



W A R M T H

WORLD ASSOCIATION OF RADIOPHARMACEUTICAL & MOLECULAR THERAPY

Registration No: S/84634 • Registered under the Societies Registration Act of 1860 in New Delhi, India

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**4th International Conference on Radiopharmaceutical Therapy (ICRT 2011)
In Conjunction with 10th AGM of Asian Regional Cooperative Council for Nuclear Medicine (ARCCNM)
28 Nov – 2 Dec 2011, New World Hotel, Ho Chi Minh City, Vietnam**

POSTER PRESENTATION

Dear Dr Aisyah Elliyanti,

Thank you for taking time to submit your abstract for the joint meeting of WARMTH's 4th International Conference on Radiopharmaceutical Therapy 2011 and the 10th AGM of ARCCNM.

We are pleased to inform you that your abstract, "**Serum Thyroglobulin Level Alone is not Enough to Monitor Persistence or Recurrence Disease of Differentiated Thyroid Carcinoma**" has been selected for **Poster Presentation** at the Joint Congress.

(A) POSTER PRESENTATION

You will be provided with a poster board to mount your poster. Please note exact the maximum permitted dimensions for your poster is as follow:

**Poster Size - AO: 1189mm (height) by 841mm (width) or
46.81 inches (height) by 33.11 inches (width)**

Posters **MUST** be in Portrait format and should be put up before **1000hrs on Tuesday, 29 November 2011**. Your Poster Number will be indicated on the Poster Boards. Kindly put up your poster(s) to the Poster Number that is allocated to you. Please note that the width of the poster board may not be exceeded under any circumstances. Velcro adhesive / Poster Board Pins will be provided at the conference venue to mount posters on the boards.

(B) JUDGING & RESULTS

All Poster Presentations will be judged by a panel of judges and three posters will be chosen for First, Second and Third Prizes. You are required to standby at your poster during the Tea Break Sessions to answer the questions posed by the judges and other participants of the conference.

Results of the judging will be announced during the Closing Ceremony at the New World Hotel Conference Hall on Thursday, 1 December 2011.

All presenters are **strongly encouraged** to attend the Closing Ceremony.

We look forward to your participation in the congress and request you to kindly send a confirmation note at your earliest convenience.

Regards,
Ee Sia
International Conference on Radiopharmaceutical Therapy Secretariat

4th International Conference on Radiopharmaceutical Therapy (ICRT 2011)

In Conjunction with 10th AGM of Asian Regional Cooperative Council for Nuclear Medicine (ARCCNM)

28 Nov – 2 Dec 2011

New World Saigon Hotel, Ho Chi Minh City, Vietnam

DAY 1: MONDAY, 28 NOVEMBER 2011

0800 – 1600	REGISTRATION	Ben Thanh Hall Foyer, Level 1
0900 – 1700	NATIONAL COORDINATORS' MEETING OF AN IAEA REGIONAL TECHNICAL COOPERATION PROJECT	To Be Advised
1200 – 1300	LUNCH / TRADE EXHIBITION	
1300 – 1445	PRE-CONGRESS NUCLEAR CARDIOLOGY SYMPOSIUM: SESSION I	Ben Thanh Hall 1 & 2, Level 1
	Session Chairpersons: 1. Prof Vo Thanh Nhan, Vietnam 2. Prof Henry Bom, CNU Medical School, Korea	
1300 – 1330 (O-6)	Myocardial Perfusion Imaging as a Gatekeeper for Coronary Angiography Dr Carlos D Libhaber, Nuclear Cardiology, University of the Witwaterstrand, Johannesburg, South Africa	
1330 – 1400 (O-2)	Clinical Roles of Myocardial Viability Assessment Prof Zuo-Xiang He, Nuclear Medicine, Fu Wai Hospital & Cardiovascular Institute, Beijing, China	
1400 – 1430 (O-3)	Nuclear Medicine in Heart Failure Dr R Giubbini, Chair of Nuclear Medicine, University of Brescia, Italy (IAEA Expert)	
1430 – 1450	ORAL PRESENTATIONS	
1430 – 1440 (O-4)	A Custom-Built Software Tool for Data Storage and Analysis of Acquisition and Processing Parameters For Tc-99m and Tl-201 MPI with Different Imaging Systems Dr Charalambos Yiannakkaras, Medical Physics, Nicosia General Hospital, Nicosia, Cyprus	
1440 – 1450 (O-5)	Construction of a Dynamic Cardiac Phantom to Optimize the Diagnostic Value in SPECT Myocardial Perfusion Imaging Dr Yiannis Parpottas, General Department (Physics-Math), Frederick University, Nicosia, Cyprus	
1450 – 1500	COFFEE / TEA / TRADE EXHIBITION	Ben Thanh Hall Foyer Pre-Function Area, Level 1
1500 – 1700	PRE-CONGRESS NUCLEAR CARDIOLOGY SYMPOSIUM: SESSION II	Ben Thanh Hall 1 & 2, Level 1
	Session Chairpersons: 1. Dr Bùi Diệu Hằng, Vietnam 2. Dr Vikram Lele, Nuclear Medicine & PET-CT, Jaslok Hospital & Research Centre, Mumbai, India	
1500 – 1530 (O-1)	Direct Myocardial Ischemia Imaging Prof Zuo-Xiang He, Nuclear Medicine, Fu Wai Hospital & Cardiovascular Institute, Beijing, China	
1530 – 1600 (O-7)	Multimodality Assessment of Myocardial Ischemia and Viability – Part 1 (CT/MRI/Echo) Dr Felix Keng, Nuclear Cardiology, National Heart Centre, Singapore	
1600 – 1630 (O-8)	Multimodality Assessment of Myocardial Ischemia and Viability – Part 2 (SPECT & PET) Prof Henry Bom, CNU Medical School, Korea	
1630 – 1700	Discussions	
1730 – 1830	WARMTH GOVERNING BODY MEETING (GOVERNING BODY MEMBERS ONLY)	
1930 – 2200	WELCOME DINNER	Grand Mekong Ballroom, Level 1
2200	END OF DAY 1	

4th International Conference on Radiopharmaceutical Therapy (ICRT 2011)

In Conjunction with 10th AGM of Asian Regional Cooperative Council for Nuclear Medicine (ARCCNM)

28 Nov – 2 Dec 2011

New World Saigon Hotel, Ho Chi Minh City, Vietnam

DAY 2: TUESDAY, 29 NOVEMBER 2011

0730 – 1600	REGISTRATION	Ben Thanh Hall Foyer, Level 1
0800 – 0815	OPENING REMARKS	
0815 – 0955	SCIENTIFIC SESSION I: THYROID I	Ben Thanh Hall, Level 1
	Session Chairpersons: 1. Prof Adil Al-Nahhas, Nuclear Medicine, Imperial College, London, United Kingdom 2. Dr Tran Van Thiep, Vietnam	
0815 – 0840 (O-9)	Radioiodine Therapy of Thyroid Cancer at Seoul National University (SNU) Hospital Prof June-Key Chung, Nuclear Medicine, Seoul National University Hospital, Seoul, Korea	
0840 – 0905 (O-10)	Thyroid Cancer and the Benefit of rhTSH in Treatment Dr Knut Liepe, Nuklearmedizin, Klinikum Kassel, Germany	
0905 – 0930 (O-11)	Thyroid Cancer: Anything New? Prof Irene Virgolini, Nuclear Medicine & PET, Medical University of Innsbruck, Innsbruck, Austria	
0930 – 0955 (O-12)	Eurasian Federation of Oncology: Ventures for Collaboration with WARMTH Dr Somasundaram Subramanian, Director, Eurasian Federation of Oncology, Surgeon (Head & Neck, Melanoma), Department of Biotherapy, N. N. Blokhin Russian Cancer Research Center, Moscow, Russia	
0955 – 1015	ORAL PRESENTATIONS	Ben Thanh Hall, Level 1
0955 – 1005 (O-13)	Effect of Short Term Metformin Therapy Associated with Levothyroxin Dose Decrement on TSH and Thyroid Hormone Levels in Patients with Thyroid Cancer Dr Seyed Rasoul Zakavi, Nuclear Medicine Research Center, Emam Reza Hospital / Mashhad University of Medical Sciences, Mashhad, Iran	
1005 – 1015 (O-14)	Breast Cancer and Autoimmune Thyroiditis: Does the Sodium Iodide Symporter Play a Role? Dr Jefferson Pagsisihan, Nuclear Medicine, St. Lukes Hospital, Quezon City, Philippines	
1015 – 1100	COFFEE / TEA / TRADE EXHIBITION	Ben Thanh Hall Foyer Pre-Function Area, Level 1
1015 – 1100	POSTER PRESENTATIONS: THYROID DISEASES	Ben Thanh Hall Foyer Pre-Function Area, Level 1
	Session Coordinators: 1. Dr Ngo Thuy Trang, MD, The Nuclear Medicine and Oncology Center, Hanoi, Vietnam 2. Dr Duong Duc Binh, Nuclear Medicine, Danang Hospital, Danang City, Vietnam	
(P-1)	Is 99Tcm Thyroid Planar Imaging Suitable for Evaluating Residue Thyroid after Thyroidectomy: Comparing with I131 Scan after Radioiodine Therapy Dr Shuqi Wu, Nuclear Medicine, Xinhua Hospital, Shanghai Jiaotong University, Shanghai, China	
(P-2)	Tc-99m MIBI Scintigraphy For Post-Therapy Differentiated Thyroid Carcinoma Patients Follow Up Dr Ryan Yudistiro, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia	
(P-3)	Effect of I-131 Large Dose Thyroid Carcinoma Therapy on Sub Mandibular & Parotid Gland. Quantitative Analysis of Salivary Excretion Pre and Post Therapy Dr Om Prakash Sinha, Nuclear Medicine, Gujrat Cancer & Research Institute, Ahmedabad, India	
(P-4)	Serum Thyroglobulin Level Alone is not Enough to Monitor Persistence or Recurrence Disease of Differentiated Thyroid Carcinoma Dr Aisyah Elliyanti, Radiology / Nuclear Medicine, Dr M Djamil Hospital / Faculty of Medicine Andalas University, Padang, Indonesia	
(P-5)	Pattern of Metastases in Well Differentiated Thyroid Microcarcinoma Dr Fithriany Syamsuddin, Nuclear Medicine, Dr Hasan Sadikin Hospital / Padjajaran University, Bandung, Indonesia	
(P-6)	Outcome of Pregnancy after Radioactive Iodine Treatment Dr Dessie Yulistiawaty, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia	
(P-7)	Radioactive Iodine Ablation in Young Adults With Differentiated Thyroid Carcinoma Dr Yustia Tuti Jelani, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia	

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DAY 2: TUESDAY, 29 NOVEMBER 2011 (CONT'D)

(P-8)	Applications of Nuclear Medicine Techniques in Diagnosis and Treatment of Differentiated Thyroid Carcinoma: Results in Vietnam Dr Phan Sy An An, Nuclear Medicine & Oncology, Bach Mai, Hanoi, Vietnam
(P-9)	Differentiated Thyroid Cancer Ablation: 5 Years Experience in Limassol General Hospital Dr Ourania Demetriadou, Nuclear Medicine, Limassol General Hospital, Limassol, Cyprus
(P-10)	Efficiency Predictive Factors of Radio-Iodine Ablation in Differentiated Thyroid Cancer Dr Chatti Kaouthar, Nuclear Medicine, Sahloul University Hospital, Sousse, Tunisia
(P-11)	Lymph Node Metastasis of Differentiated Thyroid Cancer More Frequently Develops into Non-Iodine-Avid Than Lung or Bone Metastasis Dr Fang Feng, Nuclear Medicine, Xinhua Hospital, Shanghai, China
(P-12)	The Outcome of 23 Patients Differentiated Thyroid Carcinoma with Lung Metastase After Radiothyroablation with Iodine-131 Dr Gani Gunawan, Nuclear Medicine, Hasan Sadikin General Hospital, Bandung, Indonesia
(P-13)	Head Mass with Radioactivity Uptake in Patient with Thyroid Carcinoma Dr Nopriwan Agamawan Salam, Nuclear Medicine, Hasan Sadikin Hospital, Bandung, Indonesia
(P-14)	Recent Status of Radioiodine Therapy for Patients with Primary Hyperthyroidism and Differentiated Thyroid Carcinoma in Bangladesh Dr Shahana Afroz, Biological Science, Bangladesh Atomic Energy Commission, Dhaka, Bangladesh
(P-15)	Role of Ultrasonography (USG), Radionuclide Scan (RNS) and Fine Needle Aspiration Cytology (FNAC) in Thediagnosis of Malignancy in Solitary Thyroid Nodule Dr Akhter Nahid, Nuclear Medicine, Centre for Nuclear Medicine & Ultrasound, Dinajpur, Dhaka, Bangladesh
(P-16)	Unusual Metastasis in Papillary Thyroid Carcinoma: A Case Report Dr Hapsari Indrawati, Nuclear Medicine, Hasan Sadikin Hospital, Bandung, Indonesia
(P-17)	Effect of Low Dose Radioiodine Therapy in Respect to Amount of Post-Operative Thyroid Tissue (With Metastasis or Not) Dr AKM Fazlul Bari, Thyroid Medicine, Institute of Nuclear Medicine and Ultrasound, Dhaka, Bangladesh
(P-18)	I-131 Therapy for Pediatric Hyperthyroid; A Clinical Experience in Nuclear Medicine Department, Dr Hasan Sadikin Hospital, Indonesia Dr Erwin Affandi Soeriadi, Nuclear Medicine, Dr Hasan Sadikin Hospital, Indonesia
(P-19)	Quantitative Study of the Different Protocols Analysis for Excess Radiation Absorbed Doses from Radioiodine Treatment of Hyperthyroidism in Bangladesh Dr Md Nahid Hossain, Institute of Nuclear Medicine & Ultrasound, Dhaka, Bangladesh
(P-20)	Thyroid Functional Status in Chronic Kidney Disease (CKD) Dr Mosharruf Hossain, Nuclear Medicine, Rajshahi Medical College Hospital, Rajshahi, Bangladesh
(P-21)	Effect of Single Dose of Radioiodine Therapy on Volume Reduction of Thyroid Gland in Hyperthyroidism Dr Shamrukh Khan, Institute of Nuclear Medicine & Ultrasound, Dhaka, Bangladesh
(P-22)	Graded Empirical I-131 Therapy in Differentiated Thyroid Cancer – Is There an Ideal Dose? Dr Ajit Shinto, Nuclear Medicine and PET, KMCH, Coimbatore, India
(P-23)	Role of Tc-99m Perchnetate Thyroid Scintigraphy in Detecting Etiology of Congenital Hypothyroidism Dr Aulia Huda Buchori, Dr Hasan Sadikin Hospital / Padjadjaran University, Bandung, Indonesia
(P-24)	Incremental Value of 131I-SPECT/CT Fusion Imaging Over 131I-WBS in the Management of Patients with Differentiated Thyroid Carcinoma Dr Ye Zhi-Yi, Nuclear Medicine, Xinhua Hospital, Shanghai Jiaotong University, Shanghai, China
(P-25)	Empirical Dual Dose Iodine-131 Therapy for Graves' Disease Dr Khalid Makhdomi, Radiology, Aga Khan University Hospital, Nairobi, Kenya

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DAY 2: TUESDAY, 29 NOVEMBER 2011 (CONT'D)

(P-26)	Complications to the Mother and Child with Thyroid Cancer after the Treatment with I-131 Prof Sassan Saber, Nuclear Medicine, Shariati Hospital, Tehran, Iran
(P-27)	Lacrimal Duct Obstruction after Iodine-131 Therapy in Patients with Differentiated Thyroid Cancer Prof Abbas Takavar, Nuclear Medicine, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran
(P-28)	Comparison of Different Techniques for Assessment of Thyroid Functional Status in Patients with Hyperthyroidism Dr Qaisar Siraj, Nuclear Medicine, Farwania Hospital Kuwait, Kuwait
(P-29)	The Advantages of Routine Radiothyroablation in Well Differentiated Thyroid Carcinoma Patients Dr Hapsari Indrawati, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia
(P-30)	Electrolyte Imbalance in Patients During Radioablation Na I-131 Dr Aulia Huda Buchori, Nuclear Medicine, Dr Hasan Sadikin Hospital / Padjadjaran University, Bandung, Indonesia
(P-31)	Theurapeutical Response Evaluation on Hyperthyroidism Using a Fixed Dosed of I-131 Dr Yulia Kurniawati Burhanuddin, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia
(P-32)	Influence of Metastases Characteristic to Survival Rate in Papillary Thyroid Carcinoma Dr Nopriwan Agamawan Salam, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia
(P-33)	Pattern of Lung Metastases and its Influence to DTC Treatment Outcome Dr Gani Gunawan, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia
(P-34)	Assessment of Organification Defect in Thyroid Gland in Children with Goitrous Hypothroidism Dr Anirudhan Narasimhan, Nuclear Medicine, G.K.N.M Hospital, Coimbatore, India
(P-35)	Nal-131 Radio Ablation for Well Differentiated Thyroid Cancer at Dr Hasan Sadikin General Hospital Dr Dodi Nugraha, Nuclear Medicine, Dr Hasan Sadikin Hospital, Bandung, Indonesia
(P-36)	Significance of Raised Anti Thyroglobulin Antibody Levels in Diffrentiated Thyroid Cancer Patients Dr Javaid Irfan, Nuclear Medicine Oncology and Radiotherapy Institute (NORI), Islamabad, Pakistan
(P-37)	Rare Case of Metastasis to Pituitary from Follicular Thyroid Carcinoma Dr Butch Magsombol, Nuclear Medicine and PET, Singapore General Hospital, Singapore
(P-38)	Efficacy of I-131 Therapy in the Treatment of Differentiated Thyroid Carcinoma: Results in 655 Patients Treated at the Nuclear Medicine Department of Bach Mai Hospital, Hanoi Prof Mai Trong Khoa, Nuclear Medicine, Bach Mai Hospital, Hanoi, Vietnam Dr Trang Ngo, Nuclear Medicine, Bach Mai Hospital, Hanoi, Vietnam
(P-39)	Radionuclide Therapy in Russia. A Status Report from the Largest Radionuclide Therapy Centre in Russia Prof Valeriy Krylov, Radionuclide Therapy Department, Medical Radiological Research Center, Obninsk, Russia
1100 – 1240	SCIENTIFIC SESSION 2: THYROID II Ben Thanh Hall, Level 1
	Session Chairpersons: 1. Dr Nguyen Thi Bich Dao, Vietnam 2. Prof Leszek Krolicki, Nuclear Medicine, Medical University of Warsaw, Poland
1100 – 1120 (O-15)	Radioiodine Therapy of Differentiated Thyroid Cancer: A Review Dr Savvas Frangos, Nuclear Medicine, Bank of Cyprus Oncology Center, Strovolos, Nicosia, Cyprus
1120 – 1140 (O-16)	Guidelines for Treatment of Differentiated Thyroid Carcinoma: A Critical Appraisal Prof Jasna Mihailovic, Nuclear Medicine, Oncology Institute of Vojvodina, Sremska Kamenica, Serbia
1140 – 1200 (O-17)	Radioiodine Treatment of Hyperthyroidism: A Review Dr Emerita Barrenechea, Nuclear Medicine, Veterans Memorial Medical Centre, Quezon City, Philippines
1200 – 1220 (O-18)	Graves' Ophthalmopathy Dr Wong Wai Yin, Nuclear Medicine, Singapore General Hospital, Singapore
1220 – 1240 (O-19)	Thyromomics Dr A Velumani, Thyrocare Technologies Ltd, Turbhe, Navi Mumbai, India

