with biopsy proven prostatic adenocarcinoma in the initial staging phase. All the patients had done 18F-PSMA PET/CT study and complementary mpMRI. Each 18F-PSMA PET/CT study was analyzed for the probability of presence of regional nodal metastases by assessing nodal size and uptake (SUV max) and given a PSMA-RADS score (PSMA-RADS 1, 3 and 5). Results were compared to complementary mpMRI findings in relation to post-operative histopathology report. **Results**: According to the EAU risk stratification 34% of the patients were intermediate-risk and 66% were high-risk. 80% of the patients were positive and 20% were negative for the presence of nodal metastases in postoperative histopathology. Regarding 18F-PSMA PET-CT findings, the primary prostate tumor was detected in 100% of patients. Regional lymph nodal metastases were detected in 85% of the patients and were classified as PSMA RADS 5 (PC is almost certainly present) and 15% were classified as PSMA RADS 1 (benign) or PSMA RADS 3 (equivocal). The sensitivity was 85%, specificity 100%, accuracy 88%, PPV and NPV were 100% and 62.5% respectively (P value= <0.001), the area under curve (AUC) in ROC analysis for the 18F-PSMA-PET/CT using PSMA-RADS classification was 0.920 (95% CI; 0.831 - 1.009) and SUV max cutoff value = 2.15.

Conclusion: These results validate the added value PSMA-RADS classification of 18F- PSMA PET-CT in the detection and ruling out regional metastases during the initial staging of intermediate and high prostate cancer patients. Also high sensitivity, specificity and overall higher accuracy than multi parametric MRI which may guide for proper management plan and improving patients prognosis and overall outcome.

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The Added Value of Volumetric Parameters in PSMA-PET/CT in the Follow-up of Patients with Prostate Cancer

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The aim this study SUV max, SUV mean, PSMA-TV and TL-PSMA expression in follow up of patients with prostate cancer. **Patients and methods:** this prospective study included total of 98 male patients who were referred to our center from March 2021 till March 2023 with variable grades of prostate cancer. The study was performed in Nuclear Medicine Unit, Cairo University. All patients underwent initial and sequential ^{18}F-PSMA PET/CT after interval therapy to assess the response qualitatively and quantitatively. Lesions were grouped according to their localization into prostate gland, lymph nodes, osseous deposits and extra-osseous deposits. SUV max and volumetric parameter total lesion PSMA (TL-PSMA) were calculated for each lesion. Evaluation of treatment response on follow up was based on both imaging and biochemical response. Imaging response included SUV max response and TL-PSMA response, patients were categorized into either Progressive Disease (PD), Stable Disease (SD) and Regressive Disease (RD). The standard assessment for the treatment response was determined by the change in serum PSA level (ng/ml) between pre- and post-treatment values (biochemical response). It was classified into PSA non-responder and PSA responder **Results** Regarding the biochemical response, 51 patients were classified as non-PSA responder. For progressive disease, according to TL-PSMA versus SUV max, there were 27 versus 12 patients were classified as progressive primary neoplasm ($p<0.001$), 32 versus 19 patients were classified progressive nodal deposits ($p<0.001$), 20 versus 22 patients were classified progressive osseous deposits ($p=0.019$) and 6 versus 2 patients classified as progressive extra-osseous deposits ($p=1$). The diagnostic performance of TL-PSMA versus SUV max in detecting progression- free cases for primary prostatic lesion including sensitivity and specificity were 71% and 72% versus 91% and 84%, respectively.

Conclusion: Volumetric parameter in ^{18}F-PSMA PET/CT is matching with PSA level than SUV max in progressive course of prostate cancer especially in the primary neoplasm and lymph nodal deposits. The overall sensitivity and specificity were not significant between the two parameters, however volumetric parameter could provide useful information especially in the equivocal follow-up studies.

Role of PSMA PET/CT in Evaluation of Therapy Response in Patients with Metastatic Prostate Cancer

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Introduction: The evaluation of metastatic prostate cancer under distinct therapies presents several well-known limitations which may be overcome by PSMA PET/CT. **The aim** of this study is to evaluate the role of PSMA ligands PET-CT in the metastatic prostate cancer after therapy. **Patients and methods:** This prospective study included total of 53 male patients who were referred to our center from March 2020 till March 2022 with metastatic prostatic adenocarcinoma. The study was performed in NM Unit faculty of Medicine, Cairo University. The patients' data and images were analyzed, PSMA-PET/CT studies were performed before and after treatment with post-therapy assessment according to PERCIST and RECIST criteria. Also, correlation between post-therapy serum PSA level and imaging response is done. **Results:** Total 53 patients with metastatic prostate cancer, 33 (62.3%) patients were with bone metastases, 39 (73.6%) patients were with lymph nodal metastatic lesions and 5 (9.4%) patient were with visceral deposits. All patients received interval therapy. Biochemical response was also assessed as complete response, partial response (if there is ≥ 50% decrease in PSA value), progressive disease (if there is ≥ 25% increase in PSA value) and a change in PSA after therapy between −49% and +24% was defined as stable disease. Correlation between PET parameters, CT and biochemical response were done. There is good agreement (kappa value 0.88) between PERCIST and RECIST criteria. There is moderate agreement (kappa value 0.57) between PERCIST and post-therapy PSA level response. Also, there is moderate agreement (kappa value 0.57) between RECIST and post-therapy PSA level response.

