ABSTRACTS

24th National Conference of Society of Nuclear Medicine, Bangladesh

DOI : https://doi.org/10.3329/bjnm.v22i1.40517

PLENARY SESSION-I

1. Expansion of Therapeutic Nuclear Medicine in Bangladesh: Challenges and Opportunities

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ABSTRACT

Therapeutic Nuclear Medicine in Bangladesh began in 1975 with the application of radioactive iodine for the treatment primary hyperthyroidism and later thyroid cancer. Since then Nuclear Medicine practice has remarkably developed in the country with significant advancement in instrumentation, radio-pharmacy and information technology. The government took the initiative to establish four PET- CT centers at different Nuclear Medicine centers of the country including two at the National Institute of Nuclear Medicine & Allied Sciences (NINMAS). A further development is the installation of a Cyclotron centre (18-MeV Cyclotron) at NINMAS by the government's own fund.

Currently Nuclear Medicine in Bangladesh is providing good health services to oncology patients throughout the country. However conventional radioactive iodine for imaging and therapy still remains the major theranostic application. The expansion and development of therapeutic nuclear medicine to other forms of cancer has been limited due to a number of challenging factors.

Proper planning for laboratory development, building up specialized skills, multidisciplinary and inter-laboratory collaboration can overcome many of these challenges and make it possible to introduce Theranostic Nuclear Medicine for targeted internal radionuclide treatments. It will revolutionize the current Nuclear Medicine scenario in Bangladesh and make a paradigm shift in the management approach to the oncology patient.

The presentation here will examine the different challenges, logistic requirements and other technological necessities essential for the establishment of the modern Theranostic model in Bangladesh.

2. Development and Promotion of Nuclear Medicine in Bangladesh - future challenges.

Mizanul Hasan

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ABSTRACT

Nuclear Medicine in Bangladesh started in 1962. However the major developments actually occurred after 1990 when the government took several projects to establish new centres in different parts of the country. At the same time projects were taken for modernization of the old centres including Institute of Nuclear Medicine (INM). Besides construction of physical facilities many new equipments were procured. The manpower number also increased in that period. The post graduation courses for nuclear medicine physicians started in 1988 and the Society of Nuclear Medicine, Bangladesh (SNMB) was formed in 1993. Private sectors came forward in early 2000 and expanded the activities of nuclear medicine. Communication with IAEA and other regional and international bodies also increased many fold in last 20 years. We entered into the era of PET-CT and Cyclotron in 2010. At present Nuclear Medicine in Bangladesh has achieved a quite prestigious position in national and international level.

Bangladesh has achieved the status of developing country from least developing countries (LDCs). The country is now developing fast in almost every sectors including health to become a middle income group nation. We the people of nuclear medicine also must prepare ourselves to face the future challenges for promotion and development of nuclear medicine in Bangladesh.

The future challenges will be of diversified types. Manpower problems will probably the major issue. The regular supply of isotopes should be ensured. We must

look for newer pharmaceuticals in both diagnostic and therapeutic purposes. We will have to compete with other imaging modalities in diagnostic side. To survive the radioisotope therapy should be focused more.

Nuclear Medicine is a very specialized subject. In fact the subject itself is going to face many challenges in future. Together we will have to overcome it.

3. Contribution of Radiation to the Health and Well Being of Women

Lutfun Nisa

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ABSTRACT

Contribution of radiation to the health and well being of women is somewhat paradoxical when we consider the history of the 'Radium Girls' not too long ago. But much knowledge on the power of radiation has advanced and evolved since that tragedy to allow the benefits of radiation to be realized. Relentless efforts by many brilliant men and women scientists have made it possible to harness radiation with dramatic breakthroughs not only in medicine but also in other fields of science and technology.

In medical science, radiation and radio-nuclides play a very positive role in both cancer control and cure and in many other benign diseases of women. Nuclear Medicine in particular is a scientific and clinical discipline in which radionuclide compounds are redistributed *in*-vivo and *in*- vitro and used for diagnostic, therapeutic or investigative purposes.