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DAY 2: TUESDAY, 29 NOVEMBER 2011 (CONT'D)

1240 – 1300	ORAL PRESENTATIONS	Ben Thanh Hall, Level 1
1240 – 1250 (O-20)	The Assessment of Oxidative Stress and Hematological Changes in Patients with Differentiated Thyroid Carcinoma Treated with Radioiodine Prof Milovan Matovic, Nuclear Medicine, Clinical Centre Kragujevac, Kragujevac, Serbia	
1250 – 1300 (O-21)	Relationship Between Radiation Absorbed Dose to the Blood and Successful Ablative Treatment in Thyroid Cancer Patients Dr Shazia Fatima, Nuclear Medicine, Oncology & Radiotherapy Institute Islamaba, Islamabad, Pakistan	
1300 – 1400	LUNCH / TRADE EXHIBITION	
1400 – 1505	SCIENTIFIC SESSION 3: BONE PAIN & RADIOSYNOVECTOMY	Ben Thanh Hall, Level 1
	Session Chairpersons: 1. Dr Emerita Barrenechea, Nuclear Medicine, Veterans Memorial Medical Centre, Quezon City, Philippines 2. Dr Qaisar Siraj, Nuclear Medicine, Farwania Hospital Kuwait, Kuwait	
1400 – 1425 (O-22)	Radiosynovectomy in the Treatment of Arthritis Dr Knut Liepe, Nuklearmedizin, Klinikum Kassel, Germany	
1425 – 1445 (O-23)	Use of Re-188 Colloid in Radiosynovectomy: Experience at AIIMS Prof Rakesh Kumar, Nuclear Medicine & PET, All India Institute of Nuclear Medicine, India	
1445 – 1505 (O-23A)	Radiosynoviorthosis (Radiation Synovectomy): State of the Art 2011 Prof Gynter Moedder, German Centre for Radiosynoviorthosis, Cologne, Germany	
1505 – 1545	ORAL PRESENTATIONS	Ben Thanh Hall, Level 1
1505 – 1515 (O-25)	Intra-Articular Evaluation of Lu-177 Hydroxyapatite in Animal Model Dr Muhammad Sohaib, Medical Sciences, Pakistan Institute of Engineering and Applied Science (PIEAS), Islamabad, Pakistan	
1515 – 1525 (O-26)	Development of Colloidal Samarium Phosphate [32P] Injection for Radiation Synovectomy-A New Therapeutic Radiopharmaceutical Agent For The Treatment Of Joint Disorders Dr Prabhakar Ganti, Department of Atomic Energy (DAE), Board of Radiation & Isotope Technology, Navi Mumbai, India	
1525 – 1535 (O-27)	Optimal Timing of Biphosphonate Therapy in Combination with Samarium-153 Therapy in Metastatic Bone Disease Dr Nigora Rasulova, Nuclear Medicine, Republic Specialized Center of Surgery, Tashkent, Uzbekistan	
1535 – 1545 (O-28)	Evaluation of P-32 for Bone Pain Palliation in Prostate Cancer with Skeletal Metastases Dr Muhammad Aleem Khan, Nuclear Medicine, Nuclear Medicine Oncology and Radiotherapy Institute (NORI), Islamabad, Pakistan	
1545 – 1600	COFFEE / TEA / TRADE EXHIBITION	Ben Thanh Hall Foyer Pre-Function Area, Level 1
	POSTERS PRESENTATION: BONE PAIN PALLIATION / RADIOSYNOVECTOMY	Ben Thanh Hall Foyer Pre-Function Area, Level 1
	Session Coordinators: 1. Dr Vo Khac Nam, Vietnam 2. Dr Tran Song Toan, Nuclear Medicine, Cho Ray Hospital, Ho Chi Minh, Vietnam	
(P-40)	Detection of Bone Metastases by Planer Bone Scintigraphy and SPECT Bone Scintigraphy Dr MD Sayedur Rahman Miah, Centre for Nuclear Medicine & Ultrasound, Bangladesh Atomic Energy Commission, Comilla, Bangladesh	
(P-41)	Our First Experiences in Palliative Treatment of Painful Bone Metastases with Sm-153 Dr Zvezdana Rajkovic, Nuclear Medicine, Clinical Center Banja Luka, Banja Luka, Bosnia & Herzegovina	
(P-42)	Evaluation of Prostate Cancer with Serum Prostate Specific Antigen, Alkaline Phosphatase Level and Bone Scintigraphy Dr Afroz Shirin, Scintigraphy, Institute of Nuclear Medicine & Ultrasound, Dhaka, Bangladesh	

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DAY 2: TUESDAY, 29 NOVEMBER 2011

- (P-43) **Bone Scintigraphy Findings of Multiple Osteoblastic Lesions in a Child with Primitive Neuroectodermal Tumor**
Dr Karina Michaela Dela Cruz, Nuclear Medicine, University of Santo Tomas, Manila, Philippines
- (P-44) **Bone-Seeking Radiopharmaceuticals for Pain Palliation in Prostate Cancer Metastasis**
Dr Raluca Mititelu, Nuclear Medicine, Central University Military Hospital Bucharest, Bucharest, Romania
- (P-45) **Present Day Utility of Whole Body Bone Scan in Evaluating Silent Skeletal Metastases in Apparently Operable Non Small Cell Lung Cancer when PET is not Available**
Dr Ajit Shinto, Nuclear Medicine and PET, KMCH, Coimbatore, India
- (P-46) **⁸⁹Sr Bremsstrah Lung SPECT Imaging in Bone Metastases**
Dr Masanobu Ishiguro, Section of Radiology Division of Nuclear Medicine, Fujita Health University Hospital, Toyoake, Japan
- (P-47) **Comparison of the Value of 18 F-FDG PET And 99 Tcm-MDP Bone Scan in the Detection of Bone Metastases**
Dr Shuqi Wu, Nuclear Medicine, Xinhua Hospital, Shanghai Jiaotong University, Shanghai, China
- (P-48) **Current Status of Radionuclide Therapy in Indonesia**
Dr Alvita Dewi Siswoyo, Nuclear Medicine, RS Dr Hasan Sadikin, Bandung, Indonesia
- (P-49) **Effectiveness of Bone Metastases Treatment by Sm-153 Oxabifore in Combination with Monoclonal Antibody Denosumab (Xgeva)**
Dr Nigora Rasulova, Nuclear Medicine, Republic Specialized Center of Surgery, Tashkent, Uzbekistan

1600 – 1730 **SCIENTIFIC SESSION 4: RADIOPHARMACY / GENERAL NUCLEAR MEDICINE** Ben Thanh Hall, Level 1

Session Chairpersons:

1. Prof Alan Perkins, Radiological and Imaging Sciences, Nottingham University Hospital, Nottingham, United Kingdom,
2. Prof Azu Owunwanne, Nuclear Medicine, Faculty of Medicine, Kuwait University, Safat, Kuwait

1600 – 1625 **Theragnostic Radiopharmaceuticals: An Emerging Paradigm Empowering Personalized Medicine**
(O-29) Dr Suresh Srivastava, Collider-Accelerator Department, Brookhaven National Laboratory, Upton, NY USA

1625 – 1640 **ONCIDIUM Foundation: A Perspective**
(O-30) Dr Richard Zimmermann, IBA, Molecular, IBA, Louvain-La-Neuve, Belgium

1640 – 1700 **Regulatory Aspects of Therapeutic Radiopharmaceuticals**
(O-31) Dr Maung Maung Saw, Clinical Imaging Research Centre, National University of Singapore, Singapore

1700 – 1720 **Clinical Applications of SPECT/CT in Oncology**
(O-32) Dr Sonia Sergieva, Nuclear Medicine, Sofia Cancer Centre, Sofia, Bulgaria

1720 – 1800 **Radiopharmaceutical And Molecular Therapy Quiz
(Three Prizes for 3 Participants Scoring Highest Scores)**
(O-33) Dr Gopinath Gnanasegaran, Nuclear Medicine, Guys & St Thomas' Hospital NHS Foundation Trust, St Thomas Hospital, London, United Kingdom

1900 – 2300 **FORMAL INAUGURATION OF THE CONFERENCE & GALA DINNER** Grand Mekong Ballroom, Level 1

2300 **END OF DAY 2**

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DAY 3: WEDNESDAY, 30 NOVEMBER 2011

0800 – 1020 **SCIENTIFIC SESSION 5: GI TRACT CANCER / LIVER CANCER** Ben Thanh Hall, Level 1

Session Chairpersons:

1. Dr Patricia Bernal Trujillo, Fundacion Santa Fe, Bogota, Colombia
2. Prof Harvey Turner, University of Western Australia, Fremantle Hospital, Australia

0800 – 0825 **Targeted Chemoradiation in Metastatic Colorectal Cancer: A Phase I Trial of 131I-Hua33 with Concurrent Capecitabine**
(O-34)

Prof Andrew Scott, Centre for PET, Austin Hospital, Heidelberg, Australia

0825 – 0850 **Targeted Radionuclide Therapy of Liver Tumors**
(O-35)

Prof Gregory Wiseman, Radiology, Mayo Clinic, Rochester, USA

0850 – 0915 **Radiological and Clinical Efficacy of Radio-embolization (Re) Using 188Re HSA-microspheres in Patients with Advanced, Primary or Metastatic Liver Cancer**
(O-36)

Dr Jaroslaw Cwikla, Radiology and Diagnostic Imaging, Postgraduate Medical Centre and Central Clinical Hospital, Warsaw, Poland

0915 – 0935 **PET is Superior to CT in Assessing Response to SIRT in Liver Tumours**
(O-37)

Prof Adil Al-Nahhas, Nuclear Medicine, Imperial College, London, United Kingdom

0935 – 0955 **Molecular Radiotherapy in the UK: The Current Status**
(O-38)

Prof John Buscombe, Nuclear Medicine, Royal Free Hospital, Cambridge, United Kingdom

0955 – 1020 **Statistics – OR, RR and HR**
(O-39)

Prof Janez Stare, Faculty of Medicine, University of Ljubljana, Slovenia

1020 – 1030 **ORAL PRESENTATIONS** Ben Thanh Hall, Level 1

1020 – 1030 **Does Clinical Outcome In Hepatic Y-90 Microsphere Therapy Depends On Correlation Between Y-90 and Tc-99m MAA Distributions?**
(O-40)

Dr Karin Knesaurek, Radiology / Nuclear Medicine, Mount Sinai Medical Center, New York, USA

1030 – 1100 **COFFEE / TEA / TRADE EXHIBITION** Ben Thanh Hall Foyer
Pre-Function Area, Level 1

1030 – 1100 **POSTER PRESENTATIONS: MOLECULAR IMAGING, RADIOPHARMACY** Ben Thanh Hall Foyer
Pre-Function Area, Level 1

Session Coordinators:

1. Dr Butch Magsombol, Nuclear Medicine and PET, Singapore General Hospital, Singapore
2. Dr Nigora Rasulova, Nuclear Medicine, Republic Specialized Center of Surgery, Tashkent, Uzbekistan

(P-50) **Normal Uptake Value of C-11 Acetate in Some Organs**

Dr Thi Minh Chau Trinh, Nuclear Medicine, University Medical Center, Ho Chi Minh City, Vietnam

(P-51) **Development of Nanoradiopharmaceuticals**

Dr Ralph Santos-Oliveira, Laboratory of Nanoradiopharmaceuticals, University Hospital Clementino Fraga Filho, Rio de Janeiro, Brazil

(P-52) **Nanoradiopharmaceuticals: Development of Labeling Process**

Dr Ralph Santos-Oliveira, Laboratory of Nanoradiopharmaceuticals, University Hospital Clementino Fraga Filho, Rio de Janeiro, Brazil

(P-53) **Synthesis, Radio Labeling and Biological Evaluation of [67Ga]- 5,10,15,20-Tetrakis(Pentafluorophenyl) Porphyrin Complexes as an Imaging Agent**

Dr Mohammad Reza Aboudzadeh Rovais, Nuclear Medicine Research Group, Agricultural, Medical and Industrial Research School, Karaj, Iran

(P-54) **Synthesis, Radiolabeling and Biological Evaluation of [111In]-Maltolate Complex as an Imaging Agent**

Prof Yousef Fazaeli, Nuclear Medicine Research Group, Agricultural, Medical and Industrial Research School (AMIR), Karaj, Iran

(P-55) **Production, Quality Control and Imaging of 64Cu-ATSM in Healthy Rabbits for Clinical Applications**

Prof Yousef Fazaeli, Nuclear Medicine Research Group, Agricultural, Medical and Industrial Research School (AMIR), Karaj, Iran

4th International Conference on Radiopharmaceutical Therapy (ICRT 2011)

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DAY 3: WEDNESDAY, 30 NOVEMBER 2011 (CONT'D)

- (P-56) **Synthesis, Radiolabeling and Biological Evaluation of [67Ga]-Maltolate Complex as an Imaging Agent**
Prof Yousef Fazaeli, Nuclear Medicine Research Group, Agricultural, Medical and Industrial Research School (AMIR), Karaj, Iran
-
- (P-57) **Preparation and Evaluation of [67Ga]-Tetra Phenyl Porphyrin Complexes as Imaging Agents**
Prof Yousef Fazaeli, Nuclear Medicine Research Group, Agricultural, Medical and Industrial Research School (AMIR), Karaj, Iran
-
- (P-58) **Radiosynthesis and Biological Evaluation of [111In]-5,10,15,20-Tetrakis(Pentafluorophenyl) Porphyrin Complex as a Possible Imaging Agent**
Dr Mohammad Reza Abouzadeh Rovais, Nuclear Medicine Research Group, Agricultural, Medical And Industrial Research School, Karaj, Iran
-
- (P-59) **Emergency Handling in a Medical Cyclotron Facility**
Dr Rajeev Kumar, PET Scan Centre, Medical Cyclotron Facility, Army Hospital Research And Referral, New Delhi, India
-
- (P-60) **Development and Evaluation of New Protocol for Synthesis of 6-(18F) Fluoro-L-DOPA**
Dr Rajeev Kumar, PET Scan Centre, Medical Cyclotron Facility, Army Hospital Research And Referral, New Delhi, India
-
- (P-61) **AFP-Combined 18F-FDG PET/CT Detection of HCC and its Recurrence**
Dr Wu Shuqi, Nuclear Medicine, Xinhua Hospital, Shanghai Jiaotong University, Shanghai, China
-
- (P-62) **Simple, Reliable and Cost Effective Radiochemical Purity Test Technique for N-13 Ammonia**
Dr Dhananjay Kumar Singh, Nuclear Medicine, Army Hospital Research And Referral, New Delhi, India
-
- (P-63) **99mTc-Doxorubicin Labeling and its Pre-Clinical Evaluation as a Potential Scintigraphic Probe For Tumor Imaging**
Dr Baljinder Singh, Nuclear Medicine, PGIMER, Chandigarh, India
-
- (P-64) **Engineering Salmonella Typhimurium to Become a Dual Purpose-Probe for Therapeutic and in Vivo Monitoring Applied in Cancer or Myocardial Infarction**
Dr Vu Hong Nguyen, Nuclear Medicine, CNU Hwasun Hospital, Hwasun, South Korea
-
- (P-65) **Preliminary Results of Various Pegylated I-RGD Peptides for Animal PET-Imaging**
Prof Apo Ahonen, Physiology And Nuclear Medicine, HUSLAB/HUCH, Helsinki, Finland
-
- (P-66) **Medical Cyclotron: Accidental Scenarios and Analysis**
Dr Nguyen Tan Chau, Unit of PET-CT & Cyclotron, Cho Ray Hospital, Ho Chi Minh, Vietnam
-
- (P-67) **To Establish a Synthesis Protocol of 68Gallium-DOTANOC Using 0.05MHCl as Eluant of 68Ge/68Ga Generator for PET Imaging of Neuroendocrine Tumors (NETS)**
Dr Snehlata Lata, Nuclear Medicine & PET, All Institute of Medical Sciences, New Delhi, India
-
- (P-68) **Production of Radiopharmaceutical F-18 FDG and C-11 Acetate Using Cyclotron 11 Mev at Cho Ray Hospital**
Dr Truong Ka My Dang, PET-CT & Cyclotron, Cho Ray Hospital, Ho Chi Minh, Vietnam
-
- (P-69) **Radionuclide Imaging for Neuroendocrine Tumours: Experience of Singapore General Hospital (SGH), The Largest Acute Tertiary Hospital in Singapore**
Dr Thang Sue Ping, Nuclear Medicine and PET, Singapore General Hospital, Singapore
-
- (P-70) **Cyclotron Production of 99mTc in Canada**
Dr Erik Van Lier, Targetry and Radiochemistry, Advanced Cyclotron Systems Inc, Richmond, Canada
-
- (P-71) **Diagnosis of Pulmonary Neuroendocrine Tumors with 99mTc-Tectrotide (99mTc-HYNIC –TOC) SPECT/CT and 18F-FDG PET-CT in the Selection of the First Line of Treatment and Determining Staging and Restaging**
Dr Norbert Szalus, Nuclear Medicine, Military Institute of Medicine, Warsaw, Polska
-
- (P-71A) **Peptide Receptor Radionuclide Therapy (PRRT): Colombia Experience**
Dr Patricia Bernal Trujillo, Nuclear Medicine, Fundacion Santa fe de Bogota, Bogota, Colombia

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DAY 3: WEDNESDAY, 30 NOVEMBER 2011 (CONT'D)

