

Ad5-TIS, the cell uptake ratio of ^{99m}Tc -HYNIC-TOCA was increased from 4.2% to 13.8%, and the radioactivity ratio of tumor to contralateral (T/C) was also increased from 1.72±0.22 to 5.65±0.30 in the SSTR imaging. Both of these two ratios have favorable correlation with the expression level of HSV1-tk and hSSTR2a in cell or tissue (cell: $r^2_{\text{TK}}=0.965$, $r^2_{\text{SSTR}}=0.959$, $P<0.01$; tissue: $r^2_{\text{TK}}=0.942$, $r^2_{\text{SSTR}}=0.889$, $P<0.01$). **Conclusion:** The hSSTR2a and HSV1-tk gene constructed in the Ad5-TIS could be co-expressed effectively in tumor cell and tumor model. The SSTR reporter gene imaging could be applied in monitoring the expression of the therapeutic gene indirectly. **Key Words:** Somatostatin; Receptor Imaging; Reporter Gene; Therapeutic Gene

1409 — Tuesday, October 3, 02:30 pm - 04:00 pm, Lecture Hall 1

Symposium: Somatostatin

Receptor-mediated Radionuclide Therapy

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Radionuclide Therapy with Yttrium-90-DOTA-Tyr3-Octreotide and Lutetium-177-DOTA-Tyr3-Octreotate – Italian Experience

Giovanni Paganelli (IT)

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Radionuclide Therapy with Yttrium-90-DOTA-Tyr3-Octreotide and Lutetium-177-DOTA-Tyr3-Octreotate – Netherland Experience

D.J. Kwkkeboom (NL)

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Radionuclide Therapy with Yttrium-90-DOTA-Tyr3-Octreotide and Yttrium-90-DOTA-Lanreotide – Innsbruck Experience

Irene Virgolini (AT)

1410 — Tuesday, October 03, 2006, 2:30 pm-4:00 pm, Lecture Hall 2

General: Tele-Nuclear Medicine - PACS/Economics

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On the road to Integrated Regional Health Information Systems: the role of process mapping in NM procedures

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Background Regional Health Information Systems can be considered as an intra-organizational regional system hosted at the Regional Health Care Authorities (RHA), supported by organizational arrangements in order to manage and integrate the flow of information for health services, with the ultimate aim of improving customer services in health-related issues. They are meant to integrate information provided by Health Units, Hospitals etc by means of Information and Communication Technologies in order to succeed in this scope. In 2001, a reform of the Greek National Health Care System established 17 autonomous RHAs and defined the means to support them with the design and implementation of Regional Health Networks that would ensure effective data handling and information retrieval from all health care providers in one region. In 2005, some of these projects have kicked off. **Aim** The ultimate aim of this work is to optimise the information flow within a health care environment, by facilitating a proper elicitation of information system requirements for the departments/units of nuclear medicine (NM) and radiation physics and their associated health care operations/processes. To achieve this scope, focus is placed on the accurate mapping of the aforementioned operations and their suitable use within the software development life cycle. **Materials and Methods** The case of the 2nd RHA of Macedonia, Greece, and more specifically the NM Department at Ippokraton General Hospital of Thessaloniki, is used as a specific example to draw narratives of all processes that may require integration with the Regional Health Information System in due course. These narratives are then transformed into proper maps of mega-processes, which further sub-divide into processes and sub-processes. Flow charts are used at the bottom level of this hierarchy to enable proper definitions of process parameters. **Results** The study enabled the proper identification of all NM processes run at a routine or periodic time frames. Mega-processes are elicited at the top level with links to other hospital (and Regional) operations, and proper process clarification occurs under the need of sorting and priority/parameter setting. The end result is a full operational map of NM procedures, ready to be utilised by information system designers and programmers. **Conclusion** In view of modernising health care with the aid of Information and Communication Technologies, as well as, management rationalisation such studies become crucial for the future success of any department and their envisaged improvement in health care quality.