The relevance of radionuclide therapy particularly with regard to women lies in the management of both benign and malignant conditions. For example, thyroid diseases are more common in women than in men. Benign thyroid disorders such as hyperthyroidism (Graves' Disease and auto-immune disorders) are conditions that are successfully treated with Nuclear Medicine. Radioiodine therapy for thyroid cancer is a well established procedure that has been in use for more than 50 years. Newest approach to cancer therapy is in the form of personalized medicine with specific molecular targeting. Nuclear Medicine has paved the way for such customized therapy through sophisticated molecular targets for imaging and therapy. Development of hybrid technologies, radiopharmaceuticals and diagnostic techniques has advanced targeted therapies and imaging in nuclear medicine practices. Improved imaging technologies allows for precise diagnosis and correct staging of breast cancer and other gynecological cancers so that co-morbidities can be limited and quality of life maintained.

Radiation safety, however, remain an issue and the benefits of Nuclear Medicine is countered by exposure to the harmful effects of radiation. Women of child bearing age, pregnant women and children are especially vulnerable to this risk. It is therefore essential that the referring physician who orders the test does it appropriately and with jurisdiction so that the benefit achieved from the studies can truly exceed the risk of radiation exposure. On the other hand, the Nuclear Medicine procedures must be optimized to obtain the best image quality with the lowest radiation. Last but not the least every laboratory needs to establish a radiation protection standard and strictly follow the universal safety guidelines to achieve ALARA (as low as reasonably achievable) for the patients and for the nuclear medicine personnel.

4. Clinical Utility of PET-CT Scanning in Breast Cancer Management

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The applications of 2-deoxy-2-[^{18}F]fluoro-D-glucose (FDG) positron emission tomography/computed tomography (PET/CT) has been a widely used imaging modality in the management of various malignancies. Breast cancer (BC) is the most common neoplasm in women worldwide and applications of PET/CT have been extensively studied,in the management of patients with BC. While PET/CT is not routinely performed for the diagnosis of primary BC, but it has a great value in

initial staging, restaging and for assessing response to therapy. PET/CT can detect metastases to mediastinal, axial, and internal mammary nodes, but it cannot replace the sentinel node biopsy.

The greatest utility for FDG PET imaging is for detection of distant metastasis. In the metastatic setting PET/CT has the ability to evaluate different sites of metastases in a single examination. In detection of distant metastases, this imaging tool may have a better accuracy in detecting lytic bone metastases compared to bone scintigraphy. Thus, PET/CT is recommended when advanced-stage disease is suspected, and conventional modalities are inconclusive. Also, PET/CT has a high sensitivity and specificity to detect loco-regional recurrence and is recommended in asymptomatic patients with rising tumor markers.

The role of FDG PET in the management of patients with BC is evolving. Numerous studies support the future role of PET/CT in prediction of response to neoadjuvant chemotherapy (NAC). Most patients with stage II-III are treated by NAC. This strategy allows more patients to undergo breast-conserving surgery and increases the chances of surgery in patients with primary inoperable disease. It also provides precious information on the efficacy of chemotherapy. Early assessment of the response to NAC should be helpful, as it might reduce the toxicity from inefficacious chemotherapy or allow a refinement of treatment. Studies have pointed out the efficacy of FDG PET/CT for assessment of the response to NAC. Changes in metabolic activity generally occur earlier than changes in tumor size.

FDG PET/CT has shown high performances to assess the response in metastatic patients and to detect heterogeneous response. In clinical studies it has been found that, higher SUV values are usually associated with higher histologic grades and cellular proliferation and higher uptake has been found to be associated with a statistically worse relapse-free and overall survival. Though there is no consensus yet, on how to utilize this information, detailed analyses are essential for a better outcome for the patients.

PROFFERED ORAL PRESENTATION – SESSION: I

1. Similarity in Vitamin D State between Thyroid Cancer Patients and Their Caring Physicians–Do Lifestyle, Ethnicity or Environment Matter?

