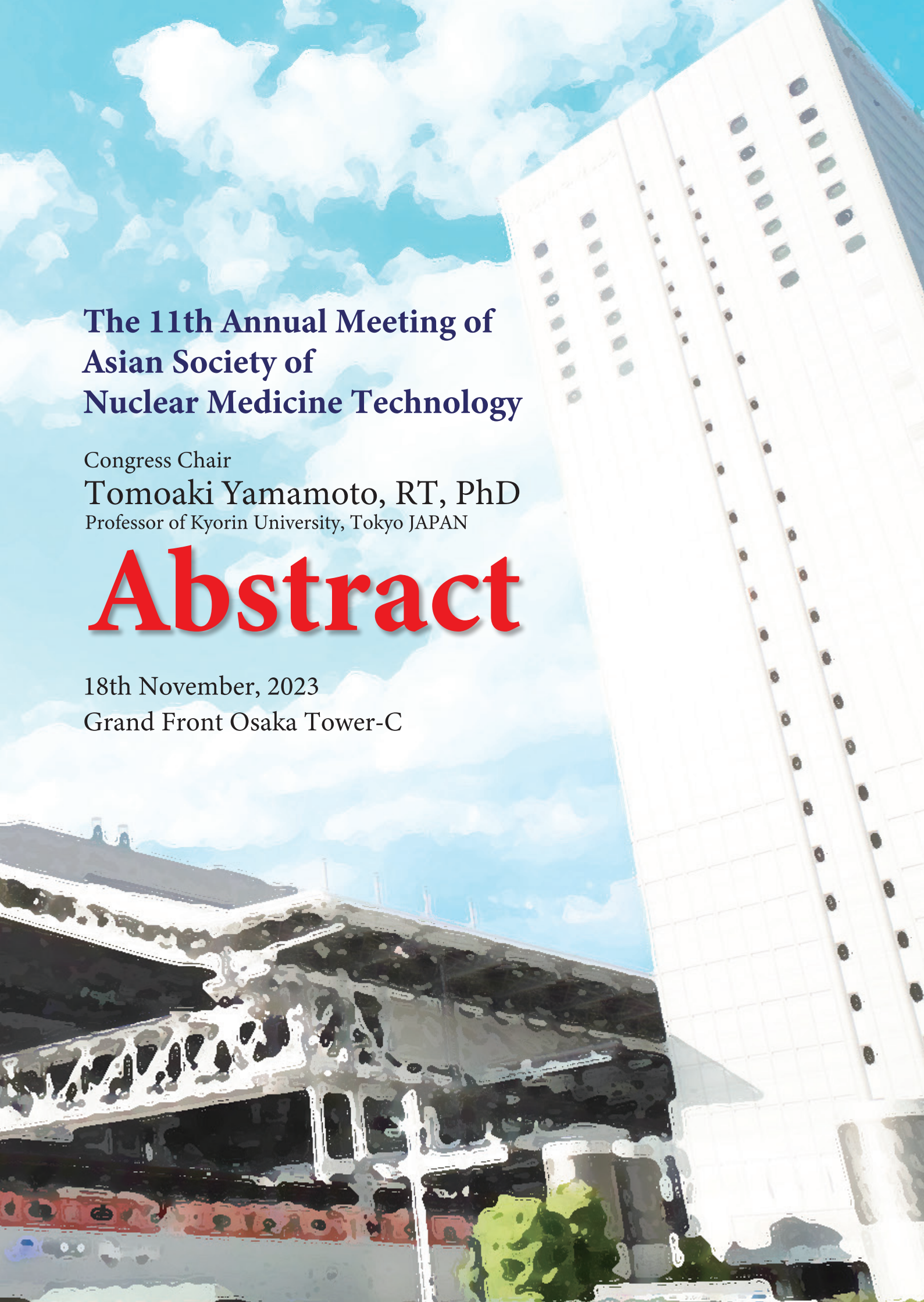
The 11th Annual Meeting of Asian Society of Nuclear Medicine Technology

Congress Chair
Tomoaki Yamamoto, RT, PhD
Professor of Kyorin University, Tokyo JAPAN

Abstract

18th November, 2023
Grand Front Osaka Tower-C



The annual meeting of

The 11th Asian Society of Nuclear Medicine Technology

in Osaka, Japan

18th November, 2023

Grand Front Osaka Tower-C, 8F

President	Tomoaki Yamamoto, RT, PhD (Kyorin University)
Vice president	Kohei Hanaoka, RT, PhD (Kindai University Hospital)

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Long time no see, all of friends

President Tomoaki YAMAMOTO, Ph.D.

Dear Friends and Colleagues, Dear ASNMT Members

It's very honor to be held the annual conference of the 11th Asian Society of Nuclear Medicine Technology (ASNMT) in Osaka, Japan, and I'm really pleasure on behalf of JSNMT and ASNMT board member to welcome you to the meeting, that will take place at Grand Front Osaka in Osaka, Japan November 18th, 2023.

COVID-19 pandemic had stricken confuse to people's heart in whole world. We had to wear a mask, keep a physical distance, cancel a lot of conferences. Web tools are useful for virtual meetings or conferences, however, the discussions are very slow. At least, we are able to join with all of you on face to face after a long time.

In nuclear medicine technology fields, standardization of imaging and therapy using radiopharmaceuticals is very important for quantification and theragnostic. We should definitize the role of nuclear medicine technology in each country, and share them. ASNMT is able to show a leadership not only Asia, but also the other regions. We hope many colleagues discuss and exchange precious opinions in this meeting, nuclear medicine technology contribute to health of peoples in whole world.

Osaka is very exiting town, there are a lot of nice foods and places. I hope you will enjoy your stay.

Welcome to Osaka, Welcome to ASNMT

Vice president Kohei HANAOKA, Ph.D.

