ASNC/JSNC JOINT SYMPOSIUM—REVIEW ARTICLE

The Continuing Relationship Between ASNC and JSNC: Joint Symposium in JSNC 2022

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Received: July 14, 2022/Revised manuscript received: July 15, 2022/Accepted: July 15, 2022

Abstract

The Japanese Society of Nuclear Cardiology (JSNC) and the American Society of Nuclear Cardiology (ASNC) have a relationship through a memorandum of understanding (MOU). This April, the MOU was extended for two more years. Based on this MOU, we hold a joint symposium at the JSNC annual meeting early in the summer each year. The theme of the joint symposium this year was "Inflammatory diseases of heart and large vessels". We consider the success of the joint symposium to be the fruit of the close relationship between JSNC and ASNC.
Keywords: ASNC, Cardiac Sarcoidosis, Infectious disease, Joint symposium, Takayasu arteritis
Ann Nucl Cardiol 2022; 8 (1): 77–79

The Japanese Society of Nuclear Cardiology (JSNC) and the American Society of Nuclear Cardiology (ASNC) have a cooperative relationship through a memorandum of understanding (MOU). The first MOU was signed by the previous presidents Yasuchika Takeishi (JSNC) and Rob Beanlands (ASNC) on 13th May 2019 in Lisbon (the venue of ICNC2019). This April, the MOU between ASNC and JSNC was extended for two more years by the current president of ASNC, Dennis Calnon, and me as the JSNC president at the time of the MOU extension. With the continuation of the relationship between JSNC and ASNC, we hold a joint symposium at the annual meeting of JSNC and invite a speaker from ASNC each year. Due to the recent expansion of nuclear cardiology into non-ischemic heart diseases, we set the theme for the joint symposium this year as "Inflammatory disease of heart and large vessels", which includes sarcoidosis, large vessel vasculitis, and infectious diseases.

The JSNC annual meeting was held this June in Tokyo. Due to the COVID-19 pandemic, we were unable to have face-to-face meetings for the last two years. However, since the COVID-19 pandemic was improving, the annual meeting was held on-site over two days similar to the pre-COVID era. Although the meeting included virtual presentations ("Hybrid" style), the majority of presentations were held on-site; therefore, we shared our experiences, efforts, and knowledge with many cardiologists, nuclear medicine physicians, and technologists through face-to-face discussions. It is my pleasure to return to the on-site style of the meeting.

The ASNC-JSNC joint symposium was also held in a "Hybrid" style. All invited Japanese speakers visited the venue of the meeting, made presentations, and had discussions on-site. However, the invited speaker from ASNC did a virtual presentation due to the continuing difficulties associated with traveling between Japan and the U.S.. Although a discussion with the ASNC speaker was not possible, Japanese speakers were involved in discussions on-site and took comments from the audience.

In this year's symposium, JSNC invited Dr. Sharmila Dorbala as a speaker from ASNC. Dr. Dorbala is a previous president of ASNC and one of the leading researchers in the field of nuclear cardiology. She gave a lecture last year on cardiac amyloidosis. This year, she prepared a pre-recorded video presentation on cardiac sarcoidosis for approximately 30 min. After Dr. Dorbala's video presentation, three Japanese speakers gave presentations in Japanese. The Japanese invited speakers were Dr. Yasuhiro Maejima from Tokyo Medical and Dental University, Dr. Yoshikazu Yazaki from the Saku Central Hospital Advanced Care Center, and Dr. Emi Tateishi from the National Cerebral and Cardiovascular Center. Prof. Yasuchika Takeishi (Fukushima Medical University) and I chaired the joint symposium.

Dr. Dorbala started her presentation by discussing the

doi: 10.17996/anc.22-00170

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importance and limitations of biopsy for a definitive diagnosis of cardiac sarcoidosis. She described an interesting case that showed short syncope with the introduction of many guidelines (1–4), including the JSNC guidelines (5), and showed a diagnostic algorithm for cardiac sarcoidosis. The roles of magnetic resonance imaging (MRI) and F-18 fluorodeoxyglucose positron emission tomography (FDG PET) imaging in the diagnostic algorithm of cardiac sarcoidosis were presented in detail. Dr. Dorbala showed that FDG PET imaging is still required to exclude the possibility of cardiac sarcoidosis even in cases without significant MRI findings. Dr. Dorbala also stressed that the proper preparation of the patient for FDG PET is crucial for a proper diagnosis. She introduced a ketogenic diet as a good option for the preparation of FDG PET imaging for cardiac sarcoidosis. Dr. Dorbala then moved onto the next topic, nuclear imaging beyond a simple diagnosis for cardiac sarcoidosis. She introduced that FDG PET may have value for predicting the outcomes of patients as well as risk stratification by monitoring therapeutic responses. However, visual evaluations of FDG PET images are not sufficiently reliable for these purposes. To overcome the limitations associated with visual assessments, she summarized four necessary technical advances: 1) semi-quantitative measurement, 2) absolute quantitative measurement, 3) volumetric measurement, and 4) radiomics. By showing example data of these advances, she demonstrated how FDG PET may expand its utility in cardiac sarcoidosis. She finalized her talk by summarizing the following: 1) FDG PET imaging provides “virtual histology”, 2) FDG PET imaging may be used as a guide for biopsy for the diagnosis of cardiac sarcoidosis, and 3) the quantitation of FDG images is vital in guiding therapy for the management of cardiac sarcoidosis.

