

MD Anderson Cancer Center
Japanese Medical Exchange Program JME Program 2018

From 30th August 2018 to 6th October 2018

Kazuaki Nakashima

Shizuoka Cancer Center Hospital
Department of Breast Imaging and Intervention

My Mission and Vision created through JME program 2018

Mission

To develop a national imaging research team and construct a novel imaging system that can diagnose breast cancers correctly before they progress through research and education.

Vision

To eliminate advanced breast cancer by early detection using innovative imaging methods.

Purpose

1. To learn multidisciplinary approach to cancer treatment being done at MD Anderson Cancer Center (MDACC) and the role that the radiologist should play in it.
2. To learn efficient systems and procedure skills in diagnostic radiology in MDACC.

Method

I participated in the Japanese Medical Exchange (JME) 2018 program at MDACC from 30th August to 6th October 2018 and received training on team medicine, leadership and career development and the diagnostic radiology.

JME 2018 Program Outline

1. **Training Programs for Team Oncology**

- Observations of Clinics and Ward Rounds with Physician, Physician assistant, Nurse practitioner, Registered nurse or Clinical Pharmacist
 - Breast Medical Oncology Clinic
 - Breast Surgical Oncology Clinic
 - Gastrointestinal Clinic
 - Radiation Oncology Clinic
 - Infusion Therapy Clinic
 - Stem Cell Transplant Rounds
 - Leukemia/Lymphoma Rounds
 - PICC Rounds
 - WOCN Rounds
 - Operating Rooms Visit - Breast Surgeries
- Multidisciplinary Conferences
 - Inflammatory Breast Cancer Clinical Consensus Meeting
 - Breast Clinical Management Conference
 - Gynecologic Oncology Planning Conference
- Nursing Ethics Rounds
- Lectures
 - Cultural Presentation, Overview of MDACC
 - Ethics Lectures
 - Statistics/Design
 - Pathology
 - Pharmacy & Therapeutics, Pharmacy Presentation
 - Nursing Quality and Patient Safety
 - Antimicrobial Stewardship
 - Breast Imaging
 - Patient Education
- MD Anderson in The Woodlands Visiting
- Houston Hospice Visiting
- Participation in annual conferences
 - 22th Annual Interdisciplinary Conference on Supportive Care, Hospice and Palliative Medicine
 - Nursing Community Leadership Meeting
- Presentation of The JME 2018 Project

2. Training for Leadership and Career Development

- Lectures and Workshops
 - Core Values
 - Leadership & Career Development
 - Handling Difficult Conversations and Managing Conflict

- Mentoring
- Meetings with My Mentors (Dr. Petross, Dr. Liao, Dr. Ueno)
- Meetings with Dr. Ueno
 - Individual Development Plan, Curriculum Vitae, Leadership and Career Development, Mentoring and Other Topics

3. Observation of Diagnostic Radiology Department

- Diagnostic Radiology Department Tour
- Interpretation of Mammograms, Ultrasonography and MR Images
- US-guided Biopsy and Seed Implantation
- MRI-guided Biopsy
- Breast Radiation Oncology Clinic
- Lecture of Contrast-enhanced Spectral Mammography

Results

1. Training Programs for Team Oncology

In observations of clinics and ward rounds, it was strongly impressed that nurse practitioner, physician assistant and clinical pharmacist who called 'Mid-level' are remarkably active in any clinic or ward such as breast surgical oncology, breast medical oncology, radiation oncology, etc. These experts teamed up with physician and visited patients in turn and discussed patient problems in the multidisciplinary team. It was well organized and seemed like watching theater or sports. Although it is a time-consuming way, I feel it is a satisfactory medical treatment system for patients. I was also very impressed by the fact that the breast surgical oncology clinic of MD Anderson in Woodlands on the outskirts of Houston adopted the same method. This method seemed to be a system which is supported by abundant staffs, medical time and the related certain-level institutions where the patients can be back. Although I cannot immediately adopt the way in overcrowded medical situation in our institution, I learned a lot about how to build a system that can obtain patient satisfaction. And what is even more impressive is the patients being very positive to better cure their illness. Of course, it is true that there are many patients with strong intention to come to MDACC in search of the best cancer care from all over the world and that the temperament of American people is different from that of Japanese, but the Japanese patient who tends to leave the treatment to the doctor has a lot to learn. I had the opportunity to ask the patient and their family about the difference. It was very remembered that they said "It is natural that we make every possible effort as it is about ourselves. Now we can get information on the internet right away". And the end of the physician's examination was always closed with the word "Any question?". After returning to Japan, I try not to forget to ask "Do you have any questions" when I talk to patients in the clinic.