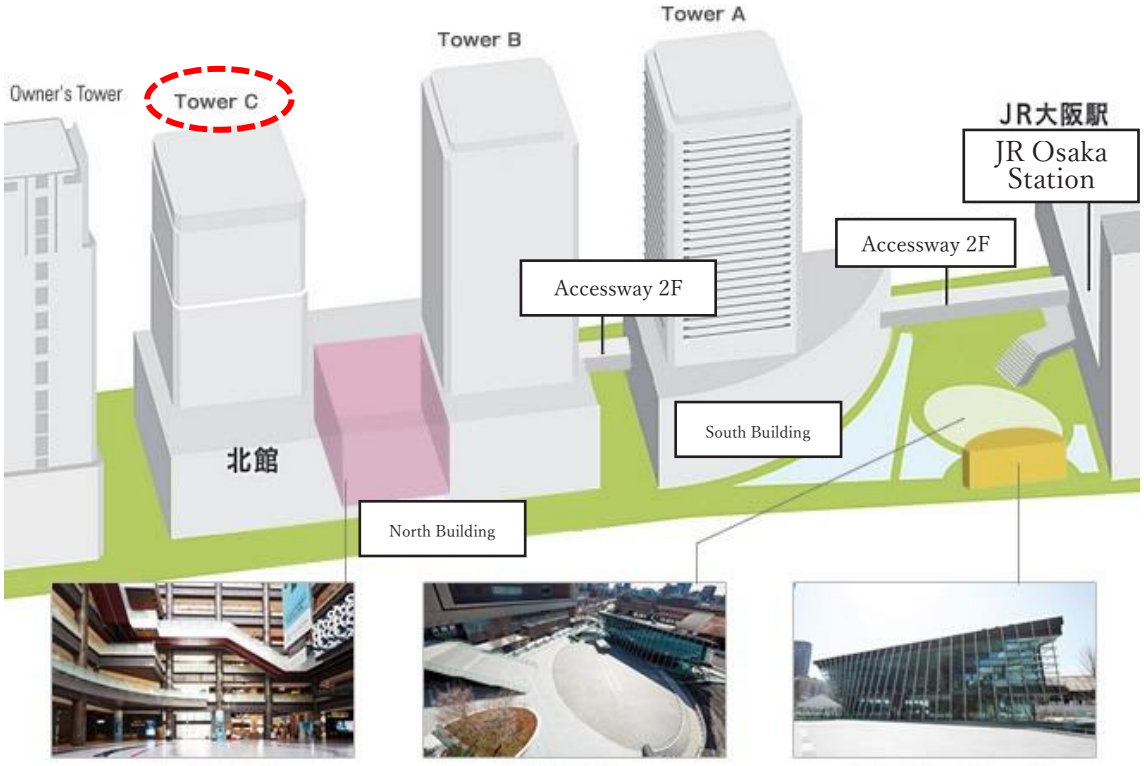
The members of the organizing committee and myself are delighted to present the '11th Annual Conference of the Asian Society of Nuclear Medicine Technology (ASNMT)' and extend a warm welcome to all participants attending the 63rd JSNM and 43rd JSNMT conferences in Osaka from November 16th to 18th, 2023.

ASNMT is designed to provide updates on the latest developments in the field of nuclear medicine technology and related aspects in Asia. After two years of virtual meetings, we are looking forward to the joy of reconnecting with each other in person. We anticipate engaging in valuable scientific sessions. We express our deep appreciation for the hard work and dedication of all the organizing committee members in preparing for this conference. We would also like to extend our gratitude to JSNMT for their invaluable support and continuous follow-up. We are committed to making this event a resounding success.

We hope you enjoy your time in Osaka!

The annual meeting of Asian Society of Nuclear Medicine Technology
Information of Venue

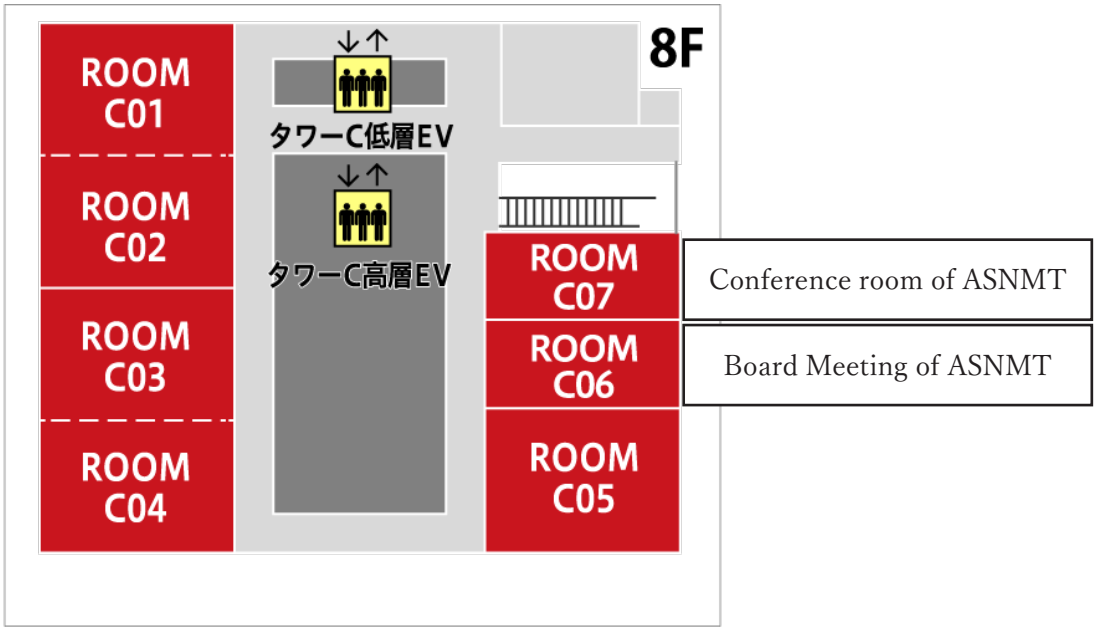
Grand Front Osaka Tower – C, 8F



Knowledge town

Umekita-hiroba

Umekita Ship Hall



Registration of the 11th ASNMT

The registration time is 12:00 to 13:00. The reception of the 11th ASNMT is located at Grand Front Tower-C, room C-07 (8F). Participants confirm your name, and receive a name card, name folder, certification of attendance and abstract book at the reception. Participants write your name and institution on the card and keep it your front in the conference and presidential reception.