After Dr. Dorbala’s excellent video presentation, we moved on to the presentations of the three Japanese speakers. Dr. Maejima discussed his experience with large vessel vasculitis, particularly Takayasu arteritis. Takayasu arteritis is prevalent in Asia and the Middle East, and frequently affects young females. Dr. Maejima mentioned that although morphological imaging modalities, such as computed tomography (CT), MRI, Echo, and angiography, are important for the diagnosis of Takayasu arteritis, FDG PET is crucial. FDG PET imaging is helpful for reaching an early diagnosis and therapeutic monitoring. The first-line treatment for Takayasu arteritis is generally steroid therapy. However, relapse during steroid therapy is frequent. Furthermore, some patients do not respond to this therapy. Dr. Maejima mentioned that only approximately 30% of patients tolerated and responded well to steroid therapy. FDG PET imaging is very useful for detecting and evaluating non-responding and relapsed patients. In these cases, treatment must be advanced to targeted molecular therapy such as using tocilizumab. Tocilizumab is very effective for large vessel arteritis, including Takayasu arteritis, and its use is officially approved in Japan. Tocilizumab decreased the rate of relapse to approximately 20–30% of cases. However, the detection of relapse during tocilizumab therapy has become an important issue. Tocilizumab inhibits the interleukin-6 receptor, which is a major component of the inflammatory process, including the production of C-reactive protein (CRP). Therefore, regardless of responses to tocilizumab, the CRP levels of patients treated with tocilizumab will markedly decrease, which affects evaluations of inflammatory activity using blood samples. FDG PET imaging represents the only reliable measurement of the activity of vasculitis in patients under tocilizumab treatment. Dr. Maejima then focused on the etiology of Takayasu arteritis. Single nucleotide polymorphisms in the MAX Dimerization Protein (MLX) gene showed a relationship with Takayasu arteritis (6). Dr. Maejima focused on the expression of the MLX gene by brown fat surrounding the aorta. Active brown fat shows the strong uptake of FDG; therefore, high metabolic activity, which is measurable on FDG PET, may be related to inflammation associated with Takayasu arteritis. Dr. Maejima finalized his talk by showing that FDG PET may not only be useful for the diagnosis of Takayasu arteritis, but may also provide some clue for the understanding of the etiology of Takayasu arteritis.

The next speaker, Dr. Yazaki presented his experience of and opinions on not only the diagnosis, but also the management of cardiac sarcoidosis in Japan. He mentioned that when any minor abnormal finding of the myocardium was detected, such as the thinning or thickening of the ventricular wall, it is important to suspect cardiac sarcoidosis and advance to the next step of the diagnosis, such as FDG PET and MRI. On the other hand, he also stated that from the viewpoint of “patient-centered” medicine, too many examinations lead to patient discomfort. He emphasized that even when “isolated” cardiac sarcoidosis is suspected, it is vital to survey the extracardiac lesions of sarcoidosis. When extracardiac sarcoidosis is detected in easily accessible locations, such as the neck lymph nodes, using FDG PET, sampling from the lymph nodes will be crucial for the rapid diagnosis of sarcoidosis. Dr. Yazaki also emphasized multiple aspects of cardiac sarcoidosis, such as inflammatory conditions, myocardial damage, and arrhythmogenic disease, the required method for the evaluation of which is different. FDG PET is a suitable method for the assessment of inflammatory activity. Echocardiography is the examination of choice for myocardial damage leading to a decline in cardiac function. Electrocardiography plays a key role in assessing arrhythmogenic conditions. The selection of these methods according to a patient’s condition is critical. Dr. Yazaki also focused on the issue of steroid-

resistant patients. Even with immunosuppressive drugs, some patients are resistant to therapy and some may relapse after therapy. FDG PET is beneficial for monitoring and detecting residual inflammation in the myocardium of these patients (7). At the end of his talk, Dr. Yazaki emphasized that the age of the patient population of cardiac sarcoidosis is getting older in Japan. Therefore, patient-friendly nuclear medicine will become more important for elderly patients.

Dr. Tateishi presented her experience in nuclear medicine with the diagnosis of infectious cardiovascular diseases, particularly device infections. FDG PET is beneficial for the diagnosis of inflammatory and infectious diseases. However, FDG PET is not officially approved for infectious cardiovascular disease in Japan. The commonly available nuclear medicine method for detecting active infection is still Gallium (Ga)-67 scintigraphy in Japan. Dr. Tateishi showed how to use Ga-67 scintigraphy and interpret images using many informative case presentations. She emphasized that single photon emission computed tomography (SPECT) images are essential for the diagnosis of infection in the cardiovascular system. She introduced cases that showed minor uptake on the implanted valve on SPECT images, which was later proven to be infectious endocarditis. She mentioned that Ga-67 scintigraphy may play a role in the diagnosis of myocarditis. Scintigraphy cannot have a major role for acute myocarditis due to its urgency. However, in cases of chronic myocarditis, active inflammation may be visualized using Ga-67. She described a case of giant cell myocarditis with the significant uptake of Ga. She also showed a case of infectious aortic aneurism, which was clearly visualized on Ga-67 scintigraphy. She then moved on to the diagnosis of device infection. In National Cerebral and Cardiovascular Center, where Dr. Tateishi is working, LVAD (Left Ventricular Assist Device) implantation is commonly performed. One of the major complications of LVAD is infection. Therefore, the early detection of LVAD infection is crucial for patient management. Dr. Tateishi discussed the common occurrence of LVAD infection as a “drive-line” infection that later advances to main device infection. She described a case that showed the high linear uptake of Ga-67 along the drive-line of LVAD, which later became a massive infection in the device.

JNSC would like to express our deep gratitude to the executives and all other members and staff of ASNC for their cooperation in this successful joint symposium. The annual meeting of JSNC next year will be held in Nagasaki, and I will chair the meeting. I hope that we will be able to invite ASNC presenters on-site at the Nagasaki meeting and advance our cooperative relationship between JSNC and ASNC.

Acknowledgments

None.

Sources of funding

None.

Conflicts of interest

None.

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