50 min (18FDG) and 30 min (11C-methionine) after tracer injection animal were anaesthetized by 3% isoflurane. 10 minutes PET scans were acquired in each bed positions using a small animal PET scanner (MiniPET-II, Department of Nuclear Medicine, Debrecen) to visualize the primary tumor and the metastasis. The MiniPET-II consists of 12 detector modules in one ring with LYSO scintillator crystal blocks. The axial and the radial field of view (FOV) are 48 mm and 106 mm, respectively and the system absolute sensitivity is 10.14% (NEMA-NU4 2008). The 18FDG and 11C-methionine uptake were expressed in terms of standardised uptake values (SUVs) and tumour to muscle (T/M) ratios.
Results: By taking the SUV values from the MiniPET-II images the majority of the radioactivity (18FDG and 11C-methionine) was accumulated in the primary tumors: He/De 18FDG-SUVmean: 10.2 ± 3.0, 11C-methionine-SUVmean: 3.2 ± 1.0; My/De 18FDG–SUVmean: 4.7 ± 1.2, 11C-methionine-SUVmean: 3.2 ± 0.8. Two weeks after the implantation in rats bearing primary tumors under the renal capsule we found metastases at the parathymic lymph nodes (PTLN): He/De 18FDG-SUVmean: 3.5 ± 0.6, 11C-methionine-SUVmean: 1.7 ± 0.2; My/De 18FDG–SUVmean: 3.2 ± 0.7, 11C-methionine-SUVmean: 1.8 ± 0.5. In the subcutaneous models after two weeks only primary tumors (He/De — SUVmean: 9.0 ± 2.6, My/De — SUVmean: 7.7 ± 1.6) and no metastases were found by 18FDG scans. Three weeks after intravenous injection of He/De cells metastatic lesions were found by 18FDG scans in the liver and lungs with SUVmean 4.3 ± 0.7 and 2.3 ± 0.3 respectively.
Conclusion: This preclinical study showed that tumor cells implanted under the capsule of the kidney generate metastases in the PTLN. The renal capsule-parathymic lymph node complex seems to be suitable for the isolated *in vivo* examination of metastatic development. MiniPET-II scanner and the animal models are helpful appliances in preclinical research and drug development research.

P11

DEVELOPMENT OF WEB TECHNOLOGY SUPPORTED MULTIMODAL IMAGE PROCESSING SERVICES AT THE UNIVERSITY OF DEBRECEN

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Background: Our aim was to develop a web-based software environment that offers image processing services for our research partners, using the imaging infrastructure of the Institute of Nuclear Medicine. As important considerations we have defined ease of use, realization of automatic notification points in the co-operation process, centralized availability and management of information and state of data
Material and methods: The core of this service is the MultiModal Medical Imaging software system developed in the institute. Furthermore, database tools are provided on the R&D website (www.minipetct.hu) of our institute to manage the data flow and data states. The flexibility and scalability provided by the CMS (Content Management System) is utilized to generate the web pages dynamically. Analysis and modeling of the co-operation process and life cycle of the data packages had been performed. Points were identified in the process where the system notifies the participants via email. We have also examined the workflow of co-operation and identified the services that should be supported by web interface.
Results: As a result we can provide database supported image processing infrastructure for our partners that can be used effectively for research projects without advanced knowledge on the field of informatics. Our virtual bronchoscopy project is used to validate the web service and its infrastructure.
Conclusion: The web services provided for the clinical research projects and supported by the infrastructure developed in our institute simplifies the collaboration and increases its efficiency. Thus we can provide uniform communication system for our upcoming, long-term clinical projects with standardized image procession; the tasks can be performed in an efficient and controllable way.

P12

METHODOLOGICAL DEVELOPMENTS FOR AUTOMATED REGION ANALYSIS OF BRAIN SPECT AND PET EXAMINATIONS

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Background: The infrastructure for automated region analysis of brain PET and SPECT examinations was partly available in our institute, which was developed for image registration processes earlier. We broadened this automated process by software components, which were developed along the development of BrainLOC, made it possible to join these components to the automated image processing thread.
Materials and methods: We have used the MultiModal Medical Imaging software system to develop the main software components required by the automated regional analysis service: pre-defined functional and anatomical brain structures as part of the VOI database of the BrainLOC application; 3rd party (MNI, FSL) and in-house developed mulimodal registration and standardization software; utilities for ROI analysis. We have also developed the DicomBBox software to receive and convert images, which is built on the basis of the DICOM server in our institute. Processing and monitoring services are available through the interfaces developed for the R + D web site of our institute.
Results: In contrast with our goals, a completely automated software system was developed to evaluate regional analysis of brain PET and SPECT data using arbitrary regional definitions of various brain atlases. The user requesting this service could select regions from more than 20 brain atlases and for spatial standardization T1-weighted MRI, PET or SPECT templates. The results of analysis carried out on the images received by our DICOM server can be accessed by email or through the web site of the institute. The standardization was carried out by the automated system.
Conclusion: We expanded the automated image processing in our institute with a service of automated region analysis of brain PET and SPECT examination. This service can be accessed by other institutes who does not have this kind of image processing infrastructure.

P13

INTEGRATION OF PET-CT IN THE MANAGEMENT OF PATIENTS' TREATED WITH RADIOSURGERY: DEBRECEN'S EXPERIENCES

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Background: The first hungarian gamma radiosurgery center was opened at 2007 in Debrecen. Until now 1500 patients have been treated. Radiosurgery is based on different imaging modalities that are used for targetting. In the currenct clinical practise we use contrast-enhanced CT and T1 weighted contrast-enhaced,3D SPGR MR sequences.We report our clinilcal experience with the combined use of metabolic (18F-FDG-PET-CT, 11C-MET-PET) and anatomic (CT,MR) images for the radiosurgical treatment of patients, to determine whether these imaging methods can be useful for further clinical management.
Material and methods: Four patients with brain metastases were treated with stereotactic radiosurgery. MRI and 11C-Met-PET examinations were done before the treatment and 2 and 6 months following the radiosurgical procedure. PET/MR fusions were also conducted. In the PET-scans we measured the size of the lesions and the tumor activity. Data was compared to the MRI findings. In one brain metastatic case radiosurgeons used 11C-MET-PET/ contrast-enhanced CT fused images for treatment planning.