1100 – 1230 **SCIENTIFIC SESSION 6: NEUROENDOCRINE TUMORS I** Ben Thanh Hall, Level 1

Session Chairpersons:

1. Prof John Buscombe, Nuclear Medicine, Royal Free Hospital, Cambridge, UK
2. Prof Andrew Scott, Centre For PET, Austin Hospital, Heidelberg, Australia

1100 – 1125 **Peptide Receptor Radionuclide Therapy – The Innsbruck Experience**
(O-41) Prof Irene Virgolini, Nuclear Medicine & PET, Medical University Of Innsbruck, Innsbruck, Austria

1125 – 1150 **Peptide Receptor Radionuclide Therapy of Neuroendocrine Tumors – The Bad Berka Experience After 10 Years in Over 1000 Patients**
(O-42) Prof Richard Baum, Department of Nuclear Medicine, Center for PET/CT, Bad Berka, Germany

1150 – 1205 **PRRT-Experience at Jaslok Hospital**
(O-43) Dr Vikram Lele, Department of Nuclear Medicine & PET-CT, Jaslok Hospital & Research Centre, Mumbai, India

1205 – 1220 **Ga-68 DOTATATE Imaging & PRRT in South Africa**
(O-44) Dr Carlos D Libhaber, Nuclear Cardiology, University of the Witwaterstrand, Johannesburg, South Africa

1220 – 1235 **New DOTA-Based Bisphosphonate Ligands for PET/CT and Endoradiotherapy of Bone Metastases**
(O-24) Dr Achim Reibel, University of Mainz, Institute of Nuclear Chemistry, Mainz, Germany

1235 – 1300 **ORAL PRESENTATIONS** Ben Thanh Hall, Level 1

1235 – 1245 **90Y And 177Lu – Radionuclides for Peptide Receptor Radionuclide Therapy**
(O-45) Dr Dariusz Pawlak, Research and Development, Institute of Atomic Energy POLATOM, Otwock, Poland

1245 – 1255 **Early Prediction of Tumor Response in GEP NET by the Sequential Change of Absorbed Doses During Treatment with Lu177-Octreotate**
(O-46) Dr Ezziddin Samer, MD, Nuclear Medicine, University Bonn, Bonn, Germany

1255 – 1305 **Effect of Peptide Receptor Radionuclide Therapy (PRRT) with Tandem Isotopes- 90Y/ 177Lu-DOTATATE in Patients with Disseminated Neuroendocrine Tumors Depending on Qualification PET/CT with 18FDG**
(O-47) Dr Jolanta Kunikowska, Medical University Of Warsaw, Nuclear Medicine Department, Medical University Of Warsaw, Warsaw, Poland

1305 – 1400 **LUNCH / TRADE EXIBITION**

1400 – 1510 **SCIENTIFIC SESSION 7: NEUROENDOCRINE TUMORS II** Ben Thanh Hall, Level 1

Session Chairperson:

1. Prof Sobhan Vinjamuri, Nuclear Medicine, Royal Liverpool University Hospital, Liverpool, United Kingdom
2. Dr Cornelis Hoefnagel, Division of Diagnostic Oncology, The Netherlands Cancer Institute, The Netherlands

1400 – 1425 **Combined Modality Radiopeptide Therapy of Neuroendocrine Tumours**
(O-48) Prof Harvey Turner, University Of Western Australia, Fremantle Hospital, Australia

1425 – 1450 **PRRT: The Italian Experience**
(O-49) Prof Giovanni Paganelli, Divisione Di Medicina Nucleare, IEO Istituto Europeo Di Oncologia, Milano, Italy

1450 – 1510 **Meta-Analysis of Radionuclide Therapy in NETs**
(O-50) Dr Shaunak Navalkissoor, Nuclear Medicine, Royal Free Hospital NHS Trust, London, United Kingdom

1510 – 1530 **ORAL PRESENTATIONS** Ben Thanh Hall, Level 1

1520 – 1530 **Tc-Carbonyl Based Octreotide Derivatives**
(O-51) Dr Guhlke Stefan, Nuclear Medicine, University of Bonn, Bonn, Germany

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1530 – 1600

**POSTERS PRESENTATIONS:
GENERAL NUCLEAR MEDICINE & MISCELLANEOUS (ARCCNM)**

Ben Thanh Hall Foyer
Pre-Function Area, Level 1

Session Coordinators:

1. Dr Marika Vereb, Nuclear Medicine Department, Klinikum Kassel, Kassel, Germany
2. Ms Nguyen Thi Kim Dung, Vietnam

- (P-72) **Gamma Camera Based GFR Measurement as an Alternative to 24 Hours Urinary Creatinine Clearance in Healthy Kidney Donors**
Dr Tania Ahmed Ahmed, Nuclear Medicine & Ultrasound, Centre For Nuclear Medicine & Ultrasound, Chittagong, Chittagong, Bangladesh
- (P-73) **Differences in Decline in GFR with Age Between Males and Females. Reference Data on 24 Hours Urinary Creatinine Clearance and DTPA Clearance**
Dr Tania Ahmed Ahmed, Nuclear Medicine & Ultrasound, Centre For Nuclear Medicine & Ultrasound, Chittagong, Chittagong, Bangladesh
- (P-74) **Preparation and Bio Distribution of 99mtechnetium-Annexin V for In Vivo Detection of Apoptosis**
Dr Saeed Rajabifar, Nuclear Medicine, AMIRS, Karaj, Iran
- (P-75) **Ciprofloxacin Labeling by 99mtechnetium and its Bio Distribution in Normal and Infected Animals**
Dr Saeed Rajabifar, Nuclear Medicine, AMIRS, Karaj, Iran
- (P-76) **Production and Quality Control of 99mtechnetium-Igg-Hynic for Infection Imaging in Experimental Rats**
Dr Saeed Rajabifar, Nuclear Medicine, AMIRS, Karaj, Iran
- (P-77) **Diagnosing Multifocal Tuberculosis in Children with Tc-99m Ethambutol Scintigraphy: A Case Report**
Dr Alvita Dewi Siswoyo, Nuclear Medicine, RS Dr Hasan Sadikin, Bandung, Indonesia
- (P-78) **A Comparative Study of Dobutamine Stress Myocardial Perfusion Imaging and Dobutamine Stress Echocardiography in the Detection of Coronary Artery Disease in Female Patient – Initial Experience**
Dr Nasreen Sultana Nasreen, Nuclear Medicine, Institute of Nuclear Medicine And Ultrasound, BSMMU Campus Block, Dhaka, Bangladesh
- (P-79) **I-131 Meta-Iodobenzylguanidine and Tc99m Sestamibi Parathyroid SPECT Scintigraphy in Diagnosis of Multiple Endocrine Neoplasia 2A Syndrome**
Dr Jamilla Gomez, Nuclear Medicine, St Lukes Hospital, Quezon City, Philippines
- (P-80) **Myocardial Perfusion Imaging and Calcium Scoring as Coronary Artery Disease Predictors**
Dr Jamilla Gomez, Nuclear Medicine, St Lukes Hospital, Quezon City, Philippines
- (P-81) **Comparison of Tc-99m Ethambutol Scintigraphy and Scoring System in Diagnosing Pediatric Tuberculosis**
Dr Ivana Dewi Mulyanto, Department of Nuclear Medicine, Universitas Padjadjaran/RS Hasan Sadikin, Bandung, Indonesia
- (P-82) **Clinical Utility of F-18 FDG PET/CT & Tc-99m MDP Bone Scintigraphy in Ewing's Sarcoma and Other Sarcomaas**
Dr Judy Nguyen, Nuclear Medicine, Stanford University Medical Center, Stanford, USA
- (P-83) **Castleman's Disease on 18FDG PET-CT**
Dr Jamilla Gomez, Nuclear Medicine, St Lukes Hospital, Quezon City, Philippines
- (P-84) **Correlation Between Bone Scintigraphy and Tumour Markers in Patients with Breast Cancer**
Dr Mohshi Um Mokaddema, Nuclear Medicine, Institute of Nuclear Medicine and Ultrasound, Dhaka, Bangladesh
- (P-85) **Impact of F-18 FDG PET/CT in Staging of Carcinoma Cervix**
Dr Zaheer Chirag, Nuclear Medicine, BINO Cancer Hospital, Bahawalpur, Pakistan
- (P-86) **Clinical Implications of PSA Level & Gleason Score in Predicting Possible Metastatic Bone Disease in Patients of Carcinoma Prostate**
Dr Zaheer Chirag, Nuclear Medicine, BINO Cancer Hospital, Bahawalpur, Pakistan

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DAY 3: WEDNESDAY, 30 NOVEMBER 2011 (CONT'D)

- (P-87) **Role of FDG PET/CT in Diagnostic Evaluation of Carcinoma Urinary Bladder: Comparison with CT**
Dr Dhritiman Chakraborty, Department of Nuclear and Experimental Medicine, IPGME & R, Kolkata, Kolkata, India
- (P-88) **Role of Tc99m MIBI Lower Limb Muscle Perfusion SPECT: In Diagnosis and Follow Up of Peripheral Arterial Diseases (PAD)**
Dr Rashid Rasheed, Nuclar Medicine, GINUM, Gujranwala, Pakistan
- (P-89) **Carotid Intima-Media Thickness (CIMT) as a Predictor of Hemodynamically Significant Coronary Artery Disease (CAD) Detected by Myocardial Perfusion Imaging (MPI)**
Dr Tapati Mandal, Nuclear Medicine, Institute Of Nuclear Medicine And Ultrasound, Dhaka, Bangladesh
- (P-90) **Hepatobiliary Scintigraphy in the Non-Invasive Assessment of Early Hepatic Dysfunction in Patients with Risk Factor for Metabolic Syndrome**
Dr Ajit Shinto, Nuclear Medicine and PET, KMCH, Coimbatore, India
- (P-91) **Tc 99m HIDA Diagnoses Early Hepatic Dysfunction in Type II Diabetics**
Dr Ajit Shinto, Nuclear Medicine and PET, KMCH, Coimbatore, India
- (P-92) **Early and Delayed F-18 FDG PET in Assessment of Disease Activity in Tuberculosis**
Dr Ajit Shinto, Nuclear Medicine and PET, KMCH, Coimbatore, India
- (P-93) **Vision of Nuclear Medicine in Bangladesh – A Road Map**
Prof Mizanul Hasan, Nuclear Medicine, Institute Of Nuclear Medicine & Ultrasound, BSMMU, Dhaka, Bangladesh
- (P-94) **Technetium-99m-Sestamibi Scintigraphy on Patient with Nasopharyngeal Carcinoma and Lymphadenopathy Tuberculosis: A Case Report**
Dr Yulia Kurniawati Burhanuddin, Nuclear Medicine, Hasan Sadikin Hospital, Bandung, Indonesia
- (P-95) **Evaluation of Low Grade Gliomas Using F-18 FDOPA and F-18 FDG PET/CT**
Dr Abhinav Jaimini, Department of Clinical PET, Institute of Nuclear Medicine and Allied Sciences, Delhi, India
- (P-96) **Case Report: Tc-99m-Ethambuthol Uptake in Case of Leprosy**
Dr Andika Hananto Gunawan, Department Of Nuclear Medicine, Hasan Sadikin Hospital / Univesitas Padjadjaran, Bandung, Indonesia
- (P-97) **Role of Tc-99m Ethambutol Scintigraphy in Diagnosing Tuberculosis in Children with Scoring Systems as Diagnostic Approach**
Dr Alvita Dewi Siswoyo, Nuclear Medicine, Rs Dr. Hasan Sadikin, Bandung, Indonesia
- (P-98) **Role of Dobutamine Stress Myocardial Perfusion Imaging (DS MPI) for the Detection of Myocardial Viability (MV) in Significantly Stenosed Coronary Artery Disease (CAD)**
Dr Sarwat Ara Sultana Khandaker, Nuclear Medicine, Institute Of Nuclear Medicine & Ultrasound, Dhaka, Bangladesh
- (P-99) **Optimization of SPECT MPI Using a Prototype Dynamic Heart Phantom**
Dr Ourania Demetriadou, Nuclear Medicine, Limassol General Hospital, Limassol, Cyprus
- (P-100) **Outcome of Patients with Positive Exercise Test and Normal Exercise Myocardial Perfusion SPECT**
A/Prof Faria Nasreen, Nuclear Medicine, Institute Of Nuclear Medicine & Ultrasound, Dhaka, Bangladesh
- (P-101) **Usefulness Of Dacryoscintigraphy in the Management of Patients with Epiphora**
Dr Madhur Kumar Srivastava, Nuclear Medicine, Apollo Hospitals, Chennai, India

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DAY 3: WEDNESDAY, 30 NOVEMBER 2011 (CONT'D)

- (P-102) **Noninvasive Rest and Acetazolamide 99mTc-HM-PAO Brain Perfusion SPECT Imaging with One Day Protocol Using SPECT/CT System**
Dr Dang An Binh, Nuclear Medicine, Cho Ray Hospital, Ho Chi Minh, Vietnam
- (P-103) **Differentiating Benign and Malignant Lesions of Uterus by FDG and FES PET Imaging**
Dr Raihan Hussain, Thyroid Division, Institute of Nuclear Medicine and Ultrasound, Dhaka, Bangladesh
- (P-104) **Illustration of a Single Anomalous Coronary Artery with Myocardial Ischemia by Fusion of N-13 Ammonia PET/CT with CT Coronary Angiography – Case Report**
Prof Bom Hee-Seung Henry, Nuclear Medicine, CNU Medical School, Hwasun, S. Korea
- (P-105) **Comparative Study of Exercise Tolerance Test (ETT) and SPECT-Myocardial Perfusion Imaging (MPI) in the Diagnosis of Coronary Artery Disease in Bangladeshi Women**
Dr Akhter Nahid, Nuclear Medicine, Centre For Nuclear Medicine & Ultrasound, Dinajpur, Dhaka, Bangladesh
- (P-106) **Radiation Exposure of Patients Undergoing Whole-Body Dual-Modality 18F-FDG PET/CT Examinations at Choray Hospital – Vietnam**
Dr Le Tran Tuan Kiet, Radiation Safety, Cho Ray Hospital, Ho Chi Minh, Vietnam
- (P-107) **The Role of 99mTc-MIBI Pinhole Scintigraphy in Preoperative Parathyroid Localization in Era of SPECT/CT**
Dr Lucia Kaliska, Nuclear Medicine, Institute Of Nuclear Medicine & Molecular Medicine, Banska Bystrica, Slovakia
- (P-108) **Langerhans Cell Histiocytosis. Imaging Findings and Utility of FDG PET/CT in an Adult Patient with Multi-Organ Involvement**
Dr Xie Wanying, Nuclear Medicine, Singapore General Hospital, Singapore
- (P-109) **Juxtapapillary Dieulafoy Lesion: An Obscure Case of G.I. Bleeding Localized Using Tc-99m RBC Scintigraphy**
Dr Millicent Grace De Guzman, Nuclear Medicine, University of Santo Tomas Hospital, Manila, Philippines
- (P-110) **Utility of Delayed Imaging in Evaluating Common Bile Duct Obstruction with Tc-99m Mebrofenin Hepatobiliary Scanning**
Dr Nand Relan, Radiology, Stony Brook University Medical Center, Stony Brook, USA
- (P-111) **Role of 18F-Fluoro-Deoxyglucose Positron Emission Tomography/Computed Tomography Fusion Imaging (18F-FDG PET/CT) for Preoperative Axillary Staging in Primary Breast Cancer: A Prospective Analysis**
Dr Ankur Pruthi, Department of Nuclear Medicine, Rajiv Gandhi Cancer Institute and Research Centre, New Delhi, India
- (P-112) **Role of FDG in Primary Lesion Identification (A Preliminary Result)**
Dr Hendra Budiawan, Nuclear Medicine, MRCCC - Siloam Hospitals, Jakarta Indonesia
- (P-113) **PET/CT and Contrast Enhanced CT in the Detection of Malignant Lesions: A Prospective Study**
Dr Susan Gironella-Camomot, Nuclear Medicine, Cagayan de Oro Medical Center, Cagayan de Oro City, Philippines

1600 – 1630

SCIENTIFIC SESSION 8: EDUCATION & TRAINING, MOLECULAR IMAGING

Ben Thanh Hall, Level 1

Session Chairpersons:

1. Prof Lee Jae-Tae, Nuclear Medicine, Kyungpook National University Hospital, Daegu, Korea
2. Prof Jun Hatazawa, Japan

1600 – 1630

Training Nuclear Medicine Physicians Foundation and Ideal Model

(O-52)

Prof Abdelhamid Elgazzar, Nuclear Medicine & PET, Medicine University of Kuwait, Kuwait

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DAY 3: WEDNESDAY, 30 NOVEMBER 2011 (CONT'D)

1630 – 1710	ORAL PRESENTATIONS (ARCCNM)	Ben Thanh Hall, Level 1
1630 – 1640 (O-53)	Detection of Activated Microglia with Translocator Protein (18 Kda) Ligand, [18F]FEPPA PET Prof Hiroshi Toyama, Radiology, Fujita Health University, Toyoake, Japan	
1640 – 1650 (O-54)	FDG Uptake, Glucose Transporter Type-1 and KI-67 Expressions Dr Xuan Canh Nguyen, Unit Of Pet/Ct And Cyclotron, Cho Ray Hospital, Ho Chi Minh, Vietnam	
1650 – 1700 (O-55)	Early Response Assessment in Gastrointestinal Stromal Tumors with FDG PET Scan 24 Hours after a Single Dose of Imatinib Dr Ajit Shinto, Nuclear Medicine and PET, KMCH, Coimbatore, India	
1710 – 1800	ARCCNM NATIONAL DELEGATES' ASSEMBLY	To Be Advised
1745 – 1900	WARMTH MEMBERS' ASSEMBLY ALL MEMBERS OF WARMTH TO ATTEND THE MEETING	Ben Thanh Hall, Level 1
1930 – 2300	DINNER & 10 YEARS OF ARCCNM CELEBRATION	Grand Mekong Ballroom, Level 1
2300	END OF DAY 3	

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DAY 4: THURSDAY, 1 DECEMBER 2011

0800 – 1030 **SCIENTIFIC SESSION 9: DOSIMETRY, MOLECULAR IMAGING, GENERAL** Ben Thanh Hall, Level 1

Session Chairpersons:

1. Prof Lee Myung Chul, Nuclear Medicine, Seoul National University, Seoul, Korea
2. Dr Pankaj Dougall, Nuclear Medicine Services, Nuclear Medicine And PET-CT, Max Super Speciality Hospitals, New Delhi, India