2. Training for Leadership and Career Development

It was my first experience to learn about leadership and career development in the J-TOP workshop earlier this year. It was a strongly impressed and very valuable experience that I continued to have guidance from Dr. Ueno, Ms. Janis Yadyne and other US mentors in the JME program and had time to focus on my career and future. Dr. Petross and Dr. Liao took the time individually, and I was able to receive meaningful advice about the specialized radiology area. In addition, I was able to clarify what I should do by making an Individual Development Plan under the guidance of my mentors and by translating my Goals into language. Regarding leadership development, further study is still necessary for me, but it was the greatest harvest from the JME program that I was able to take a new step on career development, to create motivation and to meet mentors who can consult in the future. From now on, I need to continue daily consciousness and effort on how to practice towards my Goals.

3. Observation of Diagnostic Radiology Department

Diagnostic Radiology Department Tour

There are 20 CT and 18 MRI scanners in the diagnostic radiology department of MDACC's main hospital, including 5 MRI scanners in the breast imaging section. For IVR, there are two IVR-CTs and one IVR-MRI scanners in the breast imaging section. There is a separate department for IVR of the whole body in the main building, and about 35 IVR procedures are performed in 8 rooms a day. There are other CT and MRI scanners dedicating to the operating room, radiotherapy department, etc. are also available. As a special one, there are a PET-MRI scanner, Molecular imaging-directed biopsy equipment under preparation and many advanced equipment for research in the research facility. I felt that the throughput of the CT and MRI examinations in MDACC was slower than our institution. There was not a hurried atmosphere like Japanese institutions to increase the number of examinations by operating a small number of equipment efficiently and by exchanging patients as quick as possible. The progress of examinations of the day can be seen nearly in real time from the electronic medical record, and in MDACC's main hospital the CT examinations were conducted on average about 40 cases per hour, and about 15 MRI examinations were done. There are 35 breast radiologists in MDACC now. In Japan, it is normal for one or none radiologist specializing in the breast to be at the institution, and usually breast radiologist cannot just be responsible for the breast imaging. The abundant number of breast radiologists is envious for Japanese radiologists. There are 12 mammography units (eight units for diagnostic mammography and four for screening) and nine ultrasound scanners in the breast imaging section in MDACC. About 50-60 diagnostic and 70 screening mammography and 75-80 ultrasonography examinations are performed in a day. There are three mammographic biopsy systems including two tomosynthesis-guided and one stereotactic biopsy systems. Regarding the calcifications on mammography, breast radiologists in MDACC do not use

tomosynthesis-guided systems but use conventional stereotactic biopsy systems. Tomosynthesis-guided biopsy is performed for the lesions that can only be seen on tomosynthesis images such as minor architectural distortion. This is different from our institution in which tomosynthesis-guided biopsy is used for suspicious calcifications on mammogram. I realize the accuracy, ease, and procedure-time reduction for biopsy of calcifications by using tomosynthesis compared with conventional stereotactic biopsy. However, in MDACC, the problem was that the disadvantage of occupying tomosynthesis for biopsy and making other mammography examinations impossible during the procedure.

Interpretation of Mammograms, Ultrasonography and MR Images

In our institution, breast radiologists including me perform from diagnosis to biopsy of the breast lesions (it is rather rare situation in Japan), which is like the breast radiologist in USA. Hence, I was very interested in how the routine work is being conducted in MDACC. I asked Dr. Leung, breast section chief, to see her actual daily work of interpretation and describing in the reports of mammography, ultrasound and MR images. Prior to breast radiologists finish writing a report, the attending physicians often visited the reading room for asking the results of the examination or requesting for biopsy. The radiologists sewed between corresponding to them and image interpreting duties. In the breast ultrasound examinations, 80% of the examinations are performed by ultrasound technologists and 20% of the exams are performed by radiologist. Then, in most cases, a breast radiologist makes comments on the ultrasound images taken by a technologist. As in other institutions in USA, the radiologists perform about 70% of the ultrasound examinations, MDACC is a little special situation. I was very surprised about the indication of MRI examination. In MDACC, MRI before breast cancer surgery is performed only about 10% of the cases. The reasons are that the usefulness of preoperative MRI has not been proven as evidence, false positive findings are frequently found and high cost. MRI examinations are mainly conducted for screening of high-risk group of breast cancer, evaluation of preoperative chemotherapy effect and purpose of problem solving. It is also one of the reasons that image interpretation of surgical specimen mammography performed by radiologist substitutes the MRI evaluation for breast cancer extent. On the other hand, in most institutions in Japan, MRI examination is performed before surgery in most breast cancer cases.

Regarding surgical specimen mammography interpretation in MDACC, the evaluation of the extent of breast cancer of both partial resected specimens and whole breast specimen are immediately interpreted during the surgery and the results are informed to the pathologist and surgeon. The breast specimen is divided during surgery and the split specimen mammography is conducted. A breast radiologist interprets the extent of the tumor in the specimen mammogram and informs the results to the pathologist by phone. The pathologist tells the surgeon in the operating room about pathological comment with the radiologist's diagnosis. Although the radiologist's burden to comment to the specimen

mammography seems to be large, they play an important role in the multidisciplinary team.