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ABSTRACT

Vitamin D, classically involved in calcium homeostasis, has earned recent interest for its potential role in cancer prevention and therapy. This ongoing study was done at the Thyroid division of National Institute of Nuclear Medicine & Allied Sciences (NINMAS). Thyroid cancer patients with history of (near) total thyroidectomy (12 pre therapy, 59 post radio-iodine therapy) and the caring physicians (19) were evaluated for their 25-hydroxyvitamin D(3) levels. All of them were stratified in three groups based on vitamin D status; vitamin D deficiency (VDD), reflecting levels under the established threshold of <20 ng/ml; vitamin D insufficiency (VDI), reflecting levels 20 - < 30ng/ml; above it. vitamin D sufficiency (VDS), reflecting levels 30-100 ng/ml. The outcome of VDD and VDI groups were similar in doctors as well as the thyroid cancer patients. A linear trend was observed between decreasing vitamin D levels and inadequate sun exposure and lifestyles. We did not find an association between vitamin D deficiency and the histologic type of thyroid cancer, the stage of thyroid cancer, or the status of the disease.

Keywords: Vitamin D, Thyroid cancer, Physicians, Lifestyle.

2. The Association of Thyroid Scintigraphy with Autoimmune Thyroiditis in women of Child Bearing Age.

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ABSTRACT

The objective of the study was to evaluate the scintigraphic features of thyroid gland and to determine its association with autoimmune thyroiditis in women of child bearing age. We evaluated a total of 100 consecutive female patients of child bearing age (15-45 Yrs) with any sorts of suspected thyroid disorders prospectively in the study. All participants were underwent high resolution ultrasound and radionuclide thyroid scintigraphic evaluation. Thyroid function and serum concentration of thyroid autoantibodies, thyroid peroxidase antibody (TPOAb) and antithyroglobulin antibody (TgAb) were measured. At first, an ultrasound based analysis of thyroid disorders in all patients was performed. We then evaluated scintigraphic features in AIT and non-AIT patients. Finally, patients were grouped based on absence or presence of TPOAb and/or TgAb (n=96) or fine needle aspiration cytology (n=27). A total of 41 patients were diagnosed as AIT and 59 were non-AIT based on sonographic analysis. Radionuclide thyroid scintigraphy demonstrated increased radiotracer concentration in 35(36.46%) AIT patients and in 6(6.25%) non-AIT patients. There was a significant association of AIT patients with increased radiotracer concentration in thyroid scintigraphy ($p<0.001$). Among the 41 AIT patients, 21(53.84%) were TPOAb positive and 26(66.67%) were TgAb positive. The prevalence of increased radiotracer concentration and thyroid autoantibodies in those with hypothyroidism (65.85%) and subclinical hypothyroidism (29.27%) was significantly higher than in euthyroid patients (4.88%). Despite the significant increased uptake of radiotracer in AIT patients, thyroid scintigraphy alone cannot conclude about autoimmune changes in the thyroid gland. Because it is not specific only for autoimmune thyroiditis. However, the scintigraphic findings can play a complementary role along with thyroid functional status in differentiating autoimmune thyroiditis from other thyroid disorders, thereby influencing treatment.

3. Radioiodine Treated Differentiated Thyroid Cancer Patients with Lung Metastases: Follow up analysis of a decade.

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National Institute of Nuclear Medicine and Allied Sciences.

ABSTRACT

Introduction: The most common site of distant metastasis in differentiated thyroid carcinoma (DTC) is in the lung. The aim of this study is to assess the outcome of radio iodine therapy (RAIT) in DTC patients with lung metastases at long term follow up.

Patients and Methods; A retrospective study was conducted among the registered and post ablated DTC patients who received RAIT in different doses between 2001 to 2006 at National Institute of Nuclear Medicine &Allied Sciences (NINMAS). They were followed up until 2017. A total of 18 DTC patients with lung metastases were enrolled in this study. High therapeutic doses of I_{131} were administered and most of them needed multiple therapeutic doses. Therapeutic responses were evaluated with whole body I_{131} scans and serial stimulated serum thyroglobulin (Tg) levels for a long time.

