Overview of the 79th Annual Scientific Meeting of the Japanese Circulation Society
– Late-Breaking Cardiovascular Medicine From Japan –

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The 79th Annual Scientific Meeting of the Japanese Circulation Society was held in Osaka on April 24–26, 2015. The main theme was “Late-breaking Cardiovascular Medicine from Japan”. Recently, optimal medical treatment has been guided by evidence-based medicine. We aim to emphasize the research findings and advances in cardiology from Japan, in the hope that Japan will become one of the leaders in the field worldwide. Unlike previous meetings, this annual scientific meeting was held in late April. Approximately 18,000 people, including medical doctors, healthcare professionals, and management staff, attended. The meeting was successfully completed, and included discussions on state-of-the-art medicine. (*Circ J* 2015; 79: 1675–1679)

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Other presenters were Dr Kanji Inoue, who developed the Inoue Balloon, which is used during percutaneous transvenous mitral commissurotomy for mitral stenosis, and Dr Hisayoshi Suma, a cardiovascular surgeon who performed coronary artery bypass graft surgery using a gastroepiploic artery for the first time worldwide. The lecture by the Congress Chairperson, Dr Hisao Ogawa, included the history of his studies and Japan”. Japanese clinicians who have made great achievements in their respective fields presented in detail the process from conception of their idea to its clinical application. The first speaker, Dr Hirofumi Yasue, talked about his work as a pioneer in the field of coronary spasm. The historical process, the method of diagnosis, the effect on prognosis, and appropriate treatment with ECG and imaging, attracted a packed audience.
future directions in cardiovascular medicine; an overwhelming number of participants attended this lecture.

**Heart Failure**

In the Mashimo Memorial Lecture, Dr Kangawa presented data on natriuretic peptides. Dr Matsuo, Dr Kangawa, and colleagues discovered 3 novel natriuretic peptides: A-type natriuretic peptide (ANP 1984), B-type natriuretic peptide (BNP 1988) and C-type natriuretic peptide (CNP 1990). The identification of these natriuretic peptides from the human heart and vessels enabled the determination of regulatory mechanisms of the cardiovascular system. Study of the mechanisms of action of different molecular forms of natriuretic peptides will be a very important subject in the future.

In the symposium session, experts reported on cardiac biomarkers and coronary microvascular dysfunction in heart failure patients, as well as the use of late gadolinium enhancement (LGE=myocardial fibrosis) in cardiac magnetic resonance imaging. Coronary vasomotor abnormalities in fibrotic myocardium may worsen heart failure. Progressive myocardial damage correlates with the presence and extent of myocardial fibrosis or injury; moreover, there seems to be a rigorous relationship between ischemic change and the amount of fibrotic myocardium.

**Basic Research**

John F. Keaney, from the University of Massachusetts Medical School talked about “New Concepts in Endothelial Function” at Special Lecture 1. He presented the importance of mitochondrial function in endothelial cells. His data clearly indicate that endothelial function is maintained by well-organized mitochondrial biogenesis, uncoupling, fission, and fusion. At the session about “Imaging Technology,” Dr Atsushi Miyawaki presented his novel technique for visualizing molecule-molecule interactions inside the cell. Dr Naoki Mochizuki introduced in vivo fluorescence bioimaging of zebrafish embryos. Dr Satoshi Nishimura described in vivo imaging of adipose tissue and blood vessels and discussed their relationship with human cardiovascular disease.

Regenerative medicine using iPS cells is also an important topic in cardiovascular research. Six Japanese researchers presented new therapeutic approaches using iPS cells. At a special session, entitled “Epigenetics and Cardiovascular Disease”, 5 Japanese researchers lectured on genome-wide approaches to assessing epigenetic changes and the molecular mechanisms in cardiac differentiation, regeneration, angiogenesis and diabetic nephropathy. Another session, entitled “Cardiogenesis and Cardiovascular Disease”, focused on cardiovascular development and its relationship with cardiovascular disease. Three Japanese researchers and an invited researcher described the latest topics in cardiogenesis, coronary vessel formation, and their relationship with the pathogenesis of cardiovascular disease. John Y.-J. Shyy, from the University of California, presented the basic concept of the inflammasome and its relationship with the progression of atherosclerosis. The NLRP3 inflammasome in the endothelium mediates hemodynamic-induced atherosclerosis susceptibility. Kenneth Walsh, from Boston University School of Medicine, presented accumulating evidence on adipokine-mediated interactions between adipose and cardiovascular tissue. He also introduced his recent finding that Wnt5a-mediated, non-canonical Wnt signaling contributes to obesity-related metabolic dysfunction by increasing adipose tissue inflammation.

