affected as well, it is unusual to monitor them dosimetrically in daily routine. This study aims to calculate and discuss the organ dose to the LG of patients undergoing ^{177}Lu-PSMA therapy. ***Materials and Methods:*** For dosimetric evaluation 50 ^{177}Lu-PSMA therapies with a total of 100 LGs were included. The mean administered activity was 6,809 MBq±29%. The mean age of the patients was 75 years±9%. Dosimetric analysis was performed by a region-based analysis using the ventral views of scintigraphic scatter corrected whole-body images one, two and three days post administration with an Anyscan scintillation camera (Mediso) (scan speed: 20 cm/min; matrix 256x1024 pixel, symmetric window at 208 keV; width 20%; 3-window scatter correction). Absolute quantification was achieved by previous performed sensitivity calibration for ^{177}Lu for the scintillation camera. ***Results:*** The mass of each LG was calculated by a region-based analysis using the metabolic volume (40% isocontour) from accompanying ^{68}Ga-PSMA-PET/CT. The density of LGs was assumed as 1 g/cm^3. The mean mass of the 100 LGs was 1.9 g±49%. The calculated mean accumulated activity in the LGs was 1.6 MBq±74% corresponding to 0.023%±65% of the administered activity. The organ dose was calculated by integration of the exponentially fitted time activity curve. ^{177}Lu-PSMA dosimetry indicated a mean organ dose of 4.57 Gy±111% per administration, corresponding to a mean activity-related dose of 700 mGy/GBq±105%. Mean effective half-life in the LG was 27.8 h±33%. ***Conclusion:*** Assuming a dose of 700 mGy/GBq and an administered activity of 7.4 GBq, a total of eight ^{177}Lu-PSMA therapy cycles is possible without exceeding the threshold of 40 Gy to the LGs that is known to cause organ damage. However, assuming the worst-case scenario of the maximum determined dose (3.490 mGy/GBq), two ^{177}Lu-PSMA therapy cycles may lead to an exceedance of the threshold. A ROI-evaluation of the ventral views of scintigraphic whole-body images 1, 2 and 3d post administration appears to be adequate for dosimetry of the LG. The LG are not dose-limiting organs at risk. However, an individual calculation of the organ dose may help to explain affections of dry eyes and initiate therapy especially when patients are treated with several cycles. ***References:*** None

EPS-037

Performance comparison of different dosimetry methods with respect to complexity and accuracy

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Aim/Introduction: Personalized dosimetry is of great importance for the improvement of therapy outcome. Different facts hinder the implementation of dosimetry in clinical workflows. The existing dosimetric approaches require varying numbers of processing steps, computation effort, manpower and time. The aim of this study is to directly compare the required resources and the accuracy of the absorbed dose estimates of three different dosimetry approaches using organ-specific S-values derived from simulations with reference phantoms, more advanced voxel-S-values (VSVs) simulated for a specific tissue type, and patient-specific full Monte Carlo (MC) simulation. ***Materials and Methods:*** Seven Lutetium-177-PSMA-I&T patients (8.12±0.78GBq) with QSPECT/CT 24h, 48h, 72h p.i. were evaluated. Rigid registration was applied based on CTs. Whole-body and kidneys were delineated on the 24h CT. Tumor lesions were segmented via k-means algorithm on 24h SPECT (PMOD v4.005). VOI-based effective half-life was determined from mono-exponential fitting. Subsequently a time-integrated activity map (TIAM) was generated for each patient. Doses to kidneys and bone lesions estimated with OLINDA and with soft-tissue Lu-177-VSVs from GATE v8.2 MC simulations convolved with TIAM (with MATLAB R2019b) were compared with values from GATE MC simulations using patient CT and TIAM. Processing times and required staff were compared. ***Results:*** OLINDA S-values were adjusted for patient organ/tumor mass. The mean percentage difference compared to MC for kidneys was -2% (OLINDA), +1% (VSVs); for 102 tumors +9% (OLINDA), +19% (VSVs). MC simulation of VSVs and full patient MC required a physicist. All methods required the same segmentation efforts. OLINDA requires fitting and no image creation and is fast (incl. pre-processing <30min). VSVs need to be simulated only once. VSV dosimetry performance was as fast as OLINDA. Full MC simulation per patient was run on 20 parallel CPUs and took 5h (simulation+preprocessing). ***Conclusion:*** For kidney dosimetry, all approaches revealed comparable dose results. OLINDA and VSV showed a strong overestimation and are therefore less appropriate for bone lesion dosimetry. OLINDA and VSVs assume soft tissue density instead of the actual bone density. However, OLINDA and VSVs were comparable with respect to organ dosimetry and time effort. MC, in contrast, requires powerful computers, is slow compared to both other methods, and requires specially trained personnel. Yet, MC can account for tissue heterogeneities and provides most accurate dose estimates for all volumes of interest (organs+tumors). Further investigations regarding bone lesion dosimetry methods, e.g. with density adjustments, are required. ***References:*** None

EPS-038

Determination of tumour control probability curves for treatments with ^{225}Ac-PSMA of metastatic castration resistant prostate cancer by means of microdosimetry calculations