Results: A total of 18 DTC patients [M=8 (45%), F= 10 (55%)] with a mean age of 33.7 $\pm$ 17.7 yrs (Range: 14 to 65yrs) enrolled in this study. Tumor pathology consisted of papillary carcinoma 12 (66.7 %), follicular carcinoma 4 (22.2 %), and follicular variant of papillary carcinoma 2 (11.1%). They had total or near total thyroidectomy. Average post-operative serum Tg level at the time of presentation in NINMAS was 36.25 ng/ml (Range: 1.25 to 211 ng/ml) with a decline in serum Tg levels after RAIT to 27 ng/ml, (Range: 0.19 to 246 ng/ml). These group of patients received a total dose of 616 mCi (Range: 150 to 2400mCi). The average follow-up period was 8.7 yrs (Range: 1 to 16 yrs). Complete response was observed in 13 (72.2%) patients with average received dosage of 498 mCi, persistent disease in 4 (22.2%) with an average received I_{131}dose of 1116 mCi and 1 (5.6%) was lost to follow up.

Routine consultation with pulmonologist before RAIT was done in each of these patients with careful observation and proper support during isolation period.

Conclusion: Though complete or partial response is achievable after repeated high dose RAIT in DTC patients with lung metastases, patients presenting with high serum Tg at initial diagnosis and subsequent bony metastases are likely to show poor outcome.

4. Commencement of Nuclear Cardiology activities at INMAS Mitford

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ABSTRACT

Background: Institute of Nuclear Medicine and Allied Sciences (INMAS), Mitford has recently started gated SPECT myocardial perfusion imaging (GSMPI) to join the 19 years long legacy of nuclear cardiology in Bangladesh.

Patients and Methods: Fifteen patients (M/F=13/2) and one volunteer (female) underwent Tc-99m Sestamibi GSMPI at INMAS, Mitford from January to December 2018, were retrospectively included in the study. SPECT acquisition with ECG gating was done following standards protocol using a double detector SPECT-CT scanner (Siemens Truepoint). Analyses were done using Ceders QPS and QGS. The demographic and clinical attributes are reported.

Results: Out of the total 16 subjects (15 patients and a volunteer), the volunteer and one patient underwent rest only GSMPI, all of other 14 patients were administered with one-day stress-rest protocol using adenosine. Mean age of patients were 48.1±9.6 (30-67). All were diagnosed cases of coronary artery occlusive disease involving single vessels in seven, double vessels in two and triple vessels in six patients. Three patients had previous coronary revascularization while one had undergone previous thrombolysis. Mean perfusion defect size at stress and rest were 31.4±16.0 (7-55) and 23.8±15.9 (2-43) while mean LV ejection fraction (EF) at stress and rest were 41.2±10.6 (26-60) and 43.5±13.7 (24-67) respectively.Among the 14 patients who underwent stress GSMPI, four were found to be in high risk (28.5%) with mean summed differential score (SDS) of 16.8±8.2while 10 (71.5%) were found to be in moderate to low risk (five moderate and five low) with mean SDS of 3.1±2.1 ($p<0.05$). High risk patients were recommended for coronary revascularization.

Conclusions: About one third of patients undergoing GSMPI at INMAS, Mitford was identified to be in high risk using SDS for future cardiac event and was directed for coronary revascularization. This testify the important and positive role of GSMPI for management of CAD patients.

***Key Words*:** Gated SPECT, myocardial perfusion imaging.

5. Posterior Layering of Fluorine-18 Fluorodeoxyglucose (F18-FDG) in the Urinary Bladder – A case report.

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ABSTRACT

Background: Settlement of F18-FDG in the urinary bladder is often noted during PET/CT scanning. In case of PET/CT with intravenous contrast, the higher specific gravity of the contrast material displaces the excreted F18-FDG, resulting in anterior layering of the radiotracer. Whereas, posterior layering of F18-FDG is hypothesized to be due to slow F18-FDG excretion in patients with a distended urinary bladder, resulting in delayed mixing with urine. In addition, urinary tract infection may be anotherpotential cause.