For the members of JSNMT, KSNMT and TSNMT, the registration fee is free, also students are always free. Nonmembers are requested to pay 2,000 JPY as the registration fee in cash, which is included the presidential reception.

A graffiti wall is set in front of C-07. Participants can write your sign, illustrations or your favorite words for your memorial. Please take a photo at there.

Introduction of Chairpersons

Oral session – 1

Mitsuha Fukami (Kyorin University, Japan)
Kao-Yin Tu (Mackay Memorial Hospital, Taiwan)

Oral session – 2

Daisuke Hasegawa (Kobe Tokiwa University, Japan)
Jun-Young Park (Yonsei University, Koran)

Speaker’s Regulation

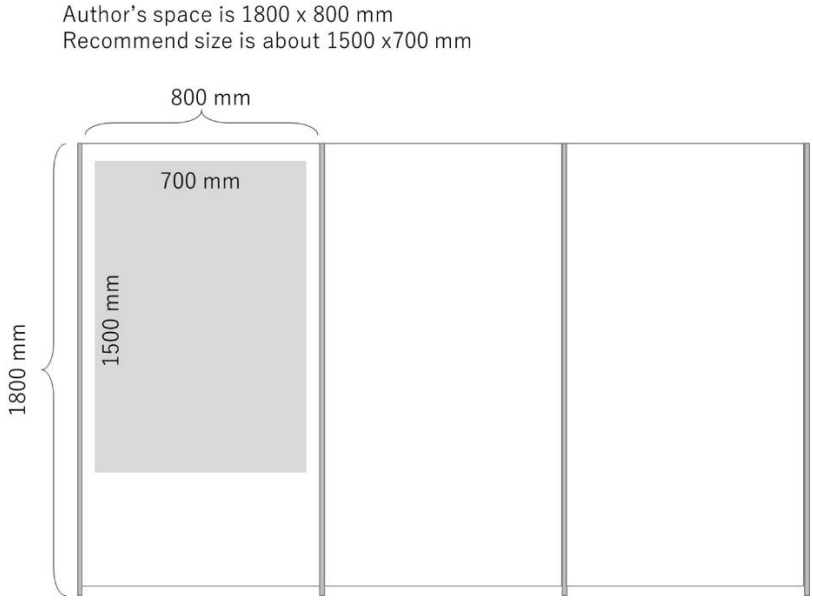
Oral Presentation

Presentation data is used MS-PowerPoint for windows, and the size should be designed by 4:3 or 16:9. Windows-PC which OS is windows-11 is placed on speaker’s table. Author installs the data to the PC during 12:30 to 13:00, and confirm it, however, practice of speech is not accepted. If author wants to use Mac-PC, then author prepare own PC and cable which you need by yourself and connect it to monitor cable (HDMI).

The presentation time is 7 minutes, and discussion time is 3 minutes. Especially, author punctual the time of presentation.

Poster Presentation

A size of poster panel is set 1,800 x 800 mm (vertical x horizontal). Author can use in this space, however, the recommended size is 1,500 x 700 mm (vertical x horizontal). In the poster, the title, author’s name, name of institutions and contents, also the poster is put on the panel using some magnets in 12:30 to 13:00. Poster Presentation is free discussion. Author anticipates in front of your poster during presentation time.



Information of presidential reception

We welcome you to a presidential reception which is held a Japanese restaurant close to conference venue. Staffs inform you to there after conference, please follow him/her. We move to there on foot, and it takes approximate 15 min from Tower-C.

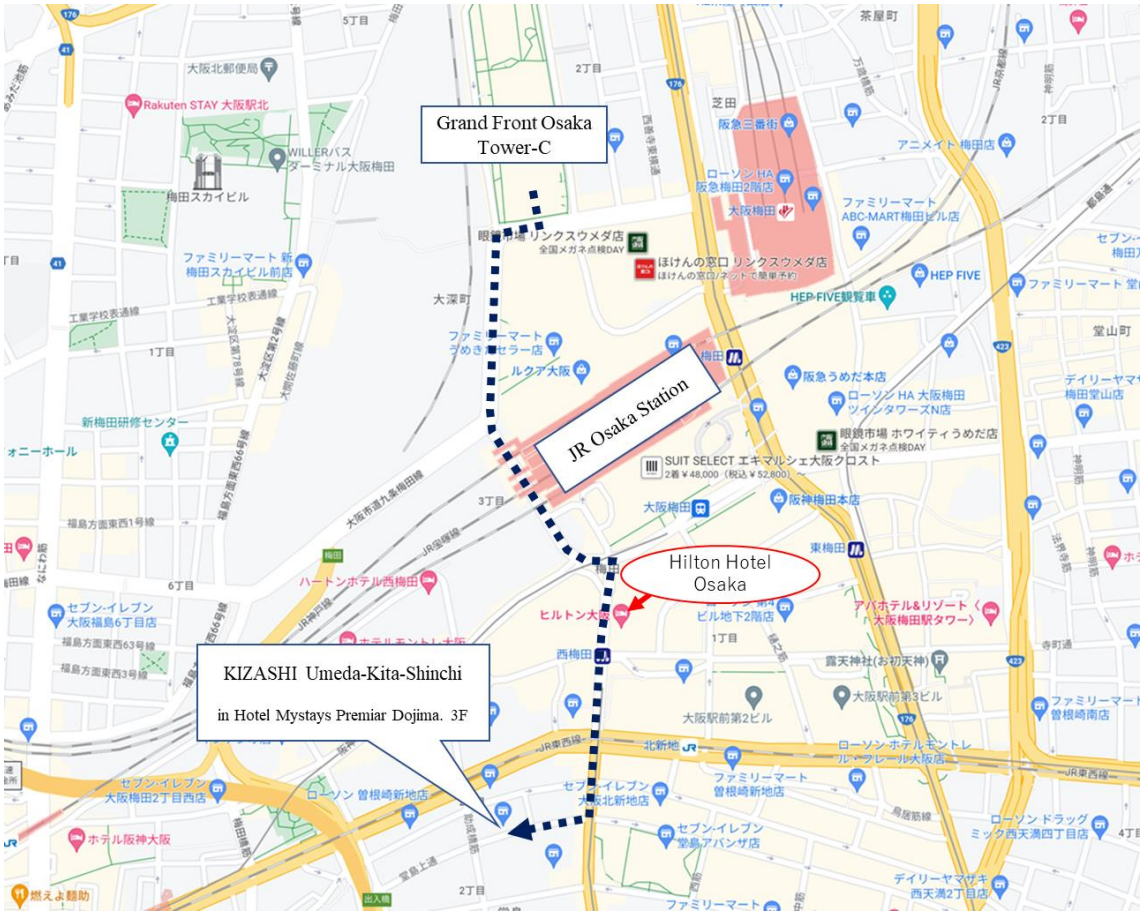
Data and Time; 18th November 2023 6:00pm to 8:00pm