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Clinical evaluation of a telematics platform for positron emission tomography

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Aim: A telematics network has been setup using a system for computer supported collaborative work for the realization of teleconsultations on PET studies between specialists from the participating centres. The main aim of this work has been the evaluation of the impact of the use of the telematics platform in the clinical practice. **Materials and Methods:** A Windows 2000/XP based platform has been employed, offering specialized PET image visualization and processing features, multimodality fusion and security measures for the transmission of the patient data to the remote expert. Online (with the presence of both physicians and assisted by a chat window) or offline teleconsultations (by secure message exchange in form of attachments) have been performed. Scenarios for second opinion, remote reporting and electronic fax (e-fax for simple data transmission to the remote location) have been tested. **Results:** Second opinion: 31 teleconsultation cases have been performed between CPC and Valencia (14 of them online); 198 patient cases have been transmitted (offline) from CPC to Seville; 13 cases from CPC have been confirmed in Houston. 68% of the sessions were held to aid the diagnostic confidence of the reporting physician at CPC, whereas the rest of the cases involved a simple confirmation of the diagnostic report and served for training on the use of the platform and overall performance evaluation of the system. Remote reporting: 34 PET studies have been reported by the primary physician at CHU from her home, involving a whole body CT study in 65% of the cases. Transfer of data over an ADSL line at the physician's home took an average of 3.1 min, incremented by an average of 3.8 min when CT data were included. e-fax: This feature has been currently implemented by the CPC for the reception of patient's previous digital imaging history and for the transmission of the PET study and diagnostic report to the referring physician. 40 PET/CT studies have been also internally transmitted from the Nuclear Medicine Dept. at CHU to the Radiotherapy Unit. Three dynamic PET (two ^{18}F -FDG and one ^{18}F -MPPF studies) have been transmitted from CPC to DKFZ for parametric analysis and quantification. **Conclusions:** The platform used for the trials has been validated for clinical PET as a useful tool for second opinion, remote reporting, secure access to the patient data from outside the PET centre as well as for training of specialists.

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An integrated teleconsultation and intelligent computer supported collaborative work platform for PET

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Aim: The principal objective of the TENPET© (Trans-European Network for Positron Emission Tomography) project was the evaluation of the provision of integrated teleconsultation and intelligent computer supported cooperative work services for clinical PET in Europe. Important security issues have been considered and the evaluation included the usability of the platform and the speed in the service provision. **Materials and Methods:** The TENPET© application runs on PCs (Windows 2000/XP) and incorporates advanced multimodality image visualization, analysis and fusion, including specific features for PET imaging. Communication between two connected workstations is based on a TCP/IP connection protected by secure socket layers and virtual private network (VPN) or Jabber protocols. A teleconsultation can be online (both specialists physically present) or offline (transmission of messages with image data and other information attached). An interface sharing protocol enables online teleconsultations even over low bandwidth connections. **Results:** The Jabber communication method is based on an open source instant messaging protocol and offers numerous advantages comparing to the VPN solution. The Jabber core protocol offers presence status and directory services. In addition, Jabber can be routed over HTTPS by encapsulation of XML messages, thus overcoming restrictions imposed by the use of firewalls, etc. This, however, increases the amount of data to be transmitted by 33% in comparison to a point-to-point binary socket transmission. Its architecture, similar to the one employed by the VPN and equally secure, consists on a hub server and various remote nodes which can be connected to the server. In the case of Jabber, however, two nodes involved in an off-line teleconsultation session do not need to be connected to the network at the same time, as is the case when employing VPN. Furthermore, data transmission is independent of the bandwidth available by the remote party. During the clinical pilot trials of the system, reported at a different abstract, users commented that the system is fast to install, easy to learn and offers unique image display feature specialized for PET diagnostics. **Conclusions:** TENPET© fosters and promotes the development of networking infrastructures and architectures including the integration of fixed or mobile on-line and off-line technologies and their application to PET diagnostic imaging. The service is based on proven technology, taking into account recent advances in medical image technology, ubiquitous communication and intelligent interfaces. It is based on innovative systems, user-friendliness, absolute security of the medical data and quality of service.