Case Report: This is a case of a 78 years old male, diagnosed as lung carcinoma with suspected mediastinal nodal metastasesin May/2018, treated by oral chemotherapy.The patient underwent whole body F18-FDG PET/CT scan at Nuclear Medicine & Molecular Imaging department, Apollo Hospitals Dhaka in December/2018, for evaluation of treatment response. In PET/CT study he was noted to have settling of F-18 FDG in theposterior aspect of the overdistended urinary bladder (UB), in addition to the findings of hypermetabolic left lung mass with mediastinal lymphadenopathy.

Conclusion: Thecase demonstrates the interesting posterior layering of F18-FDG in the urinary bladder, the cause of which appears to be due tothe distended bladder; however, the mechanism needs to be further investigated in a more comprehensive study. Images showing this layering demands careful evaluation of the urine by the clinician and hence shouldbe reported.

6. Radiation Safety Aspects of Computed Tomography System

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ABSTRACT

Versatile use of computed tomography system known as the CT scanner introduces the new dimension in diagnostic arena from long time. Besides fluoroscopy and CT simulator, now a days CT system is incorporated with PET, SPECT and MRI machine to get hybrid image. During CT scan, several times more radiation are exposed to patients than that of x-ray. CT energies are defined in terms of kV values i.e., more kV value more exposure. To protect radiation workers and public from CT radiation, shielding barriers are designed in two types; primary and secondary barrier. Secondary barriers are needed due to the patient scattering and head leakage radiation. Normally, shielding calculations are done by NCRP report 49 using some empirical formulae known as NCRP calculations. Required shielding of a CT installation are usually fulfilled by ensuring 2 mm lead-equivalent thickness around the scanner. This paper reveals what measures are needed to take before CT scanner installation to save occupational workers and public from CT radiation hazard.

PROFFERED ORAL PRESENTATION – SESSION: II

1. Imaging Thyroid Cancer Patients for Treatment Planning: Three Clinical Scenarios

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ABSTRACT

Background: Thyroid cancer management is always challenging in terms of precise total thyroidectomy, proper histopatholgical evaluation, selecting the dose of radioiodine and finally follow up of the patients. Here we will depict three critical scenarios of thyroid cancer and how PET-CT could be of helpful for the assessment of the extent of disease & their treatment planning as well.

Case Reports: Case I -One 48 yrs female patient presented with thyroid nodule, on Aug 2018 after total thyroidectomy histopatholgical report suggested anaplastic carcinoma. PET-CT scan revealed hypermetabolic osseous metastatic lesions, mediastinal and abdominal FDG avid lymph nodes, hypermetabolic metastatic lung lesions and most surprisingly multiple hypermetabolic soft tissue masses in both kidneys. She is waiting for further management. **Case II-** One 35 yrs old female patient presented with thyroid nodule on April 2014, after total thyroidectomy histopatholgical report revealed papillary carcinoma with follicular variant and neck node metastasis. She took 150 mCi ^{131}I, but unfortunately she developed recurrent neck nodes and involvement of mediastinal lymph nodes. Accordingly, she underwent neck nodes dissection thrice within the last 5 years and thoracotomy was needed once for