Venue; **KIZASHI Umeda-Kita-Shinchi**

https://c794000.gorp.jp/

in **HOTEL MYSTAYS PREMIER Dojima, 3F**

https://www.mystays.com/en-us/hotel-mystays-premier-dojima-osaka/



It takes about 15 minutes on your foot.

Program

annual meeting of

The 11th Asian Society of Nuclear Medicine Technology

Date; 18th November, 2023
Venue; Grand Front Osaka Tower-C, the 8th Floor

Tower C, Room C-06; Committees meeting of ASNMT

(Board members only)

10:00 – 12:00 Steering committees meeting

Japan, Korea and Taiwan board members

Tower C, Room C-07; The 11th Annual Conference of ASNMT

12:00 – 13:00 Registration and presentation data check

12:30 – 13:00 Putting up the posters on the panels

13:10 – 13:25 Opening ceremony

Video message from EANM-Tech Community

Welcome greeting

13:30 – 14:20 Oral session – 1

Chairpersons; Mitsuha Fukami (Japan)

KAO-Yin Tu (Taiwan)

O-01 Broad quantification calibration of various isotopes for quantitative analysis and the assessment of their SUVs in a SPECT/CT scanner

Asan Medical Center

Hyunsoo Ko (Korea)

O-02 The usefulness of acquire during step method compared to step-and-shoot and continuous method

Kobe Tokiwa University, Faculty of Health Science, Department of Radiological Technology

Kotaro Tokunaga (Japan)

O-03 A Rare Finding of Primary Aortoduodenal Fistula by Gastrointestinal Bleeding SPECT/CT Scan

Hsinchu Mackay Memorial Hospital

Chun-Liang Kuo (Taiwan)

O-04 Optimizing Nuclear Medicine Imaging Workflow for Kidney Examination Assessment

Taichung Tzu Chi Hospital

Tien-Hsin Chang (Taiwan)

O-05 Evaluation of Short Acquisition Image with Automatic Quantification Package using Multi-CZT Scanner

Division of Radiology, Department of Medical Technology, Osaka University Hospital

Kaede Tsuzura (Japan)

14:20 - 14:40 Tea Break

14:40 - 15;30 Oral session – 2

Chairpersons; Daisuke Hasegawa (Japan)
Jun-Young Park (Korea)

O-06 A Discussion on Image Analysis in ^{18}F-Florbetaben PET/CT

Severance Hospital
Yong-hoon CHOI (Korea)

O-07 Comparison of Radiation Exposure for Healthcare Personnel during PETCT Scans Using Automated and manual Procedure

Department of Nuclear Medicine, Landseed International Hospital
Hui-Ping Chen (Taiwan)

O-08 Discussion the deviation of effective renal plasma flow analysis between different technologist

Tri-Service General Hospital
Hsiu-Shan Wang (Taiwan)

O-09 Monte Carlo Simulation Study on Whole-body SPECT with TlBr Semiconductor Detector

Department of Radiological, Technology, Faculty of Medical Technology, Teikyo University
Sousei Kawasaki (Japan)

O-10 Comparison of results based on storing samples for Plasma Renin Activity (PRA) test

Asan Medical Center
Jin Joo Choe (Korea)

15:30 - 16:10 Poster session (free discussion)

P-01 Implementation of Entrustable Professional Activities (EPAs): Experiences at NM field in Taiwan

Taichung Veterans General Hospital
Jui-Yin Kung (Taiwan)

P-02 How a Laboratory Complaint Led to the Discovery of a Hidden Drug Effect on Pituitary Hormones

Cathay General Hospital
Ya-Chieh Fang (Taiwan)

P-03 Influence of the distance between the radiation source and the detector when the GFR test

En Chu Kong Hospital
Li-Ru Liu (Taiwan)

P-04 Radioimmunoassay Reagents Survey and Evaluation

National Cancer Center
Ji Na Kim (Korea)

P-05 Effect of hemolysis sample on the result of nuclear medicine blood test

Ajou University Medical Center
Jin Tae Kim (Korea)

16:10 - 16:20 Information of next ASNMT meeting

16:20 - 16:40 Closing ceremony and ASNMT flag passing ceremony

Greeting of the next congress chair
Flag passing Japan to Korea

18:00 - 20:00 Presidential Reception at Japanese restaurant

Oral Session - 1

13：30 – 14：20

O-01

Korea

Broad quantification calibration of various isotopes for quantitative analysis and the assessment of their SUVs in a SPECT/CT scanner

Hyunsoo Ko, Jaemin Choi, Soonki Park

Asan Medical Center

Purpose : Broad Quantification Calibration(B.Q.C) is used for the quantitative analysis of the Standard Uptake Value(SUV) in a SPECT/CT scanner. B.Q.C was performed for Tc-99m, I-123, I-131 and Lu-177. The purpose of this study was to lay the groundwork for the quantitative analysis with various isotopes in a SPECT/CT scanner. Materials and Methods : The B.Q.C procedure has two steps: the first is point source sensitivity cal. and the second is volume sensitivity cal. to calculate the volume sensitivity factor(VSF) using a cylinder phantom. The SPSS software was used to perform Mann-Whitney test to analyze the difference in the SUVs obtained using the Intevo 16 and Intevo Bold. Results :The SUVs obtained using the Intevo 16 and Intevo Bold showed no statistically significant($p>0.05$). Conclusion : In the past, only qualitative analysis was possible using a gamma camera. On the other hand, it is possible to not only acquire anatomic localization, 3D tomography, but also achieve the quantitative analysis of the SUVs in SPECT/CT scanners. We could lay the groundwork for quantitative analysis of various isotopes, such as Tc-99m, I-123, I-131 and Lu-177 by B.Q.C. Moreover, periodic calibration is necessary to maintain the precision of the quantitative evaluation. Thus, we can perform the quantitative analysis of isotopes in follow-up scans obtained using the SPECT/CT examinations and evaluate therapeutic responses in theranostics.