0800 – 0825 **Usefulness of SPECT/CT for Radionuclide Therapy**
(O-56) Dr Cornelis Hoefnagel, Division of Diagnostic Oncology, The Netherlands Cancer Institute, The Netherlands

0825 – 0850 **The Utility of PET in Intensity Modulated Radiotherapy Planning**
(O-57) Dr Lee Sze Ting, Centre For PET, Austin Hospital & Ludwig Institute For Cancer Research, Heidelberg, Australia

0850 – 0910 **Prognostication in Radionuclide Therapy**
(O-58) Prof Sobhan Vinjamuri, Nuclear Medicine Dept, Royal Liverpool University Hospital, Liverpool, UK

0910 – 0930 **The 3-D Dosimetry in Radionuclide Therapy Based on 4D SPECT/CT Acquisition**
(O-59) Prof Kalevi Kairemo, Molecular Radiotherapy & Nuclear Medicine, International Comprehensive Cancer Center Docrates, Helsinki, Finland

0930 – 0950 **Dosimetry in Solid Tumours – Does it have Any Use**
(O-60) Prof John Buscombe, Nuclear Medicine, Royal Free Hospital, Cambridge, UK

0950 – 1010 **Current Knowledge of FET use in PET**
(O-61) Dr Malkowski Bogdan, Department of Nuclear Medicine, Oncology Centre, Bydgoszcz, Poland

1010 – 1030 **The Tracer Principle: From De Hevesy's Cup of Tea to the Secret Services?**
(O-62) Prof Alan Perkins, Radiological And Imaging Sciences, Nottingham University Hospitals, Nottingham, United Kingdom

1030 – 1100 **COFFEE / TEA / TRADE EXHIBITION** Ben Thanh Hall Foyer
Pre-Function Area, Level 1

POSTER PRESENTATIONS: MISCELLANEOUS

Ben Thanh Hall Foyer
Pre-Function Area, Level 1

Session Coordinators:

1. Ms Dang Truong Ka My, PET-CT and Cyclotron, Cho Ray Hospital, Ho Chi Minh, Vietnam
2. Dr Nguyen Thi Thuy Hang, Vietnam

(P-114) **Plasma Therapy: A New Era of Therapeutic Techniques**
Dr Tanvir Ahmed Biman, Scintigraphy Division, Nuclear Medicine, Institute of Nuclear Medicine & Ultrasound, Dhaka, Bangladesh

(P-115) **Early Outcome of Chemotherapy in Lymphoma Patients Using Tc-99m Tetrofosmin Scintigraphy**
Dr Muhammad Asif Rafique, Nuclear Medicine, Nuclear Medicine, Oncology And Radiotherapy Institute (NORI), Islamabad, Pakistan

(P-116) **Preparation of In-111 Oxine for Labeling of Stem Cell**
Prof Ali Sattari, Nuclear Medicine, Agriculture And Medicine Research School, Karadj, Iran

(P-117) **Sentinel Lymph Node Biopsy In Malignant Melanoma – Role of Lymphoscintigraphy in the Detection of Unpredictable Lymphatic Drainage**
Dr Zamfirescu Anca, Metabolic Radiotherapy, Bucharest Oncology Institute, Bucharest, Romania

(P-118) **Dual-Phase Tc99m-MIBI Scintigraphy in Lymphoma as a Predictor of Response to Chemotherapy**
Dr Zaheer Chirag, Nuclear Medicine, BINO Cancer Hospital, Bahawalpur Pakistan

(P-119) **Review of Utilization of Surveillance Scans in Lymphoma Patients – A Pilot Study**
Dr Judy Nguyen, Nuclear Medicine, Stanford University Medical Center, Stanford, USA

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DAY 4: THURSDAY, 1 DECEMBER 2011 (CONT'D)

1100 – 1245	SCIENTIFIC SESSION 10: BREAST CANCER, LYMPHOMA, RADIOIMMUNOTHERAPY (RIT)	Ben Thanh Hall, Level 1
	Session Chairpersons 1. Prof Hiroshi Toyama, Radiology, Fujita Health University, Toyoake, Japan 2. Dr Felix Sundram, Nuclear Medicine, Wijaya International and Sime Darby Medical Centres, Kuala Lumpur, Malaysia	
1100 – 1130 (O-63)	IART in Breast Cancer Prof Giovanni Paganelli, Divisione Di Medicina Nucleare, IEO Istituto Europeo Di Oncologia, Milano, Italy	
1130 – 1150 (O-64)	Positron Emission Tomography in Breast Cancer Dr Patricia Bernal Trujillo, Nuclear Medicine, Fundacion Santa Fe B Ogota, Colombia	
1130 – 1210 (O-65)	Radioimmuno-Scintigraphy and Radioimmuno-Therapy. A State of the Art Prof Izak Garty, Nuclear Medicine, Haemek Medical Centre, Afula, Israel	
1210 – 1230 (O-66)	Radioimmunotherapy of Non-Hodgkin Lymphoma with 131I-Rituximab Prof Harvey Turner, University Of Western Australia, Fremantle Hospital, Australia	
1230 – 1245 (O-67)	Use of PET to Monitor the Results of I-131 CHT25 RIT Dr Ewa Nowosinska, Nuclear Medicine Department, Royal Free Hospital, London, UK	
1245 – 1315	ORAL PRESENTATIONS	Ben Thanh Hall, Level 1
1245 – 1255 (O-68)	Potential Use of 177Lu In Radioimmunotherapy as Targeting Tracers on Monoclonal Antibodies Dr Choi Sun-Ju, Radioisotope Research Division, Korea Atomic Energy Research Institute, Daejeon, Korea	
1255 – 1305 (O-69)	Effect of Molecular Imaging on Evaluation of the Therapeutic Efficacy of VEGFR2 Blocking Antibody in a Sodium-Iodide Symporter Gene Expressed Tumor Model Dr Cheong Su-Jin, Nuclear Medicine, Chonbuk National University Medical School and Hospital, Jeonju, Korea	
1305 – 1315 (O-70)	Diagnostic Efficacy of Scintimammography for Detection of Malignant Tissue in the Breast Performed with Tc-99m MDP and Tc-99m Sestamibi Prof Birendra Kishore Das, Nuclear Medicine, Utkal Institute of Nuclear Medicine, Bhubaneswar, India	
1315 – 1400	LUNCH / TRADE EXHIBITION	
1400 – 1530	SCIENTIFIC SESSION 11: RADIONUCLIDE THERAPY & QUALITY OF LIFE	Ben Thanh Hall, Level 1
	Session Chairpersons: 1. Prof Irene Virgolini, Nuclear Medicine & PET, University Of Innsbruck, Innsbruck, Austria 2. Prof Abdelhamid Elgazzar, Nuclear Medicine & PET, Faculty of Medicine University of Kuwait, Kuwait	
1400 – 1425 (O-71)	The Value of Life and the Concept of QOL: A Critical Examination of the Basic Principles for Clinical Measurement of QOL Dr Remigius Orjiukwu, Nuclear Medicine, Medical University Innsbruck, Innsbruck, Austria	
1425 – 1450 (O-72)	QOL from A Doctor's Perspective : Review of Actual Clinical Data Prof Irene Virgolini, Nuclear Medicine & PET, University Of Innsbruck, Innsbruck, Austria	
1450 – 1515 (O-73)	QOL from A Patient Perspective Mr William Claxton, CNETS, Singapore	
1515 – 1525	COFFEE / TEA / TRADE EXHIBITION	Ben Thanh Hall Foyer Pre-Function Area, Level 1

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DAY 4: THURSDAY, 1 DECEMBER 2011 (CONT'D)

1525 – 1550	SCIENTIFIC SESSION 12: RADIONUCLIDE THERAPY – FUTURE PERSPECTIVES & CLOSING CEREMONY	Ben Thanh Hall, Level 1
	Session Chairpersons: 1. Prof Ajit Kumar Padhy, Nuclear Medicine, Singapore General Hospital, Singapore (President-WARMTH) 2. Prof Henry Bom Hee-Seung, Nuclear Medicine, CNU Medical School, Hwasun, South Korea	
1525 – 1550 (O-74)	THERANOSTICS: From Molecular Imaging Using PET/CT with Ga-68 Labeled Tracers to Personalized Therapy Prof Richard Baum, Department of Nuclear Medicine, Center For PET/CT, Bad Berka, Germany	
1550 – 1700	CLOSING CEREMONY	Ben Thanh Hall, Level 1
1550 – 1600	AWARDS: <ul style="list-style-type: none">▪ BEST ORAL PRESENTATION – 3 PRIZES▪ BEST POSTER – 3 PRIZES	
1600 – 1607	NEXT CONFERENCE <ul style="list-style-type: none">▪ 3rd International Symposium on Radiopharmaceutical Therapy (ISRT-2012), Levi, Finland Prof Kalevi Kaieremo (Finland)	
1607 – 1615	5th International Conference on Radiopharmaceutical Therapy (ICRT-2013) (Selection of Venue)	
1615 – 1620	Closing Remarks Prof Henry Bom (ARCCNM)	
1620 – 1625	Closing Remarks Dr Nguyễn Trường Sơn (Cho Ray Hospital)	
1625 – 1630	Vote of Thanks Dr Nguyễn Xuân Cảnh (Local Organizing Secretary)	
1630 – 1700	Highlights & Closing Remarks Prof Ajit Kumar Padhy, President, WARMTH	
1710	SHUTTLE TRANSFER TO OENOPHILOUS DINNER	
1730 – 2300	ENTERTAINMENT & OENOPHILOUS DINNER	
2300	END OF DAY 4	

4th International Conference on Radiopharmaceutical Therapy (ICRT 2011)

In Conjunction with 10th AGM of Asian Regional Cooperative Council for Nuclear Medicine (ARCCNM)

28 Nov – 2 Dec 2011

New World Saigon Hotel, Ho Chi Minh City, Vietnam

DAY 5: FRIDAY, 2 DECEMBER 2011

0730 **Departure to Cu Chi Tunnels for Sight-Seeing Tour**

0930 –1130 **Cu Chi Tunnel Tour**

1130 –1230 **Ho Chi Minh Memorial**

1230 –1500 **LUNCH**

1600 **Return to Hotel**

Last Evening in Ho Chi Minh City

All Participants Will Have A Free Evening. This Evening's Dinner Is Not Included In The Lump-Sum. Participants Are Free To Go Out For Sight Seeing In The City With Friends Or Do Shopping; And Later For A Change Should Try Out Some Of The Delicious Vietnamese Cuisine For Dinner.

DAY 6: SATURDAY, 3 DECEMBER 2011

Post-Congress Tour of Siem Reap, Cambodia

Abstracts of Poster Presentations (Benign and Malignant Thyroid Disease)

P-001

Is ⁹⁹Tcm Thyroid Planar Imaging Suitable for Evaluating Residue Thyroid after Thyroidectomy: Comparing with I131 Scan after Radioiodine Therapy

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Objective: In China, ⁹⁹Tcm thyroid planar imaging was the most popular way to evaluate the residue thyroid after thyroidectomy. This study wanted to observe the difference between ⁹⁹Tcm thyroid scan and I131 scan after radioiodine therapy in thyroid cancer.

Materials and Methods: Total 103 histologically proven papillary thyroid cancer (PTC) patients(pts) in recent 2-year were collected into the study(42 male,61 female, age 44.5±14.4y). The images were respectively interpreted by 2 nuclear medicine doctors with a 5-point method, unknown the patients information. The data were analyzed by Logistic Regression.

Results: 34/103 (33%) pts had the same score in two scan, especially the high score (≥3).But it was been up regulated in I131 scan in other 69(67%) pts. And most of the pts who had small score(0-1) in ⁹⁹Tcm scan would be higher in I131 whole-body scan.9 pts even showed lung and lymph nodes metastases in I131 scan, which were confirmed by CT and more than one year follow-up. The giving doses (OR=1.135,95% CI 1.026-1.255) and the level of blood triiodothyronine (T3) (OR=0.001,95% CI 0.0-0.206) had relationship with thyroid stimulating hormone.

Conclusion: ⁹⁹Tcm thyroid planar imaging may not suitable for evaluating residue thyroid compared with I131 scan.

P-002

Tc-99m MIBI Scintigraphy for the follow up Evaluation of Differentiated Thyroid Carcinoma Patients after Therapy

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Introduction: Long-term follow-up should be performed in post-total thyroidectomy and radiothyroablation with NaI-131 Differentiated Thyroid Carcinoma (DTC) patients. Thyroglobulin serum (Tg-off) and Thyroglobulin-antigen antibody (AbTg) level in stimulating TSH should be measured in follow-up assessment every 6-12 months. NaI-131 scintigraphy is done to detect location of remnant thyroid and/or metastases. Nevertheless, NaI-131 scintigraphy has some disadvantages, such as patient's discomforts and stunning effect. Tc-99m MIBI is already common used for myocardial perfusion scan and recently is used for tumor seeking agent. Some studies showed varied results for the usage of Tc-99m MIBI scintigraphy in post-therapy DTC patients follow-up, so the advantages of Tc-99m MIBI scintigraphy is still controversy. **Aims:** To evaluate diagnostic value of Tc-99m MIBI and NaI-131 scintigraphy for post-therapy DTC follow-up patients' using Tg-off level as gold standard. **Materials and Methods:** In this study we performed diagnostic test to evaluate sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy of Tc-99m MIBI and NaI-131 scintigraphy using Tg-off level as gold standard. We evaluated 56 post-therapy DTC patients while doing follow-up assessment after therapy. Tc-99m MIBI scintigraphy was done when subjects were in thyroxin suppression therapy. Withdrawal of thyroxin suppression therapy was done at 3 – 4 weeks before follow-up assessment. Tg-off, AbTg, TSH level and administration of NaI-131 orally was done at follow-up assessment. NaI-131 scintigraphy was done at 24 and 48 hours after the administration of NaI-131.

Results: Tc-99m MIBI is more sensitive compared with NaI-131 with sensitivity value is 86.7% versus 80%. NaI-131 is more specific compared with Tc-99m MIBI with specificity value is 87.8% versus 82.9. PPV, NPV, and accuracy for Tc-99m MIBI scintigraphy are 65%, 94.4%, and 83.9%. PPV, NPV, and accuracy for NaI-131 scintigraphy are 70.6%, 92.3%, and 85.7%. Analytical statistics using Chi Square Test (95% Confidence Interval) showed there is significant difference between Tc-99m MIBI and NaI-131 scintigraphy ($P<0.001$).

Discussion: There is significant difference in the diagnostic value between Tc-99m MIBI and NaI-131 scintigraphy for post-therapy DTC patients' follow-up. Tc-99m MIBI is sensitive but less specific for post-therapy DTC patients' follow-up. This study showed that Tc-99m MIBI scintigraphy is also able to detect more positive results in patients with AbTg positive.

P-003

Effect of I-131 Large Dose Thyroid Carcinoma Therapy on Submandibular and Parotid Glands: Quantitative Analysis of Salivary Excretion Pre and Post Therapy

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Introduction: Radioiodine was first introduced in 1940 as an oncologic therapeutic agent after more than 70 years I-131 has become the agent of choice and now available in many countries. Sialadenitis is direct result of radiation injury from iodine uptake, which can be seen on a post-therapeutic whole body scan. The complication can be divided into acute and chronic radiation Sialadenitis. Damage to salivary gland can be quantitated through technetium pertechnetate scintigraphy. This study shows large reduction function of salivary gland. **Patients:** Total of 190 patients was included in this study. Group A- 80 pts. Got 30-80mci I-131. Group B- 90 patients got 100mci. Group C- got 120-200mci of I-131.

Materials and Methods: Technetium procured from BRIT, Mumbai. Pre and 1-month post therapy ^{99}TcO -scan done on all patients with GE Infinia gamma camera.

Results: We quantified the salivary excretion pre and 1-month post- radioiodine therapy. In all patients pre-therapy salivary excretion was 50-70% but after therapy group A, B and C showed different results. Group A- post therapy excretion was 25-45%, group B-20-30%, group C 10-20%. These results clearly shows that when the I-131 dose increases salivary excretion decreases. Sequentially, keeping a piece of lemon in the mouth for 48hrs reduced the dose to salivary gland and excretion also improved.

Conclusion: Sialadenitis can be prevented with lower activity of prescribed I-131, good hydration, use of sialogogues and lemon juice. Low risk patient who require remnant ablation with I-131 should be given the lowest dose of I-131.

P-004

Serum Thyroglobulin Level Alone Is Not Enough To Monitor Persistence or Recurrence Disease of Differentiated Thyroid Carcinoma

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To monitor persistence or recurrence of disease and to evaluate the effectiveness of treatment for differentiated thyroid cancer (DTC), serum thyroglobulin (Tg) is widely accepted as a tumor marker. However, Tg level can be misleading in certain instances in which levels are low but have recurrence. The aim of this study is to prove that Tg test alone is not conclusive in monitoring persistence or recurrence of disease in patients with DTC. A retrospective study was conducted for 40 patients, 36 females and four males, who received I-131 therapy during a 2- year period, 2008-2010, and of an age group of 19 to 78 years. During the follow-up, Tg and anti-Tg antibody (TgAb) were examined after four weeks period of levothyroxine hormone withdrawal. Additionally, bone scintigraphy was performed. Tg level, $>2\text{ ng/mL}$, was regarded as a persistence or recurrence disease, with Tsh levels of $>30\text{ uIU/mL}$.

Serum thyroglobulin $>2\text{ ng/mL}$ and negative TgAb were discovered in 6/40 patients, comprising 15% of the total number. Two out of those 6 patients had shown a high uptake at sternum and caput of os.femur dextra with bone scintigraphy; however, negative uptake of I-131 on whole body scan after therapy. Tg $\leq 2\text{ ng/mL}$ and TgAb negative were discovered in 34/40 patients, comprising 85% of the total number. Four out of the 34 patients had shown an abnormal uptake in the bone scan. The first had a diffuse uptake at os.parietal bilateral and sacro-iliac joint dextra on bone scan; however, none was discovered at these sites after therapy with I-131 under whole body scan and very light uptake level at thyroid bed. The second patient had also an abnormal uptake at os.costa V dextra with bone scintigraphy; however did not show after therapy with I-131 under whole body scan. Moreover, a follow-up, six months later, had shown no uptake at that site. The remaining two patients had concurrent results of bone scintigraphy and I-131 whole body scan after therapy. From the above, we conclude that serum thyroglobulin test cannot be considered as a single indicator in monitoring thyroid cancer; furthermore, TgAb examination and imaging tests, such as bone scintigraphy, should be included to improve diagnostic value in identifying persistence or recurrence disease. All test results should be treated on a case-by-case basis and not as a general guide, where test results cut-off point confirms variation in values.