Ultrasound (US)-guided biopsy and seed implantation

I asked Dr. Petross and Dr. Scoggins to see their procedures of US-guided needle biopsy and seed implantation. Regarding the US-guided fine-needle aspiration, the cytology result is obtained in 10-15 minutes, so it is possible to perform additional core needle biopsy or marker placement immediately after the diagnosis. The marker is usually placed after the fine-needle aspiration or core-needle biopsy in USA. In addition, in the case of partial resection in MDACC, it is supposed to insert a marker or wire for confirming the excision site during the operation. For that purpose, radioactive seed for detecting radiation or Magseed for detecting magnetism are implanted depending on the preference of the surgeon. Radiation exposure by radioactive seed implantation is negligible and not considered as a significant problem. Radioactive seed is individually recognized by ID, and it is tracked and strictly managed where the seed is now until the seed is discarded to the radiation container after the operation.



(A Magseed filled in the puncture needle)



MRI-guided breast biopsy became insurance adaptation even in Japan with the 2018 revision of medical reimbursement. It is estimated that the facilities will not increase abruptly because of some obstacles, but there is no doubt that it will increase in the future. Several MRI-guided biopsies are conducted a week in MDACC. I observed two cases of biopsies which Dr. Scoggins performed. It was very interesting as I had no experience of MRI-guided biopsy. Problems that arise when doing it in Japan are case selection to avoid

overtesting, high cost, occupying the MRI room, verifying the result and follow-up duration in case of the benign biopsy result. In fact, the first observed case was a highly suspicious malignancy in MRI findings, but the biopsy result showed no malignant finding. MRI-guided biopsy requires cautious radiologic-pathologic correlation. Since our institution have substituted MRI-guided biopsy using the method called Real-time Virtual Sonography, it is necessary to assess whether there is a need to introduce MRI-guided biopsy system.

Regarding breast radiation oncology clinic, again I could see a multidisciplinary teamwork of radiation oncologist Dr. Stauder, registered nurse and nurse practitioner. I was able to receive a lecture of Dr. Maxine Jochelson in the Memorial Sloan Kettering Cancer Center at the meeting of the contrast-enhanced spectral mammography (CESM) just held during the JME program period. I could understand the clinical evidence and usefulness of CESM by presented clinical cases.

Achievement and Future prospects

It was a wonderful experience that I could feel MDACC's huge facilities, funds, manpower, medical service quality and quantity. Although I did not think that MDACC was superior in all respects to our institution, I was thinking about how to approach the quality of cancer treatment being done at MDACC during the period of JME program.

In breast imaging section, I talked with my mentor Dr. Petross and other breast radiologists and could see that radiologists were deeply intervening in patient diagnosis and treatment and were trusted by other physicians and departments. In addition, I was able to know the points which differ greatly from our methods in Japan and what should be learned about in indication of examinations, image interpretation methods, biopsy procedures and so on. Although I felt that there were some parts that Japan is rather detailed, at the same time, it would mean no universality, difficulty to uniformize and no efficiency. Both Dr. Petross and Dr. Liao emphasize that a private research has limitations and cannot give a significant impact and it is necessary to make a team and conduct multicenter research. It was a valuable experience that I was able to recognize again what I felt, and now I strongly feel that I have to take effective action. I could have a long time to think about my Mission and Vision and I was able to spend a very satisfying time focusing on my career by directly consulting skilled mentors. In addition, it was a wonderful gift from JME program that gained mentors who can consult in public and private in the future. I was able to see one sophisticated form of the multidisciplinary teamwork at MDACC and spend an enjoyable time like a student with the JME 2018 members during the program. I think both were the experiences to know the importance of respecting person's individuality and generating the power by cooperating with each other. From now on, I need to continue thinking and doing my best for the development of cancer treatment. I have set my Goals for years as follows to achieve my Mission and Vision.

1. To increase the number of radiologists in Japan specializing in diagnosis of breast imaging and biopsy.
2. To make our institution the training center for breast radiologists.
3. To create a national imaging research team.
4. To write more research publications and review publications on breast imaging.

I would like to make efforts to expand what I received from the JME program and return it to the world for the development of cancer treatment. And I hope everyone will think someday that it was good to give me this JME opportunity.

Acknowledgements

I would like to thank everyone from the bottom of my heart for their help and support for JME program 2018. Especially, I would like to express my sincere thanks to Dr. Ueno who guided us from before to the end of the program and Dr. Joyce Neumann, Ms. Janis Yadiny and all other US mentors who guided us at MDACC. My mentor Dr. Le-Petross and Dr. Liao were always thinking about me and gave me a lot of valuable advice. Mr. Fueki, Ms. Marcy Sanchez, and JME 2017 members supported us from before the beginning of the program. I also thank many organizations and individuals for their kindness and support for the program. I would also like to express my gratitude to my family, Dr. Uematsu and great JME 2018 members.