Keywords Broad Quantification Calibration, Quantitative Analysis, SUV, SPECT/CT

O-02

Japan

The usefulness of acquire during step method compared to step-and-shoot and continuous method

Kotaro Tokunaga, Daisuke Hasegawa, Takuma Minoda, Syoki Nagasako, Manato Fujiwara, Akari Ouchi, Moe Maura, Hiroyuki Tsushima

Kobe Tokiwa University, Faculty of Health Science, Department of Radiological Technology

Purpose

The SIEMENS SPECT machine has the acquire during step (ADS) acquisition mode.

ADS is the acquisition method similar to conventional step-and-shoot mode and the projection data obtained by the detector-to-detector movement is added to the next projection data. The aim of this study was to evaluate the usefulness of Acquire During Method (ADS) compared to step-and-shoot (SS) and continuous (Cont) method.

Methods

JSP phantom was acquired on SPECT/CT systems (Symbia Intevo 16) to evaluate image spatial resolution. Acquisition mode was set to SS, Cont and ADS, and sampling angles were set to 2, 3, 4, 5, and 6. SPECT images were reconstructed using filtered back projection (FBP), and ordered subsets conjugated gradient minimization (OSCGM). The profile curve was drawn on line source and two types of full width at half maximum, FWHMtang and FWHMrad, were calculated.

Results

The FWHMtang of SS, Cont and ADS in FBP images were 11.78±0.16, 11.74±0.13 and 12.12±0.25 at 2 degrees of sampling, respectively, and 11.97±0.40, 13.04±0.38 and 12.24±0.73 at 6 degrees of sampling, respectively. FWHMtang of ADS images showed better spatial resolution than Cont. For OSCGM images, FWHM did not show a constant trend due to differences in sampling angle and acquisition method.

Conclusion

It was suggested that the ADS method does not degrade compared to the SS and cont methods in terms of spatial resolution, and can be used in the same way as other acquisition methods.

Keywords SPECT, acquisition method, FBP, OSCGM, FWHM

O-03

Taiwan

A Rare Finding of Primary Aortoduodenal Fistula by Gastrointestinal Bleeding SPECT/CT Scan

Chun-Liang Kuo

Department of Nuclear Medicine, Hsinchu Mackay Memorial Hospital, Hsinchu, Taiwan

A year ago, a 67-year-old man was hospitalized after suffering from coffee ground vomiting, tarry stool passage, and abdominal colic pain. Following this, he was recurrently admitted due to gastrointestinal (GI) active bleeding and hypovolemic shock. Intermittent and spontaneously stop bleeder was too difficult to find after multiple GI endoscopy, angiography, computed tomography angiography (CTA), capsule endoscopy, and ^{99m}Tc-red blood cell (RBC) scan. He received supportive treatment every time and was discharged without signs of rebleeding. Therefore, we suggested that he be admitted longer to find the bleeder. Finally, CTA was performed soon after the bleeding, and a small aortic aneurysm was found at the renal level, which seemed to be related to the duodenum. A ^{99m}Tc-RBC single-photon emission computed tomography/computed tomography (SPECT/CT) scan was arranged when the patient had bleeding symptoms and showed an active bleeder at the duodenum level. Consequently, according to clinical symptoms (intermittent massive GI bleeding with hypovolemia shock, dizziness, dark red stool passage, bloody vomitus), abdominal CTA, and ^{99m}Tc-RBC SPECT/CT scan, duodenal bleeding may be caused by the small aneurysm, and primary aortoduodenal fistula was highly suspected. Afterwards, he underwent duodenum excision and duodenum-jejunum anastomosis. A 7-mm saccular aneurysm arising from the anterior wall of the abdominal aorta near the left renal artery was found during surgery; thus, percutaneous intravascular stenting of the abdominal aorta was arranged. Accordingly, the symptoms of GI bleeding improved postoperatively.

Keywords Gastrointestinal active bleeding; Computed tomography angiography; 99mTc-red blood cell scan; Single-photon emission computed tomography/Computed tomography, Primary aortoduodenal fistula

O-04

Taiwan

Optimizing Nuclear Medicine Imaging Workflow for Kidney Examination Assessment

Tien-Hsin Chang

Taichung Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taichung, Taiwan

Background: Nuclear medicine's role in assessing kidney function, particularly in compromised states, is pivotal. It aids clinicians in discerning proper kidney functionality and drug metabolism rates, thereby serving as a cornerstone for diagnosing kidney ailments, evaluating damage extents, and monitoring function shifts.

Methods and Results: An exploration into effective renal plasma flow (ERPF) encompassed 76 patients (54% male, 46% female). Drug dosages pre and post-injection were gauged. Collimator sensitivity (CS) quantification to ascertain counting efficiency ensued. A median CS of 2053 emerged. The GE Xeleris 3.0 workstation facilitated data analysis, with consistent technician-delineated regions of interest (ROI). ERPF computation methods were juxtaposed: original versus Collimator adjusted.

Via IBM SPSS Statistics, paired samples t-tests and Bland-Altman analyses transpired. A substantial correlation (0.996) and insignificance ($p = 0.000$) denoted agreement between the two methods. Bland-Altman plot analysis affirmed the accord, signifying robust consistency.

Discussion: Traditional nuclear medicine departments grapple with demanding timetables. Incorporating the revised collimator technique, efficiency ameliorates, invigorating workflow. The revised collimator method offers clinical merits: streamlined and efficient examinations, invaluable for bustling high-volume departments.