P-005

Pattern of Metastases in Well-differentiated Thyroid Microcarcinoma

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Surgery (lobectomy, near-total thyroidectomy) is the primary treatment of well-differentiated thyroid carcinoma (DTC). According to ATA recommendation 2009, thyroid lobectomy alone may be a sufficient treatment for the small nodule (< 1cm), low- risk, unifocal, intrathyroidal carcinomas in the absence of prior head and neck irradiation or radiologically or clinically involved cervical nodal metastases. DTC may spread to lung, bone, liver and lymph node, but metastases from differentiated thyroid microcarcinoma is uncommon.

We had five patients (4 PTC, 1 FTC) who presented with metastases in various organs as the first sign of DTC, without visible or palpable lump in the thyroid gland. The presenting symptoms of 4 PTC patient were cervical lymphadenopathy due to suspected mycobacterium tuberculosis infection, blurred vision due to intracranial mass, fracture compression at lumbar bone with multiple vertebrae lumbar metastases based on anatomical imaging, and mass in parieto-occipital dextra. While the FTC patient had fracture compression at lumbar bone with multiple vertebrae lumbar metastases based on anatomical imaging as presenting symptoms. During work-up period, there is no primary malignancy. All patients underwent to surgery and the histopathological results showed metastases from thyroid carcinoma. After that, patients referred to total thyroidectomy, and the only abnormality macroscopic finding was small nodule (<1 cm). Whole body scintigraphy after RAI-131 in one PTC patient showed more extensive metastases at frontal, humerus, pelvis and femoral bones.

Discussion: Histopathology is the gold standard to differentiate type of DTC. Each type of DTC has its own metastases pattern. From these patterns, a clinician may decide management that influence patient's prognosis. **Conclusion:** The possibility of thyroid carcinoma must be considered, from patients with suspected metastases as the presenting symptoms although no lump is palpable in the thyroid gland.

P-006

Outcome of Pregnancy after Radioactive Iodine Treatment

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Radiothyroablation I-131 (RAI) is an effective treatment for high-uptake hyperthyroidism and as an adjuvant treatment for post-total thyroidectomy for well-differentiated thyroid carcinoma (DTC). The

administration of 131-I is strictly contraindicated in pregnancy. The exposure from RAI-131 is a risk on fetal growth. The goal of this study was to investigate the outcome of pregnancy in patients with differentiated thyroid carcinoma and hyperthyroidism who became pregnant after RAI.

Materials and Methods: Retrospective study were done with the data collected based on medical records from our hospital between January 2004 until December 2010. RAI activity doses for hyperthyroidism between 4-12 mCi while for DTC between 80-150 mCi.

Results: RAI was delivered to 1064 hyperthyroidism and 127 DTC female subjects. A total of 12 pregnant subjects (4 hyperthyroidism, 8 DTC) were recorded during this study period. Five of these subjects (1 hyperthyroidism, 4 DTC) got pregnant within 6 months after the last administration of I-131. One of them had blighted ovum. This subject had been pregnant two weeks after receiving 100 mCi NaI-131 for thyroid ablation. The other eleven subjects had normal pregnancy, nine of them had delivered healthy term babies, and two of them are still in gravid.

Discussion: During the first and the second trimester of gestational age, the embryo undergoes rapid growth and development. At this point in time, embryonic cells are still able to differentiate into many types of cell. This period is extremely vulnerable for radiation exposure.

Conclusion: We conclude that radioiodine did not have any deleterious effect on fetus growth and development, that is if pregnancies occurred at least after six months exposure from RAI-131 treatment.

P-007

Radioactive Iodine Ablation in Young Adults with Differentiated Thyroid Carcinoma

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Introduction: The prevalence of thyroid carcinoma in young adults is about 10% of thyroid malignancy cases. We reported our experience in using radioactive iodine (NaI-131) ablation for young adults with post-total thyroidectomy differentiated thyroid carcinoma.

Materials and Methods: A retrospective study was conducted in young adults subjects with differentiated thyroid carcinoma who has undergone post-total thyroidectomy and followed by radioiodine ablation therapy. Data was collected from 25 medical records in our department from 1998 to 2010. Histological and laboratory findings (serum TSHs, thyroglobulin/Tg and Anti-Thyroglobulin Antibody/ATA levels) were noted

until at least six months after ablation. Only 15 patients were eligible. Complete response after ablation was defined if Tg serum level < 3 ng/ml, with TSHs serum level > 30 µIU/ml and no detected ATA level; outside this level was defined as residual disease.

Results: Of 15 subjects (12 females and 3 males, aged 13-21 years.), 9 subjects had papillary thyroid carcinoma / PTC (60%) and 6 subjects had follicular thyroid carcinoma / FTC (40%). Metastases were found in 5 subjects (33.3%) with loco-regional lymphatic metastases, 3 subjects (20%) with pulmonary metastases, one subject (6.6%) with bone metastases and one subject (6.6%) with metastases in soft tissue. The first ablation I-131 dose was given between 80-100 mCi. Next I-131 was given after 6- 12 months or more, if needed, by increasing the dose to 150 mCi. Three subjects (1 PTC, 2 FTC) had complete response after first ablation, one subject (1 PTC) after second dose, and one subject (1 PTC) after third dose. Four of five subjects had thyroglobulin serum level < 10 ng/dl. Eighteen months after radioiodine ablation, 10 subjects (66.6%) were still positive for residual functioning thyroid tissue with thyroglobulin serum levels more than 10 ng/dl.

Discussion: The accepted management of differentiated thyroid carcinoma is total thyroidectomy, followed by radioactive iodine (I-131) ablation and suppressive doses of thyroid hormone. Complete response was found in 3 subjects after six months post- radioactive iodine ablation. Other studies used thyroglobulin serum level < 3 ng/dl as the criteria of good response to therapy. Based on these criteria, good response was found in four patients with thyroglobulin serum level < 3 ng/dl. Papillary thyroid carcinoma in young adults has a favorable prognosis. The favorable prognosis is associated with lymphocytic infiltration, as an anticancer reaction during the immunologic activity. Young adults usually have more advanced tumors, with local and distant metastases and have higher recurrence rates. Children under 10 years of age have very high mortality rates. In conclusion, it seems that age, histopathology classification, and distant nodal metastases are important factors for non-responsiveness of well-differentiated thyroid carcinoma in young adults to radioactive iodine ablation.

P-008

Applications of Nuclear Medicine Techniques in Diagnosis and Treatment of Differentiated Thyroid Carcinoma: Results in Vietnam

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Differentiated thyroid carcinoma (DTC) is a common disease in Vietnam. Nuclear medicine has been used for diagnose thyroid diseases and especially for thyroid cancer. However, the application of multimodalities (including radioiodine) in treatment of DTC has just been practiced since 1994. Till now, there are 8 Departments of Nuclear Medicine in Vietnam, where the treatment and follow up of thousands of DTC has been underwent in routine. This meta-analysis took data from the local published reports about this topic. The author has revealed some conclusions as follow:

- NM technique in the diagnosis and treatment of DTC has high benefit. This method is safe and cost-effective.
- There are more and more NM departments in Vietnam has sufficient human resources, conditions and equipments to expand the utilities of NM techniques in diagnosis and treatment of DTC.
- From their own studies, Vietnamese NM physicians have confirmed specific and scientific knowledge in DTC management:
 - a. Thyroid and whole body scintigraphy play an important role in diagnosis, monitoring and evaluation of DTC treatment outcomes.
 - b. Ablation of postoperative remnant thyroid tissue in DTC is the first essential step in DTC treatment. Estimating doses (from 30-100 mCi) depends on several parameters individually. The results depend on many factors but the most important ones are the volume of thyroid tissue left after surgery, histopathology type (papillary response better than the follicular ones)...Almost department gained complete response: nearly 80%, partial response: 10%, no response: <10%.
 - c. Majority of our patients coming to physicians had metastases (lymph nodes, lungs, bones..) or recurrent. So they have been treated with multiple doses (between 2 - 5 times) to gain better treatment outcomes. Maximum dose was 512,2 +- 100,2 mCi.
 - d. Clinical examinations and necessary laboratory tests are essential in diagnosis, evaluation and follow up. Determination of serum Tg and Anti-Tg levels, neck and whole body scintigraphy with I-131, bone scintigraphy with MDP-Tc-99m, lung perfusion with MIBI-Tc-99m, brain scintigraphy are very important.
 - e. PET / CT have been used for DTC management in Vietnam. Its benefit in patients having difficulties in detecting distant metastases by SPECT, PET / CT with FDG has discovered more than 65.5% patients with metastases and/or recurrence but previously negative with I-131 SPECT.
 - f. Tg, Anti Tg is being proved here. Results from some studies also showed that determination of both Tg and Anti Tg serum concentrations is very important, because 38.5% of patients

clinically diagnosed as DTC having the positive scintigraphy (thyroid tissue remaining after thyroidectomy), but Tg levels were <10 ng/ml. The reason for this phenomenon is the higher Anti Tg levels (> 16,85 ± 3,96 IU/ml).

- g. Some studies showed a discordance between the serum Tg (Tg ≤ 10ng/ml) and Anti Tg concentration (≤ 50 UI / ml) but a positive I-131 whole body scintigraphy (9.16% of 1037 DTC patients in Cho Ray Hospital). This issue need further study to answer a reason.

P-009

Differentiated Thyroid Cancer Ablation: 5 Years Experience in Limassol General Hospital

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Introduction: The use of I131 in the treatment of patients with differentiated thyroid cancer has been well established in the past years. Thyroid cancer patients are given an ablation dose to eliminate the residual thyroid tissue after operation. The use of 131-I whole-body imaging before 131-I therapy, and whether “stunning” of the thyroid remnant occurs, remains under discussion. Therefore, nowadays different protocols of ablation therapy are in use in many centers: Ablation with standard dose without pre-therapy scan and or Pre-Therapy Scan and selection of the dose according to the results and or after dosimetric calculations.

Materials and Methods: Between January 2006 and June 2011 we examined 127 patients, 99 women- mean age 48.1. y (between 19-75 years) and 28 men-mean age 49.3 y. (between 30-74) with differentiated thyroid cancer (Papillary Ca, Follicular Ca and Papillary Ca- follicular variant) after operation. These patients are followed up according to the following protocol: Initial diagnostic WB and static neck scan was performed 3-4 weeks after total thyroidectomy (TSH and Thyroglobuline levels done on the day of I131 administration), 24 hours after administration of 2.8 mCi I131. Ablation with doses between 28 mCi and 150 mCi was performed one week after. Patients, who were administered doses higher than 28 mCi, were admitted in a dedicated room in Nicosia General Hospital and had post-ablation scan one week later. Follow up scans were performed between 8 months and one year, 4 years and 9 years post operation. Patients were 3-4 weeks on preparation (off Thyroxin). For the WB imaging a double-headed γ -camera Fillips Forte fitted

with high energy collimators, matrix 256×1024, speed 5 cm/min, energy 364 KeV with 20% window was used. Static anterior neck image was imaged with matrix 256 for 5 minutes.

Results: A total of 82 patients out of 127 were followed-up. 46 patients were given 28 mCi, 28 p. between 100-120 mCi and 8 p. 140-150 mCi. The doses given were empirical taking into consideration the presence or absence of thyroid residua, lymph node or distant metastases on I131 WB diagnostic scan and the thyroid cancer risk (mentioned in the Textbook of Nuclear Medicine of Michael Wilson). 8 patients had abnormal first follow-up scan, 6 had minimal residua and 2 had lymph nodes.

Conclusion: We have demonstrated a relatively uniform ablation rate of 90.2% using empirical single doses of Iodine 131 ranging between 28-150 mCi. We have been taking into consideration the thyroid cancer risk, the results of the biopsy of the tumor and the presence or absence of thyroid residua or metastases on I131 WB diagnostic scans. We believe that the combination of the above factors (thyroid cancer risk and presence or absence of residua or mets) for the decision of the I131 ablative dose to be used post thyroidectomy in patients with differentiated thyroid cancer is more easier than the complicated method using calculations (uptake and volume of thyroid residua) is cheaper as almost the half of the patients don't need hospitalization and is having comparable results. The stunning effect was not observed and we believe that this is due to the use of low diagnostic doses and due to the short interval between diagnostic scan and administration of ablative doses.

P-010

Efficiency Predictive Factors of Radioiodine Ablation in Differentiated Thyroid Cancer

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Introduction: Iodine-131 is often used in the management of Differentiated Thyroid Carcinoma (DTC). The aim of this paper is to establish the predictive value of anatomopathologic parameters, pTNM classification and prognostic staging on required ablative activity.

Patients and Methods: We studied retrospectively 275 patients with DTC. All patients were treated with radioactive iodine (Iodine-131) after total thyroidectomy. Data were analyzed using statistical tools (Khi2 or ANOVA tests).

Results: The highest activities were required when tumor size exceeded 6cm ($P=0.012$), when peri-thyroid fat was invaded ($P<0.010-3$) or when many cervical lymph node compartments were invaded ($P<0.010-3$). A comparable report was found with pTNM classification. In fact ablative activity increased beyond T3 ($P=0.002$) and N1a ($P=0.039$). No correlation was found with TNM prognostic staging.

Conclusions: Our study showed that we could predict a better ablative efficiency of iodine-131 when tumor size is less than 6cm, lymphatic invasion involvement in one compartment and in the case of peri-thyroid fat integrity. These criterion correspond in pTNM classification to T<T3 and N<N1b classes.

P-011

Lymph Node Metastasis of Differentiated Thyroid Cancer More Frequently Develops into Non-iodine-avid than Lung or Bone Metastasis

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Background: Some lymph node (LN) metastases and distant metastases of differentiated thyroid carcinomas (DTCs) can develop non-iodine-avid as a poor prognostic factor. The present study was performed to evaluate the influencing factor of radioiodine (RAI) uptake in LN metastases and distant metastases in DTC patients.

Materials and Methods: This retrospective study included 121 DTC patients with LN metastases or distant metastases who were treated with 131I therapy after thyroidectomy from 2001 to the end of 2009 in our department. Non-iodine-avid metastases were diagnosed by 18F-fluorodeoxyglucose (FDG) positron emission tomography (PET), CT, MRI or surgery. Iodine avidity was determined by visual uptake in the metastatic site at post-therapeutic 131I WBS. Statistical analysis was performed by using SPSS software (version 15.0). Univariate and multivariate analysis were performed using t-test, chi-square test and binary variable logistic regressions model. $P<0.05$ was taken as statistically significant.

Results: 121 patients with metastases included 75 (62.0%) women and 46 (38.0%) men; 51 (42.1%) patients were <45 years old and 70 (57.9%) patients were ≥45 years old (range: 5–80 years; mean age: 45.0 years); histologically, there were 104 (86.0%) papillary carcinomas, 17 (14.0%) follicular carcinomas. Totally 51 patients had non-iodine-avid metastases. On univariate analysis, LN metastases

were more frequently be non-iodine-avid than distant subgroup ($\chi^2=4.338$, $P=0.037$). However, there are not significant difference between lung and bone metastases ($\chi^2=1.509$, $P=0.216$). Binary variable logistic regressions model revealed four significant predictors of non-iodine-avid occurrence: Papillary histology (OR=0.059; 95% CI 0.010 to 0.037, $P=0.001$), age (OR=1.050; 95% CI 1.019 to 1.082, $P=0.001$), metastasis time (OR=4.122; 95% CI 1.421 to 11.894, $P=0.000$) and recurring time (OR=4.299; 95% CI 2.132 to 7.685, $P=0.000$). Metastases in 13 patients taking up RAI developed non-131I-avid metastases after treated with 131I. Four patients recurring long time after 131I therapy all have non-iodine-avid metastases.

Conclusion: DTC metastases in LN more frequently developed to lose their ability to concentrate iodine than distant metastases, but bone metastases and lung metastases show the similar chance to be non-iodine-avid. Old age, papillary histology, metastasis time and recurring times are predictor factors for non-iodine-avid metastases. 131I may potential predictor factors for non-iodine-avid metastases.

P-012

The Outcome of Differentiated Thyroid Carcinoma Patients with Lung Metastases after Radiothyroablation with Iodine-131

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Background: Thyroid cancer is the most common endocrine neoplasm. RAI therapy has been widely used for metastatic differentiated thyroid cancer (DTC). Metastases sites of DTC are lung and bone respectively. The aim of this study was to evaluate outcome of RAI therapy in lung metastatic DTC regarding its pattern and survival rate.

Materials and Methods: DTC patients with lung metastases were enrolled from 2005 – 2010. The subjects were divided into two groups based on uptake pattern of metastatic lesion: macro and micronodule. Outcome of RAI therapy was evaluated by serum thyroglobulin measurement and visually radioiodine uptake changes on post RAI therapy whole body scan or diagnostic I-131 whole body scan with minimal one year of follow up period.

Results: There were 286 patients of DTC from 2005 – 2010, 15 of them had lung metastases (age 9 – 61, mean

43.5; 13 female and 2 male). Histopathology result showed papillary thyroid cancer in 11 patients and follicular thyroid cancer in 4 patients. From all patients, there were 11 patients showing lung metastases and 4 patients showed both lung and bone metastases. Micronodules were found in 10 of 11 patients with lung metastases and 2 of 4 patients with both lung and bone metastases. Most of the micronodules (9/11 and 2/4) showed decreased serum thyroglobulin level and radioiodine uptake. Two patients showed no metastatic lesions on their last follow-up scan result (one patient in 2.5 years, while another patient in 6 years after their first radioiodine treatment).

Conclusion: Micronodule metastatic lesion show better response to RAI therapy.

P-013

Head Mass with Radioactivity Uptake in Patient with Thyroid Carcinoma

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Introduction: Thyroid cancer is a tumor with unique presence. Good survival rate in the patient with thyroid tumor is common even when distant metastases occur. Site of metastases in this tumor are lung (49%), bone (25%) and other soft tissue (10%). Only 3 of 144 new cases diagnosed with well-differentiated (DTC) have metastases to the brain in our department in the last 3 years. All cases are female; 2 papillary and 1 follicular carcinoma.