removal of mediastinal nodes. Totally she took 600 mCi ^{131}I already but recently on follow up high resolution ultrasonogram (HRUS) of the neck showed two recurrent anterior mediastinal lymph nodes while whole body scan (WBS) with ^{131}I was negative. Her Tg (> 300 ng/ml) & anti Tg (77.50 U/ml) level were raised remarkably. Finally, recent PET-CT scan revealed multiple level IV & anterior mediastinal lymph nodes with intense FDG uptake (five distinct nodes) denoting dedifferentiation of the tumour. Now she is waiting for further neck dissection & thoracotomy followed by treatment with tyrosine kinase inhibitor (Sorafenib). **Case III-** One 55 yrs old female patient presented with solitary thoracic vertebral metastasis with severe pain & FNAC showed undifferentiated carcinoma, furthermore it was mentioned that the lesion could be from thyroid or kidney. She had a history of thyroid lobectomy 20 yrs. back but no documents were available. One HRUS left thyroid lobe was recognized and it was uniform. She took radiotherapy for bone metastasis but it was not so much helpful. Keeping in mind her clinical context, Tg level was checked and it was quite high (305 ng/ml). PET-CT scan revealed intense FDG avid lesion in one thoracic vertebra, no appreciable abnormal FDG uptake in the thyroid region or anywhere else in the body surveyed. After total thyroidectomy her TSH was not raised (due to hormone secreting metastatic lesion) and it was a big challenge for radioiodine therapy. Thyrogen was injected (it is noteworthy that Thyrogen was introduced for the first time in Bangladesh) & then 200 mCi ^{131}I was given. Now the patient is feeling better.

Conclusion: For managing thyroid cancer patients PET-CT scan could play pivotal role for assessing the extent of disease involvement & changed the planning of treatment.

2. Upheaval of Meckel's Scan for Differentiation of Gastrointestinal Bleeding in Childhood-Single Centre Experience.

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ABSTRACT

Background: Gastrointestinal bleeding has several clinical manifestations & origins may lead to life threatening consequences in childhood. Bleeding may occur anywhere in the gastrointestinal tract (GIT) and may be difficult to determine its location. Though many procedures are developed, invasive procedures always remain a challenge for the pediatrics as well as concern for the parents. Meckel's diverticulum is one of the most common congenital abnormalities of GIT and is a major cause of occult or overt GI bleeding in children. This study aims at assessing the role of pertechnetate scintigraphy commonly known as Meckel's scan to determine the cause GI bleeding in children referred to NINMAS.

Patients and Methods: This retrospective study was conducted at National Institute of Nuclear Medicine & Allied Sciences (NINMAS) on children with clinical suspicion of a bleeding Meckel's diverticulum for GI bleeding.

Results: The study was performed over 09 months fromMarch to December '2018. Total no scan performed was 68. The age range was from 03 months to 17 years (mean age 5.14±3.67 years). Of the total children, 35 were male (mean age 4.59±2.89 years), 33 female (mean age 5.73 ± 4.33 years). Common presentations were occult per rectal bleeding 45 (66.2%), overt per rectal bleeding including hematemesis 03 (4.4%), sub-acute intestinal obstruction 3 (4.4%), rectal ulcer 2 (2.9%), abdominal pain 2 (2.9%), others 13 (19,1%). Of the total 68 scans performed, 07 (10.3%) were considered to be positive and rest to be negative 89.7%). The total positive scans showed to be positive in 04 male & 03 female children with male to female ration of 1.33: 1. rest of the scans were considered less likely or negative to be considered for bleeding Meckel's Diverticulum.

Conclusion: Infrequently suspected and seldom found Meckel's diverticula remain a crucial differential diagnosis for evaluation of GI bleeding in childhood. As there is variability of presentations with gastrointestinal bleeding reasonable suspicion is undoubtedly necessary. Thus pertechnetate scintigraphy or Meckel's scan would always remain an important diagnostic tool for evaluation of gastrointestinal bleeding in childhood.

3. Assessment of internal radiation doses for occupational workers from inhalation of 131I by using MONDAL-3 software

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ABSTRACT

Iodine-131 is used both for the diagnostic & therapeutic purpose in nuclear medicine department.During the administration process occupational radiation worker who administrates the radioisotope receives some extent of external and internal radiation doses. As per national regulation, the external and internal dose should be assessed in order to comply with the dose limit. External radiation dose can be measured by using a suitable dosimeter but it is difficult to measure internal radiation dose. Internal radiation dose can be assessed by using a suitable computational technique or computer software based on the ICRP biokinetic compartmental model. The objective of this study is to use MONDAL-3 software based on the ICRP biokinetic compartmental model. MONDAL software is used to analyze the intake bio-distribution, radionuclide retention and elimination behaviors due to inhalation of 131I by the radiation occupational workers. The intake radioactivity, effective dose, tissue equivalent dose etc. has been calculated by using MONDAL software for generic intake of 1 Bq. The MONDALsoftware has been benchmarked with other related software to validate our results. The results on internal radiation doses and retention behavior including dose estimation from experimental bioassay data (radioactivity in urine sample) of occupational radiation workers will be discussed in this paper.