Keywords ERPF, collimator sensitivity, LEHR

O-05

Japan

Evaluation of Short Acquisition Image with Automatic Quantification Package using Multi-CZT Scanner

Kaede Tsuzura[1)], Takashi Kamiya[1)], Koushi Kotani[1)], Hidetaka Sasaki[1)], Hajime Ichikawa[2)],

[1)] Division of Radiology, Department of Medical Technology, Osaka University Hospital

[2)] Department of Radiology, Toyohashi Municipal Hospital

Introduction:

VERITON-CT (Spectrum Dynamics Medical), a Multi-CZT detector mounted gamma camera, has been reported to have higher sensitivity than Anger-type camera equipped NaI detector. Several reports were analyzed by automatic quantification package for bone SPECT, (Hone Graph: Bone SPECT Conference). In this study, a bone-specific phantom and Hone Graph software were used to clarify detectability for short acquisition.

Methods:

In a SIM2 bone phantom (Taisei Medical) simulating the thorax region, was filled with ^{99m}Tc solution of 50 kBq/mL in normal bone and 300 kBq/mL in bone metastases (28, 22, 17, 13 mm sphere). Acquisition time was 2 and 10 minutes/bed. SPECT images were reconstructed by iterative method (subsets; 8, iteration; 2-14, matrix; 256×256, pixel size; 2.46 mm, FWHM of Gaussian filter (GF); 5, 10 mm). By using Hone Graph software, SPECT images were analyzed about detectability score (DS) evaluated by both percent of detectability equivalence volume (%DEV) and contrast noise ratio (CNR).

Results:

With optimal parameters of iterations; 8, subsets; 8 and GF; 10 mm for 2 and 10 minutes/bed acquisition, %DEVs were 31.25 and 44.73 (> 14.21), and CNRs were 11.46 and 12.71 (> 11.36), respectively. Mentioned above, DSs of 17 mm sphere received an excellent evaluation for 2 and 10 minutes/bed acquisition.

Conclusion:

Based on Hone Graph software, bone SPECT images acquired in 2 minutes/bed by VERITON-CT were verified the feasibility.

Keywords VERITON-CT, Hone Graph, SPECT/CT, bone scintigraphy, CZT

Oral Session - 2

14：40 – 15：30

O-06

Korea

A Discussion on Image Analysis in ^{18}F-Florbetaben PET / CT

Yong-Hoon Choi, Jae-Sam Kim, Young-Kag Bahn, Han-Sang Lim

Department of Nuclear Medicine, Severance Hospital, Yonsei University Health System, Seoul, Korea

[Purpose] ^{18}F-Florbetaben (FBB) Readings are made by visually comparing the signal strengths of gray matter and white matter. We intend to evaluate the usefulness of image analysis by comparing quantified image analysis with readout.

[Materials and Methods] Based on the reading results, 100 patients were divided into a negative scan and a positive scan, and 300 MBq of FBB was injected, and images were taken 90 minutes later for 20 minutes. The equipment was a Discovery 600 (GE Healthcare, MI, USA). Four regions of interest were lateral temporal lobes, frontal lobes, posterior cingulate & precuneus, and parietal lobes. For image analysis, SUVratio (SUVr) was calculated by dividing each SUVmean by the cerebellum, and the average SUVr in the entire area was performed. Statistical analysis analyzed ROC Curve, Independent sample t-test, and Kappa test.

[Results] The average SUVr cutoff in the entire area was 1.23. Concordance with the read results using cutoff was 95% for negative and 92% for positive. As a result of the t-test, there was a statistically significant difference between the groups ($P < 0.05$), and the Kappa statistical result showed a high degree of agreement with 0.867 ($P < 0.05$).

[Conclusion] The results of image analysis were statistically significant and showed a high degree of agreement with the reading results. If quantified FBB image analysis is used as an auxiliary indicator, it is thought to be helpful in reading.

Keywords SUVr, Cutoff

O-07

Taiwan

Comparison of Radiation Exposure for Healthcare Personnel during PETCT Scans Using Automated and manual Procedure

Hui-Ping Chen, Tzu-Hsuan Wu, Sheng-Pin Changlai

Department of Nuclear Medicine, Landseed International Hospital

Method: The staff wore portable surveymetter on their wrist and chest to simulate extremity and trunk dose rates during injections. Dose rates were separately collected from 36 patients for both automated and manual injections of ^{18}F-FDG. The highest values recorded during injection to conservatively calculate dose received for ^{18}F-FDG injection using the automated and manual injection methods. During data analysis, all ^{18}F-FDG activities were normalized to standard activity (10 mCi) for analysis and comparison. Results: Used of the automated injection system, The staff received an average dose rate of (1.86±1.16/1.47±0.82) μSv/h at extremities and trunk, with an average injection time of (147±4) seconds. The calculated average dose received by Staff for each ^{18}F-FDG injection was (76±46/60±32) nSv at the extremities and trunk. In contrast, when using manual injection, The staff received an average dose rate of (567.0±230.1/113.23±70.66)) μSv/h at extremities and trunk, with an average injection time of (64±9) seconds. The calculated average dose received by staff for each 18F-FDG injection was (1.02±0.45)×104/(2.01±1.27)×103 nSv at the extremities and trunk. Based on these results, it can be concluded that extremity dose during automated injection was 1/130 (0.77%) of that during manual injection, and trunk dose was 1/34 (3.0%) of that during manual injection. Conclusion: Using an automated injection system for drug administration significantly reduces the dose received.

Keywords 18F-FDG

O-08

Taiwan

Discussion the deviation of effective renal plasma flow analysis between different technologist

Hsiu-Shan Wang, Tzai-Yang Chen, En-Shih Chen, Tien-Juei Hsu, Kuan-Wen Shih, I-Feng Cheng, Cheng-Yi Cheng

Department of Nuclear Medicine of Tri-Service General Hospital, Taipei, Taiwan

Purpose:

The main purpose of using nuclear medicine to detect kidney disease is to understand the extent to which kidney function is affected by disease. The most important physiological tests include renal blood flow, effective renal plasma flow (ERPF), and renal glomerulus. Filtration rate (GFR) and renal excretion function, etc. These methods were affected by the nuclear medicine dose or the location and size of ROI (region of interest). The purpose of this study is to discuss the deviation of ERPF analysis values between different technologist, and then to establish a consistent analysis method.