Treatment: One female patient has a history of lump in the neck within 9 years decided to have treatment when another mass in the head occur. The result from thyroid scan was enlargement of two lobes with irregular distributed of radioactivity, nodule in the lower part left lobes no uptake were present, the Mass on the left part of occipital bone with diameter 1 cm shown an uptake from radioactivity. Fine Needle Biopsy (FNAB) results conclude that the mass was metastases thyroid carcinoma. The Patient underwent total thyroidectomy with pathologic finding show papillary thyroid carcinoma variant follicular, follow by radiothyroablation protocol in our department with NaI-131 100 mCi and given oral dose 150 ug L-Thyroxin. Patient hospitalized for 6 day with dose rate still > 1 mRad/h. Whole body scan not performed in this patient because that reason. Six month later patient came again with a larger mass in the head after 1 month L-thyroxin discontinued. Laboratory finding

show Thyroglobulin value: 148 ng/dl (N: 2-70 ng/dl), Anti Thyroglobulin: >3,000. Patient was decided to second round RAI NaI-131 150 mCi and given oral dose 150 ug L-Thyroxin. Patient hospitalized again for another 9 day with dose rate still > 1 mRad/h. Whole body scan not performed in this patient because that reason either. Six months later the mass became larger with diameter ± 3 cm after 1 month L-Thyroxin discontinued. The laboratory result find that Thyroglobulin value was: 250 ng/dl (N: 2-70 ng/dl) and Anti Thyroglobulin: >2,369. The patient then decided to give another session of RAI NaI 131 with dose 150 mCi followed with 150 ug L-Thyroxin. Then again patient was hospitalized for 9 day with dose rate still > 1 mRad/h. Whole body scan not performed in this patient because that reason either.

Discussion: Three session of high dose RAI NaI treatment did not affect the mass in the head which was still growing and laboratory finding (Tg and ATA) remain high. One of the main reasons was the range of internal radiation of beta from iodine 0.2-0.8 mm. It explains why not all of extra thyroid mass in the head was ablated. The bigger the mass affect, the long duration of stay from the treatment. Excision of extra thyroid mass in patients with a large diameter must be a consideration to improve the effectiveness of RAI treatment.

P-014

Recent Status of Radioiodine Therapy for Patients with Primary Hyperthyroidism and Differentiated Thyroid Carcinoma in Bangladesh

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Introduction: Radioiodine therapy (RIT) has been in use for last 7 decades since 1941 for hyperthyroidism and patients with Differentiated Thyroid Carcinoma (DTC) successfully. In Bangladesh, RIT was introduced on 1961, but its use has tremendously increased in last decade about 30 times more than that was in early 1980s as in other countries for its proven safety and cost effectiveness. Society of Nuclear Medicine, Bangladesh established guidelines for RIT in hyperthyroidism and patients with DTC with taking consideration of common agreements of experts in Nuclear Medicine, medicine specialists, endocrinologists and consultant surgeons through National Workshop on Management of Thyroid Cancer and Thyrotoxicosis by Nuclear Medicine Technique-14 Aug 2002.

Objectives: To observe the outcome of fixed dose RIT in primary hyperthyroidism and different doses of radioiodine ablation therapy (RIAT) in DTC among Bangladeshi population.

Materials and Methods: Meta-analysis of databases and registries for RIT of 3 peripheral Centers for Nuclear Medicine and one Institute in Bangladesh was done. During the year 2006 to 2010, total 2196 patients with primary hyperthyroidism and 1873 patients with DTC received RIT. All Nuclear Medicine Centers of our Country take the responsibilities of life long follow up of the patients after RIT, so, in these centers data about history, investigations and RIT and follow up were well preserved. Data of all these patients from registries were included in this study. RIT in small ranges of fixed dose in patients of Graves' disease (GD) (131I, 8-12 mci), toxic multinodular goiter (TMNG) (fixed dose-131I -15 mci) and autonomous functioning toxic nodule (AFTN) (131I -15 mci) and different dose schedules of radioiodine (RI) for DTC were given. Doses of RI in DTC varied from 30 mci to 250 mci. In thyroidectomized patients with DTC with significant remnants of thyroid tissue 30 mci/50 mci was given. Patients with DTC without metastases received 75/100 mci doses depending on residual tissue. Patients with lymph nodes/lungs metastases were given 150 mci and those with bony metastases received 200 mci. Patients with brain metastases were given 250 mci with special care. All patients those received 50 mci and more were isolated in single cabin of a specified hospital for 6 days and those who received 30 mci were also confined to hospital for 2 days and also given in some as outpatients after satisfactory counseling. At follow -up, patients with DTC were assessed by doing serum TSH (as all patients are kept in TSH suppressive levothyroxine supplement), thyroglobulin (Tg) 3 monthly at first year of RIT and thereafter 6 monthly. Whole body Iodine scan (WBS) was done in each patient at first and second year of RIAT after withdrawal of levothyroxine for 3 weeks routinely. WBS was repeated after 5 years and whenever needed especially when Tg became high. Patients were considered disease free or as survivor when his serum Tg level <4 ng/ml (normal range-4-14 ng/ml) and subsequent two WBS were normal after getting single dose of radioiodine ablation therapy. Success rate of RIT in hyperthyroidism or remission of thyrotoxicosis was considered to attain euthyroidism or hypothyroidism. Persistence of hyperthyroid state after 6 months of RIT was considered as treatment failure and these patients needed subsequent RIT for remission.

Results: Among 2196 hyperthyroid patients (Age range; 11-85 years, mean age, 41±12 years), female to male ratio was 2:1. Patients with GD (79%), TMNG (15%) and AFTN (6%) had received RIT. Patients with GD received radioiodine at fixed dose of 8-12 mci and patients with TMNG and AFTN were given 15 mci of radioiodine. Similar treatment outcome was found in different centers ($P>0.05$). At 6 months follow up, 47% of GD remained in euthyroid state, 40% patients became hypothyroid and 13 % (failure rate of hyperthyroidism) remained still in hyperthyroid state. These patients with persistence hyperthyroid state received subsequent RIT in higher doses than the initial

dose. After 24 months of follow up, all patients with GD became hypothyroid. In case of TMNG, euthyroid state was attained by 56% of treated patients, 14% patients became hypothyroid and treatment failure was noted in 30% cases at 24 months of follow up. At same follow up time, euthyroid state was observed in 75% cases of AFTN and 25% cases required double doses of RIT. About 1873 patients with DTC were treated with radioiodine in mentioned centers during the last five years. Age range of patients with papillary carcinoma of thyroid (PCT) was 11-78 years, mean age, 36±12 years. Ratio of PCT to follicular carcinoma of thyroid (FCT) was 18:1. Age range of patients with FCT was 25-70 years, mean age, 50±20 years Majority patients (52%) with PCT referred to Nuclear Medicine Departments after total thyroidectomy without metastases and received 100 mci of RI and showed highest percentages (87%) of disease free survival. About 28% patients with PCT presented with cervical lymph nodes metastases, 2% with lungs metastases and 2% of cases of PCT with follicular variant showed bony metastases. About 55% of patients after receiving RIT showed disease free survival who had PCT presented with cervical lymph nodes metastases but had history of good cervical clearance surgery along with total thyroidectomy. About 12.5% of patients with FCT presented without metastases, 25% cases with cervical lymph nodes and or lungs metastases, 50% with bony metastases and 12.5% with brain metastases. Disease free survival was observed in 80% cases with FCT who were presented and treated without metastases, but 95% cases needed double or more doses.

Conclusion: In retrospect from the given statistics it is well apparent that the success rate of RIT for hyperthyroidism varied from 70%-87% depending on disease categories at 6-24 months of follow up. Disease free survival after 12- 48 months follow up was observed highest (87%) in patients presented with PCT without metastases who received 100 mci of radioiodine. About 55% of patients showed disease free survival who had PCT presented with cervical lymph nodes metastases. Multiple doses were needed in 95% patients with FCT with metastases. Finally it can be concluded that more affordable nuclear techniques are urgently needed with each passing year, as the cancer epidemic spreads in developing parts of the world like Bangladesh.

P-015

Role of Ultrasonography, Radionuclide Scan and Fine Needle Aspiration Cytology in the Diagnosis of Malignancy in Solitary Thyroid Nodule

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Purpose: Ultrasonography (USG), Radionuclide Scan (RNS) and Fine Needle Aspiration Cytology (FNAC), clearly all have particular application in the diagnosis of malignancy in solitary thyroid nodule. But there are drawbacks of each technique and the final answer to the problem is still elusive. This study aims to review the existing protocol and to compare the efficacy of USG, RNS and FNAC in appropriate selection of patients for surgery.

Materials and Methods: This cross sectional study included 50 patients with solitary thyroid nodule, were examined by USG, RNS and FNAC. All the study patients underwent thyroid surgery and their biopsy materials were sent for histopathological diagnosis. The diagnostic accuracies of all the modalities were then assessed against histopathological diagnosis.

Results: The sensitivity of USG in diagnosing malignancy in solitary nodules was much lower (62.5%) than those of RNS (87.5%) and FNAC (75%), while the specificity of RNS was much lower (28.6%) compared to USG (88.1%) and FNAC (97.6%). The positive predictive value of USG was much lower (50%) than that of FNAC (87.5%). However, the PPV of RNS was staggeringly lower (18.9%). The NPV of three diagnostic modalities were over 90% and were almost comparable. The overall diagnostic accuracy of USG (84%) was nearer to that of FNAC (94%) but significantly higher than that of RNS (38%).

Conclusion: The current protocol could not effectively isolate benign from malignant disease. The problem of solitary thyroid nodule also demands special attention or revision of current protocol. We see that there is still a need for approaches that improve the yield of patient selection for surgery of solitary thyroid nodule especially in areas where iodine deficiency is endemic.

P-016

Unusual Metastasis in Papillary Thyroid Carcinoma: A Case Report

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Introduction: Papillary thyroid carcinoma is the most common neoplasm in the thyroid gland and accounts for about 70% of all thyroid carcinomas. When the regional nodes are systemically examined, most patients with papillary carcinoma are found to have microscopic nodal metastases. Node metastases to other regions can

be found although rarely reported. We report a case of papillary thyroid carcinoma with lymphogenous metastases on inguinal lymph nodes without any involvement of cervical nodes.

Case Report: A 55-y.o female underwent right thyroid lobectomy followed by external radiation in the year of 2000 in peripheral hospital. Nine years later, she complained of left groin mass. Cytology examination suggested metastasis from the thyroid. Since the bulky tumor was inoperable, the patient first underwent adjuvant chemotherapy with doxorubicin regimen. After six cycles of chemotherapy, the inguinal mass significantly shrunk and became operable. Total thyroidectomy and left inguinal lymphadenectomy were performed. Histopathology results showed papillary thyroid carcinoma and inguinal metastases. The patient was treated with I-131 150 mCi (5550 MBq). Post-RAI ablation scintigraphy showed pathological uptake in thyroid bed and left inguinal region.

Discussion: Papillary thyroid carcinoma usually spreads to cervical lymph nodes. The spreading to other regional lymph nodes is rarely reported. Mazzaferri and Young (1981) found recurrence rates is increasing approximately fivefold in patients over age 40 who were found to have regional nodal metastases at initial surgery. According to Maches A *et al* (2004) when lateral or mediastinal lymph node compartments are involved there is a possibility of cancer cell spread to corresponding lymphatic flow region, such as in the groin lymph node.

Conclusion: In differentiated thyroid carcinoma patients with any regional lymphadenopathy, distant metastasis of the primary tumor should always be considered.

P-017

Effect of Low Dose Radioiodine Therapy in Respect to Amount of Post-operative Thyroid Tissue (with Metastasis or Not)

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Introduction: Management of patients with differentiated thyroid cancer with low dose radio-iodine with significant amount of remnant of thyroid tissue, serum thyroid stimulating hormone level relatively lower and variable amount of I-131 uptakes to avoid complications of iodine-131 thyroid ablation therapy referred to INMU.

Objective: To determine the effect of low dose radioiodine therapy in destroying the amount of thyroid tissue remaining after surgery. To reduce the treatment cost and avoidance of hospital admission for isolation.

Design: Prospective study.

Materials and Methods: Low dose iodine-131 (29mCi-50mCi) was used to ablate post-operative thyroid remnants in 15 patients with differentiated thyroid cancer. Serum thyroid stimulating hormone (TSH), serum thyroglobulin (Tg), thyroid USG, thyroid scan and uptake test were done in all patients before radioiodine therapy. All patients were followed up with thyroxin suppression of thyroid stimulating hormone after ablation. Follow-up of patients was done by measuring serum Tg (off thyroxin) and whole body scans (WBS).

Results: The surgical procedure was total/near-total thyroidectomy in 82.3% and 48.5% total thyroidectomy with radical neck dissection and subtotal or hemithyroidectomy in 11.7%. Histology was papillary carcinoma in 94.15% of patients and 5.8% was follicular carcinoma of thyroid. With more than one low dose I-131 of 10 patients (58.8%), remnant ablation was achieved in 7(70%), where as in 1 patient WBS (whole body scan) shows focally increased uptake in right lobe after two low dose therapy in 2 patients no follow up whole body scan and thyroglobulin (Tg) done. 5 patients out of 6 patients with significant activity in pre-therapy scan and good amount of tissue in ultra sonogram show good response to low dose I-131 ablation therapy (complete ablation). In one patient two subsequent 28mCi and 29 mCi doses fail to ablation. In this patient WBS shows focal increased uptake in right lobe (positive) but thyroglobulin (Tg) less than one. Ablations by one low dose in 5 patients, 3 patients (60%) show effective or complete ablation and rest two patients do not follow up adequately.

Conclusions: The use of multiple low doses of I-131 therapy can be effective as large dose therapy. Low dose therapy ensures low cost I-131 therapy in differentiated thyroid carcinoma and avoidance of hospitalization.

P-018

I-131 Therapy for Pediatric Hyperthyroid: A Clinical Experience in Nuclear Medicine Department of Dr. Hasan Sadikin Hospital, Indonesia

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Background: Incidence of hyperthyroid is very rare in pediatric, more than 95% of cases is caused by Graves disease. There are three therapeutic options for pediatric Graves' disease: antithyroid drugs, radioiodine ablation and surgery. Because of its higher rate of significant remission in pediatric Graves' disease, antithyroid

drugs are the first line of therapy. Recently, there are many reports about effectiveness of radioiodine therapy for pediatric Graves' patients. Pediatric Graves' hyperthyroidism may have poor therapeutic responses to I-131 when getting delayed ablations or just have been treated with antithyroid drugs. In this report we wish to describe our experience in using radioiodine therapy for pediatric hyperthyroid patients.

Materials and Methods: A retrospective study was done in 701 hyperthyroid patients. Among them, there were seven pediatric patients (1%) who underwent radioiodine ablation therapy based on hyperthyroidism criteria (goiter with increased thyroid hormones, decreased TSH sensitive level, Tc-99m pertechnetate diffuse uptake) in our department in the period of November 2008 to November 2010. All those pediatric patients were given I-131 therapy with doses of 4-8 mCi. Their clinical responses and laboratory examination were followed-up until the time of three months after radioiodine therapy.

Results: The subjects consisted of six girls and one boy, aged between 12-20 years old. Five of the patients had been treated with antithyroid drugs. Hyperthyroidism was diagnosed between one month and six years. After three months follow up, there were two drop out patients; one patient was not achieving time of the three months follow up yet. Four patients showed significantly clinical improvement manifestation after radioiodine therapy with decreasing in their serum thyroid hormones levels although still not achieved normal values yet. All of those four patients needed no longer special medical attentions and antithyroid therapy but still needed reablation therapy.

Conclusion: Radioiodine is a convenient and effective therapy for pediatric hyperthyroid.

P-019

Quantitative Study of the Different Protocols Analysis for Excess Radiation Absorbed Doses from Radioiodine Treatment of Hyperthyroidism in Bangladesh

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Introduction and Objective: Radioiodine therapy is the first choice for treatment of hyperthyroidism because it is considered safe, inexpensive and is

convenient for the patient almost without side effects. Even though radioiodine therapy of hyperthyroidism using ¹³¹I has been performed for more than 60 years, the technique of treatment; prescribing the activity differs from country to country and even from hospital to hospital within the same country. A number of protocols have been suggested and used for calculation the activity to be administered to the patients for the radioiodine treatment of hyperthyroidism; application of these protocols may result in excess dose of the hyperthyroid patients. The main objective of this study was to carry quantitative study of the different protocols analysis for excess radiation absorbed doses of hyperthyroid patients.

Materials and Methods: To illuminate such differences 50 radioiodine treatments for hyperthyroidism at the Institute of Nuclear Medicine and Ultrasound in Dhaka, Bangladesh have been analyzed. Comparative absorbed dose calculations were carried out assuming that the individual patients had also been treated according to different protocols in current use. The measurement of thyroid uptake were performed 2, 24 and 48 hrs after administration of the 0.4 MBq radioiodine ¹³¹I uptakes to each patient. Also some patients ¹³¹I uptake were measured after 5 and 6 days for using single uptake method for calculating the absorbed dose. Thyroid mass and effective half-life were also calculated and the variations in the thyroid doses were analyzed.

Results: The results show that the method used for calculation of the administered activity in radioiodine therapy is differ from optimized in the patients. In Bangladesh, all hospitals used fixed administered activity for the treatment for hyperthyroidism. For that reason, most of the patients were treated with an unnecessarily high activity, as a mean factor of 2.75 times too high and in individual patients up to 7 times too high from my study, leading to an unnecessary radiation exposure both for the patient, the family and the public. The protocols, which have not taken into account the thyroid mass, and the effective half-life of ¹³¹I of the individual patient, showed a higher degree of deviation from the required thyroid dose. This is not acceptable with general radiation protection principles.

Conclusion: Using higher activity for treatment of hyperthyroidism than required will also extend the patients stay at the hospital, increase risk for the exposure to others and thus increase the costs for the care. Unnecessarily high activity will also impose more long-lasting radiation protection restriction relative to family members when the patient returns home. More effort should be made worldwide to conform these protocols in use and thus decrease unnecessary radiation dose to individual patients and their families.

P-021

Effect of Single Dose of Radioiodine Therapy on Volume Reduction of the Thyroid Gland in Hyperthyroidism

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The aim of the present study was to see the reduction of thyroid volume and its relation to thyroid status. In this study 10-12 mci of radioactive iodine was used for the treatment of hyperthyroidism and volume measurement of thyroid gland before and after the treatment was done by ultrasonogram. Total 117 patients from July 2009 to June 2010 were studied at Institute of Nuclear Medicine and Ultrasound, BSMMU campus. Patients with diffuse toxic goiter, toxic multinodular goiter and single toxic nodular goiter of any age after puberty were included in this study. All the patients were under went through physical examination, thyroid scan with ^{99m}Tc, radioactive iodine uptake test and FT₄, TSH level. Thyroid volume was measured by Ellipsoid method of ultrasonography. Patients were followed up after 3 months and 6 months by evaluating thyroid volume and hormone assay. In this study 86 patients were having diffuse toxic goiter and 31 had nodular goiter. Of these 31 had nodular goiter, 10 had single nodule and 21 had multiple nodule. Mean volume of the thyroid gland was 24 ml, which reduced to 14 ml at 1st follow- up and became 9.1 ml after 2nd follow- up. Volume reduction of thyroid gland was 42% at 3 months and 66.1% at 6 months. Single dose of radioactive iodine therapy is very effective for diffuse toxic goiter, toxic multinodular goiter and single toxic nodule.