3. Initial Experiences of PET-CT at Institute of Nuclear Medical Physics, AERE, Savar.

Azmal Kabir Sarker, Hossen Mohammad Jamil, Monjur Ahasan, RahimaAkter Sharmin and Ashikur Rahman

Institute of Nuclear Medical Physics (INMP), AERE, Savar.

ABSTRACT

Background: Institute of Nuclear Medical Physics (INMP) at Atomic Energy Research Establishment (AERE), Savar has recently started Fluorine 18 fluoro deoxy glucose (F-18 FDG) PET- CT scan for oncological work up.

Patients and Methods:A total of 54 patients (M/F=24/30) with mean age of 49.6±13.7 (19-76) underwent PET-CT on 12 working days over 12 weeks. Each patient had undergone whole body F-18 FDG PET-CT scan in Philips 128 slice Ingenuity TF PET CT scanner one hour after intravenous injection of 18F-FDG.A CT scan was performed before the PET scan covering the same region of the body. Iodinated contrast was administered through per oral and/or intravenous route if indicated. Patients who had undergone FDG whole body PET CT at INMP from September 2018 to January 2019 were retrospectively included in the study. Demographic and clinical traits are reported.

Results: Most frequent primary diagnoses were carcinoma of breast in 14, (all female) and lymphoma in 12 (M/F=6/6). Other frequent malignancies were of colon in five (M/F=3/2), ovary in five, pancreas in four (all male), unknown primary in three (M/F=2/1), urothelial in two (both male) and testis in two. Remaining malignancies were of prostate, cervix, vaginal vault, lung, vocal fold, osteosarcoma and melanoma (one each). While negative scans were commented in seven (13%), local recurrence in addition to metastases was identified in nine of remaining 47. The unknown primaries in three came out to be pancreas, lung and lingual tonsils. Organs with benign uptake included colon in 15, reactive lymph nodes in 11, tonsils in 10, small bowel in nine, myocardium in eight, skeletal muscle eight, thyroid in six, stomach in four, vocal fold in three, esophagus in two, brown fat in two and salivary gland in one. Further evaluation was recommended to 19 (35%) patients; endoscopy or colonoscopy in 15, FNAC in five and thyroid function test in three.

Conclusions: In this series, 13% patients had no evidence of local recurrence or distant metastases and 35% patients were directed towards further evaluation through correlative modalities.

Key Words: F-18 FDG, PET-CT, oncology.

4. **Unusual, Complicated Presentation of Differentiated Thyroid Cancer - Interesting case report**

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Objective: About 2-3% of differentiated thyroid cancer (DTC) patients present with complications of distant metastases. Objective of this case report is to explain the necessity of Multidisciplinary Expert Team (MDT) opinion to manage the complicated case of DTC with metastases in bone, lungs and brain.

Case report: A 45 years old female patient presented with swelling and excruciating pain in right upper arm and cytology proved suspected metastases of follicular variant of papillary thyroid cancer. Meticulous history revealed that she had subtotal thyroidectomy for multinodular goiter back in 1998 with no supporting histopathology documents of malignancy. Serum thyroglobulin (Tg) levels done in India was unusually high (13880 ng/ml) with high antiTg antibody (141.10U/ml) followed by treatment with Tab Sorafenib for 2 months. Recent off Thyroxine serum Tg was high (>300 ng/ml) with low TSH level (0.72 m IU/L). Diagnostic whole body scan with ^{131}I showed multiple intense tracer uptakes in thyroid bed, right humerus, right upper chest and right pelvis. High resolution neck ultrasound revealed hypoechoic areas with calcifications (1.6 X 1.3 cm) and significant thyroid remnant (3.3X1.3cm). Finally the patient is diagnosed with bone metastases in right pelvis, right humerus, right scapula and right parietal bone, bilateral lung metastases and MRI proven extradural soft tissue mass in brain.