Material and methods:

Select about 60 cases of kidney function examinations between 2020 to 2021, de-identify the original images and replace them with numbers, and post-process the images respectively by 5 radiologists. After analyzing the EFPF values, the ten patients with the largest coefficient of variation were found. All the radiologists used the image of ERPF which was the closest to the average as the standard to analysis again.

Results:

The ERPF coefficient of variation of five radiologists analysist were between 3%~53%. The largest ten ERPF coefficient of variation values were between 32%~53%. After analysis again, the coefficient of variation had significantly decreased.

Keywords effective renal plasma flow, ERPF

O-09

Japan

Monte Carlo Simulation Study on Whole-body SPECT with TlBr Semiconductor Detector

Sousei Kawasaki[1)], Toshimune Ito[2)], Keitaro Hitomi[3)], Michael Ljungberg[4)], Hirotatsu Tsuchikame[5)], Yuya Sekikawa[6)]

[1)]Department of Radiological, Technology, Faculty of Medical Technology, Teikyo University
[2)]Department of Radiological, Technology, Graduate School of Health Sciences, Teikyo University
[3)]Department of Quantum Science and Energy Engineering, Graduate School of Engineering, Tohoku University
[4)]Medical Radiation Physics, Lund University
[5)]Department of Radiology, Saiseikai Yokohamashi Tobu Hospital
[6)]Department of Radiological Technology, Graduate School of Health Sciences, Teikyo University Fukuoka Campus

Objective:
The development of Whole-body SPECT system with TlBr semiconductor (T-SPECT), celebrated for high sensitivity and energy resolution, necessitated a Monte Carlo simulation validation. We compared prototype detector measurements with T-SPECT simulations and ^{99m}Tc cerebral blood flow imaging. Further, we evaluated clinical suitability against Whole-body SPECT system with CZT semiconductor (C-SPECT) measurements.
Methods:
Data were obtained using a 4-pixel detector with a ^{57}Co source and T-SPECT simulations via SIMIND, under matching conditions. Their Energy Spectrum verified each's consistency. A 3D-Brain phantom was infused with ^{99m}Tc, and varied-duration data were collected using C-SPECT. Identical conditions were mirrored in T-SPECT simulations. From these, we computed Count profile, PSNR, SSIM, and PSD.
Results:
The T-SPECT showcased high SIMIND reproducibility. The 3D-Brain phantom revealed that T-SPECT had thrice the collection count of C-SPECT. T-SPECT displayed stable PSNR and SSIM across collection times. T-SPECT's PSD outperformed C-SPECT in all frequency domains.

Conclusion:
T-SPECT, relative to C-SPECT, offers heightened data sensitivity. It demonstrated fewer noise fluctuations over collection spans and a sustained likeness to the base image, underscoring its clinical prowess.

Keywords TlBr semiconductor, CZT semiconductor, Monte Carlo Simulation, SIMIND, Whole-body SPECT system

O-10

Korea

Comparison of results based on storing samples for Plasma Renin Activity (PRA) test

Jin Joo Choe

Asan Medical Center

The sample storage conditions are important in matters that are easily denatured in vitro. We has consistently found a difference between the initial and re-test results in PRA test. We analyzed the differences in results according to the sample storage.

The 43 PRA samples were measured using the RIA and were re-tested with different storage conditions. The first group was tested by freezing the plasma-separated samples and the second group was tested with refrigerated EDTA sample. Based on the initial results, the results of each group were compared. The re-test result of the first group showed a lower correlation than the second group.

When calculating the percentage based on the initial test results, the average percentage of the first group is 404.9%, and R^2=0.8501, and the second group was 133.8%, R^2=0.9966.

In addition, 13 PRA samples were tested to verify the effect of thawing temperature. Each group was thawed at room and refrigrated temperature. There was no significant difference in the first test. When the second test was conducted after freezing again, both groups increased.

A comparative analysis of retesting according to differences in sample storage showed a higher correlation the refrigerated EDTA plasma. Repeated freezing and thawing of samples, regardless of thawing temperature, has been shown to affect results. Therefore, retesting of PRA should be re-collected plasma from the original EDTA plasma to increase reproducibility.

Keywords Plasma renin activity, Radioimmunoassay, Storage temperature

Poster Session

15：30 – 16：10

P-01

Taiwan

Implementation of Entrustable Professional Activities (EPAs): Experiences at NM field in Taiwan

Jui-Yin Kung[1,2], Hui-Ping Chen[3], Kao Yin Tu[4], Yu-Ching Hsu[5], Yi-Hsun Chen[6], Wan-Jo Chang[7], Chen-Jung Chang[2], Shih-Chuan Tsai[1,2]

[1]Department of Nuclear Medicine, Taichung Veterans General Hospital
[2]Department of Medical Imaging and Radiological Science, Central Taiwan University of Science and Technology
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[4]Department of Nuclear Medicine, Mackay Memorial Hospital
[5]Department of Nuclear Medicine, Dalin Tzu Chi Hospital
[6]Department of Nuclear Medicine, Ditmanson Medical Foundation Chia-yi Christian Hospital
[7]Department of Nuclear Medicine, National Taiwan University Cancer Center

The Taiwan Association of Medical Radiation Technologists (TAMRT) has embraced Competency-Based Medical Education (CBME) in recent years., TAMRT convened national experts to establish five core competencies in 2014. From 2017, Entrustable Professional Activities (EPAs) and Milestones were introduced into national clinical instructor training programs. The nuclear medicine team initiated the development of EPAs for "PET" and "SPECT" examinations in 2020.This year, we're planning to complete two additional EPAs: "NM Radiopharmaceuticals and QA" and "Isotope Therapy." An expert panel was responsible for drafting the OPAs(Observable Practice Activity) and observation dimensions for each EPA. A nationwide survey in March garnered 60 responses, and on June 10, a national expert consensus meeting was held with 43 experts in attendance. The consensus process involved literature review, consensus education training, and the use of the Nominal Group Technique (NGT) for consensus on task names and observation dimensions. After 42 group votes, 18 task names remained unchanged, 9 observation dimension names were modified, 8 observation dimensions were merged, and 7 new cases were added or withdrawn. In addition to the development of new EPAs, TAMRT has initiated a two-year pilot CBME program. The ultimate goal is to establish a solid foundation for CBME, emphasizing the cultivation of practical competencies in medical radiation technology.