P-022

Graded Empirical I-131 Therapy in Differentiated Cancer of Thyroid - Is There an Ideal Dose?

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Introduction: The consensus about optimal activities of I-131 for thyroid remnant ablation has not yet been achieved. The aim of this study was to compare ablation rates obtained with different I-131 activities.

Patients and Methods: The study included 102 patients

divided into four groups according to I-131 activities given after total thyroidectomy for papillary thyroid cancer: group A [42 patients who received 897 MBq], group B [23 patients who received 1470 MBq], group C [18 patients who received 1847 MBq], and group D [17 patients who received 4432 MBq]. Ablation outcome was assessed by whole-body scan in hypothyroid state 6-9 months after ablation and finally 18-21 months after the treatment.

Results: The rate of successful ablation was similar in the group of patients who received 24 and 40 mCi (75 and 71.2%, respectively). The higher rate of ablation was achieved in the groups treated with 50 and 120 mCi of radioiodine (87.69 and 90.74%, respectively). The ablation rates at the first follow-up examinations (59.5, 67.2, 73.9, 80.6%) were lower than at second control study (75.0, 71.2, 87.7, 90.7%) in all groups. Time required for thyroid remnant ablation seems to be ≥ 18 months.

Conclusion: Our study indicates that activity of 50 mCi seems to be optimal to achieve a successful ablation rate (approximately 90%). Low I-131 activities are acceptable for lower risk patients because of satisfactory ablation rate ($>70\%$), lower expense, and minimal radiation burden to patients as well as lower radiation exposure

P-023

Role of Tc-99m Pertechnetate Thyroid Scintigraphy in Detecting Etiology of Congenital Hypothyroidism

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Introduction: Recently hypothyroidism screening in newborns is a routine procedure in several developed countries in the world. Congenital hypothyroidism (CH) is one of endocrine diseases in newborns that require early diagnosis to avoid adverse effects on neurological and intellectual functions. Diagnosis can be made by newborn screening using serum thyroid stimulating hormones-sensitive (TSHs) and the etiology can be differentiated using thyroid scintigraphy. Dr. Hasan Sadikin hospital is one of 12 hospitals in Bandung that joins national programme for hypothyroidism screening in newborns from year of 2000.

Aim: To investigate the etiology pattern of CH detected through newborn screening. **Materials and Methods:** Dry technique sampling and radioimmunoassay (RIA) were used to measure serum TSHs from 118,920 newborns. CH was defined when high serum level of TSHs from the newborn was found.

Thyroid scintigraphy was performed after intravenous injection of 18.5 – 37 MBq Tc-99m pertechnetate (based on surface area) on hypothyroid infants.

Results: Twenty eight infants were diagnosed having primary congenital hypothyroidism by high level of serum TSHs. Scintigraphy results were classified as : agenesis (absence of uptake), dyshormonogenesis (presence of uptake), ectopic (uptake outside thyroid beds), hemiagenesis (uptake in one side of thyroid beds). From the 28 hypothyroid infants, 12 were found to have agenesis, 2 hypoplasia, 2 hemiagenesis, 8 of ectopic thyroid gland, and 4 patients with suspected dyshormonogenesis.

Conclusion: Small percentage of CH was found from serum TSHs. Thyroid scintigraphy allows the evaluation of the etiology of CH pattern with thyroid agenesis as the most frequent cause.

P-024

Incremental Value of I-131-SPECT/CT Fusion Imaging Over I-131-WBS in the Management of patients with Differentiated Thyroid Carcinoma

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Objective: 131I whole-body scintigraphy (WBS) is an important exam during 131I therapy of the differentiated thyroid carcinoma (DTC), which plays a significant role in detecting differentiated thyroid tumors and metastases, evaluating the therapeutic effect and helping to make further clinical management. However, it is hard to localize parts of radioactive accumulations because WBS is a planar imaging which lacks of anatomic landmarks. Besides, sometimes it is also difficult to differentiate between lesion accumulation, physiological accumulation and contamination. By technique of attenuation correction, 131I-SPECT/CT can make fusion imaging involving anatomical structure and functional information, and provide reliable evidence to the accurate location or qualitative analysis of thyroid carcinoma and its metastases. This retrospective study estimated the incremental value of 131I-SPECT/CT fusion imaging over WBS in the management of patients with DTC.

Materials and Methods: Total 82 DTC patients underwent both WBS and SPECT/CT imaging after they acquired radioiodine therapy. The scans were interpreted by two experienced nuclear medicine physicians and an experienced radiologist. According to the pathological results, other imaging characters and clinical follow-up, accumulations were separated to: 1) benign ones,

including physiological accumulations (nasopharynx, thyroid remnant, salivary glands, digestive tract, bladder and diffuse liver accumulation), inflammation accumulation or radioactive contamination; 2) malignant ones, including remnant tumor, recurrence or metastases; 3) undefined ones, accumulations could not be verified as benign or malignant. The capacity of location or qualitative analysis of SPECT/CT imaging compared with WBS was analyzed and the impact of SPECT/CT imaging on diagnosis of metastases, clinical stage and therapeutic strategy were evaluated.

Results: 203 accumulations were detected by WBS. 89 of them (43.84%) were located by WBS, which was verified by SPECT/CT imaging. Thyroid remnant and bone were the most accurate regions, reached accuracy of 74.24% (44/66) and 62.86% (22/35) respectively. WBS determined 52 benign accumulations, 36 malignant ones and 115 uncertain ones while the number of SPECT/CT imaging were respectively 94, 79 and 30. There was a significant difference of the uncertain accumulations between SPECT/CT imaging and WBS ($t=77.51$, $P=0<0.01$). Besides, 6 none-radioiodine avid metastases were detected by SPECT/CT imaging. Among all 82 patients, 14 (17.07%) were changed about the diagnosis of metastasis; 5 (6.1%) were changed about the clinical stage and 23 (28.05%) were changed about the therapeutic strategy.

Conclusion: 131I-SPECT/CT fusion imaging has incremental value in differentiating radioactive accumulations, detecting of non-radioiodine avid lesions, improving accuracy of diagnosis of DTC and adjusting therapeutic strategy. 131I-SPECT/CT fusion imaging is a better method than 131I-WBS in the management of patients with DTC.

P-025

Empirical Dual Dose Iodine-131 Therapy for Graves' Disease

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Introduction: Various methods have been used to calculate the dose of Iodine-131 for therapy of Graves' disease, including calculating the dose per gram of tissue or using empirical calculations. No conclusive evidence has been noted suggesting the superiority of any of these dose calculation techniques. We used a simple algorithm for a dual dose technique for the therapy.

Materials and Methods: Ninety three consecutive patients diagnosed with Graves' disease on clinical findings, biochemistry and a technetium thyroid scan who were sent for Iodine-131 therapy were enrolled

for this study. Results of the thyroid scan - technetium thyroid uptake - and clinical examination - size of the goiter - were used to determine the dose of I-131 for therapy, either 15 or 20 mCi. All patients with a thyroid uptake of 1 to 5% and/or a goiter of Grade II or greater were administered 20 mCi, whereas all other patients - uptake greater than 5% and goiter less than Grade II - received 15 mCi. All patients were followed up for a minimum of one year post-therapy to evaluate their thyroid status.

Results: At the end of one year post-therapy seventy-four patients were euthyroid, fourteen hypothyroid and five hyperthyroid. This meant that eighty-eight of the ninety-three patients (95%) responded to the therapy. Out of these responders 16% had become hypothyroid by the end of the first year. There was no significant difference in the response rate and incidence of hypothyroidism at the end of one year between the two groups treated with 15 or 20 mCi of I-131.

Conclusion: It is concluded that the above empirical technique of dose calculation for I-131 therapy for Graves' disease using two doses -15 and 20 mCi - reveals very good response rates, comparable with those in literature using various dose calculation techniques. This simple dose calculation technique can thus provide a good alternative to these other techniques.

P-026

Complications to the mother and child with Thyroid Cancer after the Treatment with I-131

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Radioiodine (I-131) has been widely used in the treatment of differentiated thyroid carcinoma. Since radiation can carry a known risk of mutagenic abnormalities, we decided to study the outcome of pregnancy in females with DTC and evaluate the genetic risks and health status of their offspring. We retrospectively studied the medical records of these patients in our Institute from 1999 to 2004. A total of 1110 women were hospitalized for treatment with high doses of 131I, at least 3700MBq. During this period, 653 of these women were in their reproductive period. A hundred of them, who had at least one pregnancy after 131I treatment, were studied. These women had a total of 126 pregnancies (1-6 pregnancies each) after treatment and 101 pregnancies before treatment. We also reviewed the 131I dose administered last, as well as the cumulative

dose of ¹³¹I. Our results show that the incidence of abortions before ¹³¹I treatment was 16.83% (all were spontaneous abortions) and increased to 26.19% after ¹³¹I treatment (15.87% induced and 10.3% spontaneous abortions). Spontaneous abortions were decreased. There was no significant difference between the mean last ¹³¹I dose and the cumulative dose in patients with or without a history of abortions. Mean interval between the last dose of ¹³¹I treatment and abortions versus the last dose and live childbirths showed a significant difference. All children had normal birth weight. Three congenital anomalies: Down's syndrome, cardiac abnormalities and macrocephaly were diagnosed. Three episodes of intrauterine death were also recorded. In conclusion, our findings indicate that in women with DTC, treated with high doses of ¹³¹I: a) There was no evidence of increased spontaneous abortions, b) Increasing the interval between the last dose of ¹³¹I treatment and time to pregnancy might be beneficial for decreasing the entire risk of abortions and c) It appears that ¹³¹I treatment had no obvious adverse effects on the risk of congenital anomalies.

P-027

Lacrimal Duct Obstruction after Iodine-131 Therapy in Patients with Differentiated Thyroid Cancer

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Aim: ¹³¹I has been widely used in treatment of differentiated thyroid carcinoma for almost 70 years. During this period many complications such as lacrimal gland dysfunction have been established. This study argues a new complication "symptomatic or asymptomatic lacrimal duct obstruction".

Materials and Methods: 81 patients (162 eyes) treated with more than 100 mCi ¹³¹I were categorized in 4 groups based on received cumulative dose and were evaluated in a historical cohort study. In addition 17 (34 eyes) age and sex matched persons were selected as control group. Using dacryoscintigraphy, patients and control group were evaluated for partial or complete lacrimal duct obstruction. The data on different groups of patients were compared with the data of control group. Fisher's exact and Mann-Whitney U tests were applied for analyses of categorical and numeric variables, respectively. The analyses were considered significant with $P < 0.05$.

Results: 18% of exposed eyes (29 out of 162) and 9% of

control eyes (3 out of 34) had evidences of lacrimal duct obstruction on the scan images. Among the patients treated with less than 300 mCi of ¹³¹I, 12.8% (5 out of 39) had asymptomatic lacrimal duct obstruction and 2.6% (1 out of 39) had symptomatic obstruction. These values for patients treated with more than 300 mCi were 19% (8 out of 42) and 35.7% (15 out of 42), respectively. Mean cumulative ¹³¹I dose that lead to lacrimal duct obstruction was 429 ± 264 mCi. This value was 273 ± 173 mCi for the patients without obstruction ($P < 0.05$).

Conclusion: This study confirms lacrimal duct obstruction as a complication of ¹³¹I therapy. The symptomatic form of this complication occurs mainly in cumulative dose more than 300 mCi.

P-028

Comparison of Different Techniques for Assessing the Thyroid Functional Status in Patients with Hyperthyroidism

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I-131 thyroid uptake determination is the measurement of the fraction of an administered amount of radioactive iodine that accumulates in the thyroid at a selected time following ingestion. Thyroid uptake can also be determined by using intravenously administered Tc-99m pertechnetate and a gamma camera. To our knowledge, these three widely utilized methods of assessing thyroid functional status have not previously been compared in the same group of patients. The study attempts to evaluate and validate the technetium uptake parameters against the established technique of I-131 uptake. The aim of the study was to assess the reliability of the technetium uptake parameters compared with the radioiodine probe measurements since this would result in not only reduction of radiation burden to the patient but would obviate the need for the patient to attend the department on two separate days. The study also investigates the reasons for the differences observed between the thyroid uptake probe and the gamma camera pertechnetate measurements. The report includes data from a total of 100 patients investigated at the nuclear medicine departments of the Farwania Hospital Kuwait (50 patients) and St. Mary's Hospital Portsmouth (57 patients). 24-hr I-131 uptake was performed using a scintillation probe as part of pre-radioiodine therapy assessment. Thyroid scintigraphy with Tc-99m pertechnetate was performed

in all of the patients and quantified by estimating the 20-minute Tc-99m pertechnetate uptake and thyroid-to-background ratio at 20 minutes. The results of the different measurements were evaluated by regression analysis. The correlation between the 20-min thyroid uptake and the thyroid-to-background ratio at 20-min was 0.84, between Tc-99m pertechnetate uptake and the I-131 uptake was 0.61 and that between the thyroid-to-background ratio and the I-131 uptake was 0.53. The correlation between these parameters and the serum thyroid hormone levels is also discussed. We conclude that pertechnetate uptake measurements can sensitively and fairly accurately document thyroid functional status. The pertechnetate uptake techniques are comparable in their accuracy and definitely more accurate than the 24-hr uptake measurement of I-131.

P-029

The Advantages of Routine Radiothyroablation in Well-differentiated Thyroid Carcinoma Patients

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Introduction: Routine radiothyroablation following total thyroidectomy remains controversial in well-differentiated thyroid cancer (DTC). Thyroid remnant is commonly found even after total thyroidectomy. In our institution (Dr. Hasan Sadikin Hospital), we use routine RAI therapy for thyroid remnant ablation and unsuspected metastases that was subsequently seen from post-therapy whole body scan. The purpose of this study was to evaluate the advantages of routine ablation in DTC patients.

Materials and Methods: The retrospective study was conducted on patients' data that were diagnosed with DTC and subsequently treated with routine ablation therapy after total thyroidectomy from January 2009-December 2010. Routine ablation was given 6-8 weeks after total thyroidectomy. I-131 therapeutic dose was varied between 80-200 mCi (2960 MBq-7400 MBq). WBS and SPECT/CT post therapy were performed when patients were discharged to evaluate pathological extrathyroidal uptake of I-131.

Results: A total of 133 patients (103 female, 30 male, 13 - 72 years old) were included in this study. Papillary carcinoma was diagnosed in 95 patients and the rest had follicular carcinoma. There were pathological extrathyroidal uptakes of I-131 in 33 cases. Twenty-six of them were unsuspected with pathological extrathyroid uptake, while seven others were referred with prior history of distant metastases. Two of the 7 cases did not show any

pathological uptake of I-131 as predicted before. Imaging was able to show more metastases lesions in the other 5.

Conclusion: I-131 routine ablation exhibits advantages in differentiated thyroid carcinoma patients to detect unsuspected distant metastases and provide guidance for more suitable management.

P-030

Electrolyte Imbalance in Patients During Radioablation Na I-131: Case Report

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High TSHs serum level is required for effective radioiodine uptake in every patient who will receive RAI therapy. The condition can be achieved by administering rhTSH or levothyroxine withdrawal for several weeks. Levothyroxine withdrawal may cause hypothyroidism and discomfort for the patients. One adverse event of hypothyroidism is electrolyte imbalance. We report 2 cases of hypothyroidism with electrolyte imbalance during RAI treatment in the period of 2009-2011. One follicular thyroid carcinoma (FTC) patient 70 years age and 1 papillary thyroid carcinoma (PTC) patient 61 years of age. All patients received cumulative doses of NaI-131 (14.8 GBq). Before RAI therapy, TSHs serum level was 22.37 uIU/mL for the FTC patient and 53.5 uIU/mL for the PTC patient. RAI therapy still given to FTC patient regardless of suboptimal TSHs serum level because of levothyroxine withdrawal for more than 4 weeks already. After 24 hours of RAI therapy isolation, both patients complained of nausea and vomiting without signs of dehydration. Followed by a decreased level of consciousness (1 patient with somnolence and the other with stupor accompanied by seizures). Neurological abnormalities were not found by physical examination at the time. Decreased electrolyte serum level (Na/sodium: 103 mEq/L; K/potassium: 3.2 mEq/L) was found on the FTC patient as well as on the PTC patient (Na/sodium: 120 mEq/L; K/potassium: 3.6 mEq/L). These conditions were corrected by saline and KCl infusion, and early levothyroxine administration. Improvement of patients' general conditions were documented one day after correction.

Discussion: The nature of electrolyte imbalance due to hypothyroidism remains unknown. In our cases, electrolyte imbalance is caused by levothyroxine withdrawal. Levothyroxine is usually given after discharging patients from isolation (in our institution, usually 5 days after RAI treatment). But in these cases, levothyroxine was

administered concomitant with electrolyte imbalance correction (2 day after RAI treatment). However the pathological radioiodine uptake was still documented by after RAI therapy whole body scans at the thyroid bed. Age may also affect electrolyte balance in elderly patients that they have increased risk of body fluid and sodium changes. This condition when combined with other conditions like hypothyroidism will increase risk of fluid and electrolyte imbalance. In our cases, both patients were elderly with no underlying heart and kidney disease. Hyponatremia can be corrected with electrolyte infusion and early levothyroxine administration.

Conclusions: Hypothyroid state due to levothyroxine withdrawal in long periods (> 4 weeks) prior to RAI therapy can cause electrolyte imbalance, especially in elderly patients. Levothyroxine administration immediately after electrolyte imbalance correction can significantly improve patient condition. There are no effects of early levothyroxine after RAI to the remnant disease tissue uptake.

P-031

Therapeutic Response Evaluation on Hyperthyroidism Using a Fixed Dosed of I-131

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Introduction: Euthyroid condition is the ideal expected post therapy result in hyperthyroidism, but there is still no established therapeutically method that can achieve said condition. I-131 has been known as one of the methods to manage this condition. However, controversy over the optimum dose of I-131 therapy is still debated. The objective of this study is to evaluate therapeutic response after fixed dosed I-131 therapy in our department.