Conclusion: PSMA PET/CT has a pivotal role in post-therapy assessment of patients with metastatic prostate cancer.

Prognostic Value of Metabolic Indices in Baseline ^{18}F-FDG PET/CT for Pediatric Burkitt Lymphoma

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Purpose: Burkitt lymphoma (BL) is the most common non-Hodgkin lymphoma (NHL) in children and adolescents accounting for over 40% of NHL, the early recognition of patients with poor prognosis and the tailoring therapeutic remediation options to them are undoubtedly key interventions. **The aim of** this study is to assess the value of baseline PET metabolic indices in predicting treatment response and prognosis in pediatric Burkitt lymphoma. **Methods:** We retrospectively analyzed 98 pediatric patients with BL who underwent baseline and end of treatment 18F-FDG PET/CT from 1st January 2018 to 31 December 2019 with minimum follow up one year -3 years after end of treatment protocol. Treatment response groups include good response (complete remission) and Poor response partial response, patient develop recurrence or progression). Event-free survival (EFS) and Overall survival (OS) were correlated with quantitative metabolic indices using receiver operating characteristic (ROC) curve and area under curve (AUC) to estimate the optimal cut-of value. EFS and OS curves compared with metabolic parameters. **Results:** SUV mean and SUV max do not show a statistically significant difference between treatment response groups, TMTV and TLG do exhibit statistically significant differences (p = 0.008; p=0.01). After follow- up of three years, TMTV (<570 cm3) and TLG (< 4000) had better 3-year EFS rate compared with those with a high TMTV and high TLG (p=0.001). However, TMTV and TLG were not predictive of OS (p=0.81; p=0.96).

Conclusion: TMTV and TLG could represent potential PET/CT metabolic biomarkers for predicting the response of pediatric Burkitt lymphoma.

FDG PET/CT Versus Conventional Bone Scan for Detection of Bone Metastases in Late Stage Breast Cancer Patients

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Background: Breast cancer is the first female cancer worldwide. 20-30% of patients become metastatic, bone represents the most frequent site for metastases, seen in about 70% of metastatic patients. Some molecular subtypes of breast cancer have significantly higher risk of bone metastases. FDG-PET/CT and bone scan represent important diagnostic modalities for early detection of bone metastases. **Objectives:** to compare diagnostic performance of 18F-FDG PET/CT and conventional bone scan for the diagnosis of bone metastases in patients with advanced breast cancer regarding different molecular subtypes, guiding clinicians to the most appropriate study for individual patient. **Patients &Methods:** We included 63 female patients with advanced breast cancer with bone metastases having different molecular subtypes. All patients underwent conventional bone scan using 99mTc-MDP and FDG-PET/CT within 1-3 weeks. We compared the diagnostic performance of both studies in detection of metastatic osseous lesions. **Results:** Sixty-three female patients with invasive duct carcinoma with bone metastases were included. 41 patients out of them were hormone receptor positive and 22 had triple negative breast cancer. Patients had a total of 420 bone lesions, mainly seated at axial skeleton (76.2%), out of them 389 (92.6%) were metastatic. The latter were either mixed (50.5%), osteolytic lesions (33%), or sclerotic lesions (16.5%). Those lesions were detected in FDG PET/CT and bone scan in 95.9% & 87.7% *(p:0.017),* 96.8% &73.4% *(p:0.008)* and 93.7% and 98.4% *(p:0.077)*
respectively. The difference was statistically significant in favor of PET/CT for detection of osteolytic and mixed metastases. Though conventional bone scanning detected more sclerotic lesions, yet, the difference was not statistically significant. FDG PET/CT significantly detected more metastatic lesions in triple negative breast cancer compared to bone scan (96% *vs* 83.7%, *p:0.023*), this significance was lacking in those with hormone receptor positive patients (89.6%.*vs*88% *;0.089*). The overall sensitivity, specificity and accuracy for detection of bone metastases using PET/CT and bone scan were 84.1% & 72.2%, 74.2% &64.5% and 83.3% & 71.7% respectively.

Conclusion: FDG PET/CT has better overall diagnostic performance in detection of bone metastases from breast cancer compared to conventional bone scanning for osteolytic and mixed osseous metastases. Whereas, conventional bone scan detected more sclerotic lesions compared to PET/CT, yet, the difference was not statistically significant. Also, PET/CT has significantly higher sensitivity in detection of metastatic osseous lesions in patients with triple negative breast cancer.

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