This case was discussed in Multidisciplinary Expert Team (MDT) meeting at NINMAS. According to the decisions of experts- surgeon agreed to excise the metastatic masses in neck. Patient received EBRT on bony lesions according to the suggestions of radiation oncologist. Patient consulted with neuromedicine specialists, neurosurgeon, and palliative care medicine physician

Conclusion: Complicated DTC cases with metastases in multiple organs cannot be treated straight way with radioiodine. Multidisciplinary Expert Team approach is required for proper management of these cases.

5. **Evaluation of Surgical Outcome of Pelviureteric Junction Obstructive Patients by ^{99m}Tc-DTPA Renography**

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ABSTRACT

Introduction: Pelviureteric junction (PUJ) obstruction is the most common congenital abnormality of urinary tract and accounts for 80% of cases. This study was done to evaluate surgical outcome of PUJ obstructive patients by ^{99m}Tc-DTPA renography.

Patients and Methods: This observational, longitudinal study was carried out at Institute of Nuclear Medicine & Allied Sciences (INMAS), DMCH Campus, Dhaka, during July 2016 to June 2017. For this purpose, a total of 70 subjects with PUJ obstruction before A-H pyeloplasty in the above Institute were included in this study. Patients with GFR $\leq$ 10 ml/min, serum creatinine level $\geq$ 3 mg/dl and pregnancy were excluded from this study. All the study subjects had ^{99m}Tc-DTPA renogram in diagnosed cases of PUJ obstruction (diagnosed by ultrasonography and intravenous urography) before and 3 months after A-H pyeloplasty. Static renal images 1 hour and 2 hours in DTPA renogram in selected postoperative subjects were also done. The pre and postoperative renogram findings were statistically analyzed to assess outcome.

Results: Obstructive uropathy was present in 70 (100.0%) preoperative subjects. Postoperatively; obstructive uropathy was present in 31 (44.3%), partial obstruction in 22 (31.4%) and functional obstruction in 17 (24.3%) subjects. The mean differential renal function

(%) was 38.7 ± 8.2 in preoperative subjects and 41.0 ± 9.8 postoperatively. The mean glomerular filtration rate (ml/min) was 42.1 ± 9.1 in preoperative subjects and 46.2 ±10.8 postoperatively. The mean total glomerular filtration rate (ml/min) was 92.1 ± 8.9 in preoperative subjects and 95.5 ± 10.4 postoperatively. The difference was statistically significant ($p < 0.05$) between pre and postoperative DTPA renography findings. The mean serum creatinine (mg/dl) was 1.3 ± 0.4 in preoperative subjects and 1.2 ± 0.4 postoperatively. The difference was statistically not significant ($p > 0.05$) between pre and postoperative periods. At the one hour and two hours static images of DTPA renogram in subjects with obstructive uropathy even after pyeloplasty also showed features of obstruction in almost all of them. Post pyeloplasty^{99m}Tc-DTPA renogram at 3 months revealed stable renal function in 23 (32.9%) subjects, while improvement in renal function was noticed in 36 (51.4%) subjects and remaining 11 (15.7%) subjects had deterioration in renal function.

Conclusion: In most of the study subjects, the differential renal parenchymal function and glomerular filtration rate were significantly increased in postoperative period. Post pyeloplasty^{99m}Tc-DTPA renogram at 3 months revealed about half of the subjects had improvement in renal function. So, a routine ^{99m}Tc-DTPA renography of all the patients of PUJ obstruction before and also after A-H pyeloplasty will be helpful to evaluate the renal parenchymal function as well as planning for further management as a cost-effective method in a developing country like Bangladesh.