Keywords competency-based medical education (CBME), Entrustable Professional Activities (EPAs), Nominal Group Technique (NGT), nuclear medicine

P-02

Taiwan

How a Laboratory Complaint Led to the Discovery of a Hidden Drug Effect on Pituitary Hormones

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We encountered a puzzling case of a post-total thyroidectomy patient who had been on a suppressive dose of thyroxine for decades and was found to have progressively elevated thyroid-stimulating hormone (TSH) from the suppressive range to the hypothyroid range, despite taking an adequate dose of thyroxine correctly. The clinician initially suspected a laboratory error and requested a retest. We verified the accuracy and precision of our TSH assay and found no issues. We suggested a thorough medication review during our discussion with the clinician, which inspired the clinician to focus on the timeline of the patient's TSH elevation and concurrent medication. It turned out that a dopamine antagonist, domperidone, used for gastroesophageal reflux disease (GERD), was closely related to the patient's hormonal profile change. Additional hormone determination, including prolactin, also agreed with the timeline of TSH elevation.

We successfully solved a clinical dilemma by investigating a laboratory complaint and collaborating with the clinician. This drug effect is often overlooked and can lead to misdiagnosis or inappropriate treatment. Clinicians should monitor pituitary hormones in patients who are on dopamine antagonist therapy. Laboratories should have a systematic process for dealing with complaints and discussing results with clinicians.

Keywords Laboratory Complaint, thyroidectomy, TSH elevation, dopamine antagonist, prolactin

P-03

Taiwan

Influence of the distance between the radiation source and the detector when the GFR test

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GFR is metabolized by the kidneys and excreted with urine. Nuclear medicine dynamic renal/urological function measurement (GFR with Gate,s Method) mainly evaluates the function of the kidney .

GFR is mainly used for quantitative analysis by measuring the radioactive tracer full needle, empty needle, the uptake of the drug by the left and right kidneys, and the residual dose of the drug at the injection site.

Pilt up effec occurs in any detector used by SPECT. Two potential effects can occur:

1. Both pulses are counted as one (count lost)
2. The final pulse height detected is considered higher than either pulse (i.e. the deviation in photon energy)

if the radioactive tracer is overestimated, it will cause an overestimation of the patient's GFR.the pill up effect should be prevented from happening.

The main cause of the pilt up effect is that the activity is too high (high counts), and a certain radiation dose must be maintained in response to imaging requirements. Another method is to increase the distance between the radiotracer and the detector.

Keywords GFR pilt up effect

P-04

Korea

Radioimmunoassay Reagents Survey and Evaluation

Kim, Ji Na, Jae Seok An, Jeon, Young Woo, Yoon, Sang Hyuk, Kim, Yoon Cheol

National Cancer Center

When a new diagnostic test is introduced or reagent changes are made in a laboratory, a comprehensive and careful evaluation of the diagnostic procedure and reagents as well as consideration of the cost of purchase and maintenance are necessary. We share our experience in performing a comparative evaluation of radioimmunoassay reagents for all diagnostic procedures used competitive bidding.

Twenty test procedures were evaluated, excluding consignment tests. Each reagent was examined for the test method, incubation time and sample volume needed for the test. The primary selection was made according to whether it was available in our laboratory under the above factors. The secondary selected factors were based on the comparative evaluation which is consisted to the data correlation test, sensitivity measurement, recovery rate measurement and dilution test.

The most problematic factors during the comparative evaluation was sample securing, sample securing period and sample volume. Lack of dilution solution or standard zero material for sensitivity measurement or dilution tests was an addition limitation. Comparative evaluation for test reagent changes require sufficient preparation time to secure a large number and volume of samples. In addition, setting the total sample volume and reagent volume range required for comparative evaluation based on a single test will reduce the burden of sample securing and test implementation for each comparative evaluation.

Keywords Primary selection, Secondary selection, Evaluation

P-05

Korea

The Effect of hemolysis sample on the result of nuclear medicine blood test

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Purpose, In many item of nuclear medicine blood tests, Hemolysis samples are defined as inappropriate sample and are recommaended not to be used for blood test. So, the lab requires re-blood collection in the blood collection room and is performing the test using the re-collected normal sample. However, we have not studied the effect of hemolysis sample on nuclear medicine, so we have decide to examine them in this study.

Material and Methods, The kit manuals of 23 test items were reviewed to confirm whether hemolysis samples were used. The subjects were 22 general applicants(male : 6, female : 13) and the samples were collected by each two SST Tube. One was obtained by centrifugation normally, the other was obtained hemolysis sample. SPSS19 program was used for staistical comparison of the test resuls.

Results, There was no significant difference between normal serum and hemolsis serum in 21 of 23 test items, but the results of insulin and C-peptide were significantly lower($p<0.05$).

Conclusion, Biochemical and gematological tests have a great effect on the results of the hemolysis samples, but immunological tests are relatively low. Similarly, nuclear medicine tests using ummunological methods represented that hemolysis did not affect the test results except for some tests. Therefore, it is thought that the demand for re-collection due to hemolysis will be reduced in the laboratory, which will help improve the work process of the laboratory.

Keywords Hemolysis, insulin, C-peptide

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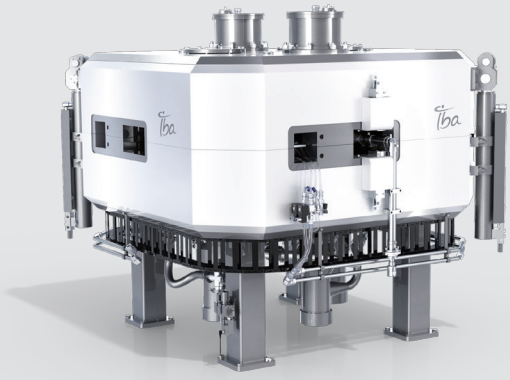

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