Materials and Methods: This retrospective study was carried out during January 2010 until January of 2011. The inclusion criteria were all subjects received I-131 for the first time with a fixed dose of 8 mCi, diffused enlargement and high uptake of Tc-99m. Therapy response was evaluated based on the patient's clinical state and or their laboratory results 3 months after the therapy. Therapeutic response categorized successful if thyroid hormones within normal value and/or improvement of clinical state, also if thyroid hormones below normal value with better clinical state, but it categorized partial

response when thyroid hormones still high (above normal value) with improvement clinical state and no response if there were no changes both on laboratory result and clinical state.

Results: There were 127 patients receiving a fixed dose I-131 therapy of 8 mCi during January 2010 to January 2011. As many as 87 underwent routine examination on third month. However the other 40 did not, therefore cannot be considered for analysis. The patients were between 12 to 63 years of age. From the 87 patients, 46 (52.87%) were still considered in a hyperthyroid condition, 20 (22.98%) were hypothyroid, and 21 (24.13%) were euthyroid. It means about 47.11% patients have good response on third month. From the 46 who were a hyperthyroid condition, a second ablative therapy were done on 43 patients, while the other 3 did not get ablative therapy due to improvement of clinical state so they need more evaluation before getting second radioablation therapy.

Conclusion: Further studies regarding fixed dose I-131 therapy in Indonesia are still needed. There are other factors that influence the success of therapy, therefore therapeutic response should be evaluated.

P-032

Influence of Metastases Characteristic to Survival Rate in Papillary Thyroid Carcinoma

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Introduction: Differentiated Thyroid Carcinoma (DTC) is a slow growing cancer with rare occurrence of distant metastases. The median survival of DTC patient with brain metastases is 12 months. Surgical resection is suggested for this kind of patient followed by RAI therapy. We presented two cases of patients with brain metastases of Papillary thyroid carcinoma (PTC) who undergone RAI therapy and thyroid hormone suppression only. Both patients were unable to undergo surgery because of unresectable mass.

Case 1: A 34-year-old female patient was diagnosed with PTC with left temporal lobe and lung metastases from the first post therapy whole body scanning. At the time, the patient was given 5 times of RAI therapy with a cumulative dose of 750 mCi. The patient is still alive after 5 years follow up period.

Case 2: A 51-year-old female was diagnosed

with PTC follicular variant with left parietal lobe metastases. The patient had already been given RAI therapy for 3 times with a cumulative dose of 450 mCi. The patient is still alive after 2.5 years follow up period.

Discussion: Papillary thyroid carcinoma is the most common type of differentiated thyroid carcinoma. Few reports have shown that brain metastases are a rare complication of thyroid carcinoma. It is reported that metastatic lesions from DTC may be less differentiated than primary tumor, thus not accumulating radioactive iodine. In our cases, both post-RAI therapy whole body scan showed radioiodine uptake in the brain metastatic lesion. This may be favorable factor, which is supported by the fact that there were decrease of serum thyroglobulin and antithyroglobulin antibody level.

Conclusion: These cases suggest that survival rate of DTC patients with brain metastases is influenced by metastatic lesion's ability to take radioiodine.

P-033

The Outcome of Differentiated Thyroid Carcinoma Patients with Lung Metastases after Radiothyroablation with Iodine-131G

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Background: Thyroid cancer is the most common endocrine neoplasm. RAI therapy has been widely used for metastatic differentiated thyroid cancer (DTC). Metastases sites of DTC are lung and bone respectively. The aim of this study was to evaluate outcome of RAI therapy in lung metastatic DTC regarding its pattern and survival rate.

Materials and Methods: DTC patients with lung metastases were enrolled from 2005 – 2010. The subjects were divided into two groups based on uptake pattern of metastatic lesion: macro and micronodule. Outcome of RAI therapy was evaluated by serum thyroglobulin measurement and visually radioiodine uptake changes on post RAI therapy whole body scan or diagnostic I-131 whole body scan with minimal one year of follow up period.

Results: There were 286 patients of DTC from 2005 – 2010, 15 of them had lung metastases (age 9 – 61, mean 43.5; 13 female and 2 male). Histopathology result showed

papillary thyroid cancer (PTC) in 11 patients and follicular thyroid cancer (FTC) in 4 patients. From all patients, there were 11 patients showing lung metastases and 4 patients showed both lung and bone metastases. Micronodules were found in 10 of 11 patients with lung metastases and 2 of 4 patients with both lung and bone metastases. Most of micronodules (9/11 and 2/4) showed decreased serum thyroglobulin level and radioiodine uptake. Two patients showed no metastatic lesions on their last follow-up scan result (one patient in 2.5 years, while another patient in 6 years after their first radioiodine treatment).

Conclusion: Micronodules metastatic lesion show better response from RAI therapy.

P-034

Assessment of Organification Defect in Thyroid Gland in Children with Goitrous Hypothyroidism

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Aim: To assess the utility of Perchlorate discharge test using Gamma camera in Hypothyroid children with increased trapping function in Tc99m Thyroid scan.

Materials and Methods: The study included 16 patients from June 2009 to June 2011. They were in the age group of 22 days to 15 Years. 6 were males and 10 were Females. All patients underwent Tc 99m Thyroid scan prior to the study which showed enlarged thyroid gland with increased trapping function (Tc99m uptake - > 4%). 6 Patients were not started on Tablet Thyroxin prior to the study and rest of the patients had stopped Thyroxin for 1 month prior to the study. 8 patients had elevated levels of Antimicrosomal antibody. All patients were administered between 90 to 125uCi of I-131 orally and static images for 1 minute were acquired after 2 hours. A standard with similar activity was prepared and static images were taken for similar time intervals. ROI was drawn over the thyroid region and around the activity area in the standard images and counts were obtained. % Tracer uptake by the Thyroid gland was calculated. 1 Gram of potassium perchlorate was then administered orally and images were acquired at varying time intervals up to 2 hours. % uptake by the thyroid gland in the 2-hour post perchlorate image was calculated. A reduction in tracer uptake in the post perchlorate images by > 10 % as compared to the pre-perchlorate image was considered as positive.

Results: Out of 16 patients, 13 patients had positive post perchlorate test which is suggestive of organification defect in the Thyroid gland. The remaining 3 patients

had Iodine deficiency or Iodine avid Goiter as there was no reduction in thyroid uptake in post perchlorate images. Out of 13 patients, 8 patients had elevated Antimicrosomal antibodies which were suggestive of congenital hypothyroidism.

Conclusion: Perchlorate discharge test using Gamma camera (in centers where thyroid probe is not available) is useful in diagnosing organification defects in the thyroid gland. Perchlorate discharge test using gamma Camera should be routinely done in hypothyroid children with increased trapping function in the thyroid scan as these patients require lifelong thyroxin supplementation.

P-035

NaI-131 Radioablation for Well-differentiated Thyroid Cancer at Dr. Hasan Sadikin General Hospital

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Background: Thyroid cancer is the most common cancer among all endocrine malignancies. The incidence of thyroid cancer range 1.2 and 2.6 in men and from 2.0 to 3.8 in women per 100.000 individual with wide variability between different countries. The aim of this study was to evaluate the usefulness of NaI-131 radio ablation for well- differentiated thyroid cancer at Dr. Hasan Sadikin General Hospital.

Materials and Methods: This study was a retrospective study. Subjects were grouped into two groups based on histopathology finding, papillary thyroid carcinoma (PTC) and follicular thyroid carcinoma (FTC). All subjects received 2960 - 9250 MBq NaI-131 and isolated. Following up was done at 6 and 12 months after radio ablation by using Thyroglobulin (Tg), Antithyroglobulin antibody (ATA) serum level and diagnostic whole body scan. The criteria of good response if Tg level < 3 ng/mL, negative ATA and negative whole body scan.

Results: During period of time July 2008 - July 2009, there were 126 subjects underwent for NaI-131 radio ablation, 24 (19%) were male and 102 (81%) female, aged 16 - 84 years. Good response was observed in 12 (9.5%), no response in 52 (41.3%), while 62 (49.2%) dropped out. The highest incidence 57 (45.3%) was occurred in the age group of 45-64 years and the lowest incidence 7 (5.6%) was in the age group of 65-84 years. Based on histopathological, there were 92 (73%) PTC and 34 (27%) FTC.

Conclusion: The incidence of well-differentiated thyroid cancer among females is higher than males and the

age predilection is between 45-64 years old. Based on histopathological finding PTC is the most common malignancy in the thyroid gland. After a follow-up for a year, large numbers are found to be unresponsive. Further evaluation should be done to find out very high drop out patients.

P-036

Significance of Elevated Anti Thyroglobulin Antibody Levels in Differentiated Thyroid Cancer Patients

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Differentiated (papillary and follicular) thyroid carcinoma (DTC) is generally characterized by an indolent course with low morbidity and mortality and is among the most curable cancers The long term survival of differentiated thyroid cancer warrants the long term follow up follow-up of patients with DTC. In this study the significance of increased anti Thyroglobulin antibody in long term follow of thyroid cancer patient was studied. Total of 56 patients (37 females and 19 males, mean age: 46.9±23.1) were enrolled as study group. All patients had diagnosis of low-risk thyroid cancer. After total thyroidectomy all patients had baseline Thyroglobulin, Anti Thyroglobulin antibodies and neck ultrasound. All patients were given ablative dose of I-131 when serum TSH was >30 ng/ml. Patients were followed up 6 monthly with I-131 whole body scan, Thyroglobulin, Anti Thyroglobulin antibodies and neck ultrasound. Successful ablation was defined as minimal or no neck uptake on I-131 WB scan, no remnant tissue on thyroid USG with Tg levels <2 ng/ml and Anti-Tg < 20 ng/ml when TSH30 mIU/ml.

Results: In our study group 42 out of 56 patients were re-evaluated at 6 months after therapy. Whole-body I-131 (WB) scan, thyroid ultrasonography (USG), Tg, anti TG Ab measurements were performed at each follow-up visit. Out of total study population 24 patients had raised baseline Anti Thyroglobulin antibody levels. Serial follow up in all 24 showed gradual decline in Anti Thyroglobulin antibody levels with successive ablative therapies. Out 32 remaining patients 18 developed subsequent rise in Anti Thyroglobulin antibody levels which was treated with I-131 treatment dose with good response to therapy in 10 cases. Out of these 18 patients 3 had negative whole body scan normal Tg and elevated anti thyroglobulin antibody levels. PET-CT of these patients showed FDG avid lesions. Based on the above study it was concluded that Anti Thyroglobulin

antibody levels in DTC patients carry a significant clinical significance.

P-037

Rare Case of Metastasis to Pituitary from follicular Thyroid Carcinoma

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Background: Pituitary metastasis occurs in only 1-3% of patients with malignant tumors and is considered a rare occurrence. Breast cancer is the most common primary tumor that metastasizes to the pituitary, followed by lung malignancy. Most of the patients with pituitary metastases are asymptomatic and therefore differentiation of pituitary metastases from other primary tumors is often difficult both clinically and radiologically.

Summary: A 64-year-old woman presented with 15-year history of euthyroid multinodular goiter and background of left renal cell carcinoma treated with radical nephrectomy was admitted with non-specific symptoms of cough, breathlessness, and diarrhea, loss of appetite and loss of weight over several weeks. CT neck of thorax, abdomen and pelvis was performed during her inpatient stay showed multiple findings of an enlarged pituitary fossa mass, asymmetric enlarged thyroid lobe (left more than right) compressing and narrowing the trachea, large lytic lesion at L4 vertebral body, and two discrete small pulmonary nodules. Areas of increased tracer uptake were seen at the right proximal humerus, L3-L5 vertebrae and subtrochanteric region of the left femur. Prior to discharge, the patient underwent L4 vertebral body biopsy, which revealed a metastatic carcinoma. After discharge, patient presented again to A&E with bitemporal hemianopia. Repeat MRI scan showed increased in pituitary mass size with increased bowing and distortion of the optic chiasm, as well as indentation on the floor of the third ventricle. Following this, she underwent a total thyroidectomy and a trans-sphenoidal resection of the pituitary mass. Histopathology was officially signed out as both papillary and follicular thyroid carcinoma whilst that of the resected pituitary tumor was that of metastatic follicular thyroid carcinoma. Post therapy I-131 whole body scan after oral administration of 250mCi of radioiodine showed functioning metastases in the region of the pituitary fossa, left parotid region and anterior neck.

Conclusion: Although pituitary metastasis is a rare incidence, this should be excluded in patients with

hypopituitary symptoms and known thyroid cancers. Radioiodine ablation is highly indicated after a pituitary metastasis resection as complete tumor resection may not be possible by surgery alone.

P-038

Efficacy of I131 in the Treatment of Differentiated Thyroid Carcinoma: Results of 655 Patients at the Nuclear Medicine and Oncology Center Bach Mai Hospital

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Background: According to IAEA recommendations, I131 has been used in the management of patients with differentiated thyroid carcinoma (DTC) in Vietnam since 1998. Previous clinical experience gained from treatment of large number of Vietnamese DTC patients with I131 was limited. This study is designed to evaluate the clinical outcomes of I131 therapy and thereby to define the role of I131 in the treatment of DTC.

Materials and Methods: From January 2002 to August 2009, 655 DTC patients were treated with I131. Location: The Nuclear Medicine and Oncology Center, Bach Mai Hospital, Hanoi, Vietnam. Retrospective (from January 2002 to January 2008) and prospective research. All patients were diagnosed with DTC (histopathological confirmation) underwent total thyroidectomy and lymphadenectomy and followed with I131 treatment were reported every 1, 3 months after treatment. Patients were excluded who were suspected of having 1) TSH < 30 mU/ml, 2) currently using iodine product, 3) renal and liver failure, 4) pregnancy or breast feeding, 5) lost data. Radiopharmaceuticals: NaI liquid or capsule.

Results: The male: female ratio was 1:4. The mean age was $41,29 \pm 15,73$ and $40,05 \pm 13,65$ in male and female respectively, with majority being <45 years old (60,8%). Subjects included papillary 82,9%, follicular 7,9%, mixed 9,2% types. I131 doses were 30mCi, 50mCi, and 100 mCi. If metastases were discovered, the patient could be treated with higher doses and several times. Changes in remnant thyroid volume, I131 scan, Tg and anti Tg level were evaluated. Histopathology types, remnant thyroid volume, I131 concentration are significant prognostic factors. Ablation success rate after surgery: 33,3 %, 60,1 % 79,2% in 30mCi, 50mCi, 100 mCi subgroup respectively. At 6th month after treatment, all the parameters were

reduced remarkably and the vital laboratory tests (blood count, liver and renal function) were normal. Complete response 18,3%, partial response 58,3%, poor response 20% and restraint 3,4%. There is no severe complications even in subgroup who have been treated several times with high cumulative dose > 300 mCi.

Conclusions: The Nuclear Medicine and Oncology Center has successfully applied radioiodine therapy for DTC patients and the outcome is promising. Papillary thyroid cancer has better response than follicular and mixed type. I131 is a safe and effective treatment and can be used for remnant ablation (after thyroidectomy), for recurrent and metastatic DTC with good effects and acceptable side effects.

P-039

Radionuclide Therapy in Russia: A Status Report from the Largest Radionuclide Therapy Centre in Russia

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Russia is a pioneer in peaceful use of atomic energy. In 1954, the first ever Obninsk NPP came into operation. In the 1950s, the USSR assigned top priority to nuclear development, however a sequence of adverse events such as Chernobyl accident, collapse of the Soviet Union, painful economic adjustment, has thrown Russia back. The nuclear renaissance has prompted a renewed interest in peaceful nuclear technology, particularly in medicine. This is a thriving field for international cooperation, research and know-how development, and an attractive investment opportunity. MRRC is the largest Radionuclide Therapy Centre in Russia. In the following 2012 it will celebrate the 50-year-old anniversary. MRRC consist of three big so-called Sectors: Clinical Radiology and Nuclear Medicine, Experimental Radiology, Radiation Epidemiology. Sector of Experimental Radiology is experimental facilities to carry out fundamental and experimental investigations. Sector of Radiation Epidemiology focuses their investigation in the field of radiological protection, health effects of radiation. Sector of Clinical Radiology and Nuclear Medicine

is the biggest. It has the hospital on 400 beds. In the hospital there is a large diagnostic complex, including SPECT, MRI, CT and set of laboratories, pathology and clinical departments, such as Radionuclide Therapy, Radiation and Surgical Treatment, Radiation Therapy, Radiosurgery, Hematologic, Urologic, Gynecologic diseases, Chest and Breast Cancer and others.

The Radionuclide Therapy department is the largest in Russia. They began using radiotherapeutics about 40 years ago. Trends and Methods of Radionuclide Therapy in MRRC: (1) Radioiodine Therapy in differentiated thyroid cancer (131I): MRRC treats more than 1500 thyroid cancer patients a year (ablation + metastases treatment). Over 8000 patients have received radioiodine in the past five years. Treatment of lung metastases from thyroid cancer result in complete response in 71.4% partial response -22.2%, no effect -6.3%. Follow Up Time: 10 - year Survival Rate 79.3%. (2) Radioiodine Therapy for thyrotoxicosis (131I): More than 700 patients a year received radioiodine. Over 3000 patients have received radioiodine in the past five years, 90% of them are cured of thyrotoxicosis. (3) Radionuclide therapy for bone metastases (153Sm, 89Sr): Annually more than 150 patients received radiotherapeutics, such as 89Sr chloride as competitive antagonist to Calcium and domestic therapeutic Samarium -153 Oxabiphore, RF Patent No 2162714 dd 20.06.00. Effectiveness of Russian product meets international standards. Permanent pain relief, slower progression, lower intake or no analgesic medication, better quality of life are resulted in the treatment with the above therapeutics. Clinical effect demonstrates in 60-80% of patients. Best results were obtained in patients with breast and prostate cancer. (4) Prostate Cancer Interstitial Radiation Therapy (Brachytherapy): Effectiveness: 76% - 92% depending on the progression stage and prognosis. (5) 252Cf - brachytherapy: exclusive advanced technology of treatment of tumors of oral cavity. (6) Innovative drugs under development: 188Re OEDP- OxiEthylidenDiPhosphonate and 188Re - zoledronate to treat patients with bone metastases. An entire pharmaceutical line is conceivable for interstitial, intracavitary, and systemic therapy both in oncology, rheumatology and cardiology. Now Russian Government began to pay much attention to the development of nuclear medicine in the country. This moment is very convenient for intensification of international cooperation in the field of nuclear medicine. MRRC is a good and powerful platform for development of such cooperation.