**Hypertension**

Renal denervation (RDN) for treatment-resistant hypertension has received a considerable amount of attention. In the Late Breaking Clinical Trials session, Professor Kazuomi Kario, from Jichi Medical University, presented the results of the SYMPLICITY HTN-J clinical trial before the trial was discontinued. Professor Kario revealed that the SYMPLICITY HTN-J was underpowered for its primary endpoint analysis and did not demonstrate a significant difference in the 6-month systolic blood pressure (SBP) change between RDN and control subjects. However, the change of SBP in the RDN group was significant from the 24-h to 6-month period (P=0.008), but not different in the control subjects. In the SYMPLICITY HTN-3 trial, no major adverse events were reported.

**Acute Myocardial Infarction (AMI) Registry: The Aim of Creating a National Registry**

In Japan, there are several representative cohort studies concerning AMI: Tokyo CCU Network, Osaka Acute Coronary Insufficiency Study (OACIS) and the Japanese Acute Coronary Syndrome Study (JACSS). These data vividly display the current status of AMI in the interventional era. There are also famous AMI registries based in specific prefectures, such as the MIYAGI-AMI Registry and the Kumamoto Acute Coronary Events (KACE) study.

There is a National Registry of Myocardial Infarction (NRMI) in the United States and data on significant advances have been published. In Asia, Korea and Taiwan have been creating each national registry of AMI. However, there is no national registry data related to AMI in Japan. Because the current data are limited to that of some participating institutions, the accurate incidence of AMI in Japan remains unknown. Recently, a group named the “Japanese AMI registry (JAMIR)” has been set up for the purpose of investigating the present state of AMI in Japan and to compare the data with those from other countries; this involves a number of participating groups aggressively creating regional registries. The JAMIR-Korean AMI registry (KAMIR) collaborating group is expected to provide clinical evidence for patients with AMI in Asia.

**Antithrombotic Therapy in Cardiovascular Disease**

Antithrombotic therapy was a major topic of this meeting. The popular sessions on this field were “Optimal Antithrombotic Therapy in Patients with Coronary Heart Disease” (Symposium 21), “Antithrombotic Therapy in Atrial Fibrillation (AF) Patients Undergoing Percutaneous Coronary Intervention (PCI)” (Round Table Discussion 7), “Rapid Development of Antithrombotic Therapy: Current Status and Future Directions” (Special Session 9), and “Thromboembolism/Antithrombotic Therapy/Thrombolysis” (Featured Research Session 5). Symposium 21 focused on antithrombotic therapies, especially antiplatelet therapy, which plays an important role in the prevention of coronary event development and stent thrombosis after coronary stent implantation. In Round Table Discussion 7, the experts presented data regarding triple therapy with dual antiplatelet therapy (DAPT) and anticoagulant in AF patients undergoing PCI. In Featured Research Session 5, Dr Willem Dewilde, first author of the WOEST-trial, presented a sub-analysis of this trial, and showed a comparison between drug-eluting stents (DES) and bare metal stents (BMS) in patients on long-term anticoagulants who need PCI.
Valvular Diseases and Echocardiography

MitraClip implantation that mimics surgical edge-to-edge mitral valve repair is increasingly becoming popular in Europe. Echocardiography for valvular heart diseases was a major topic of this meeting. In Featured Research Session 3, Kiyoshi Yoshida presented the new approach of 3-dimensional (3D) echocardiography for understanding the complicated anatomy of the whole mitral valve complex. Currently, the importance of right ventricular function is increasingly being acknowledged, especially in cases of adult congenital heart disease. In Symposium 10, Dr Fujiwara showed the usefulness of echocardiographic indices for the evaluation of right ventricular function in tetralogy of Fallot (TOF). Two-dimensional speckle tracking echocardiography (STE) is frequently used to evaluate left ventricular systolic function. In Featured Research Session 3, the usefulness of 3D STE in evaluating left ventricular diastolic function or atrial function was demonstrated.

Imaging

In Plenary Session 1, the promising utility of “New Multimodality Cardiovascular Imaging and the Dedicated Management of Diseases” was discussed. The session focused on the potential usefulness of 4D magnetic resonance imaging to monitor pulmonary artery pressure and adenosine stress computed tomography myocardial perfusion imaging for noninvasive diagnosis of coronary artery stenosis and its functional significance. Moreover, Symposium 12 reevaluated the role of endomyocardial biopsy in patients with coronary artery disease, cardiomyopathy, and cardiac arrhythmias.

Structural Heart Disease

It is 18 months since transcatheter aortic valve implantation (TAVI) was introduced to Japanese clinical practice, and the clinical experience of Japanese TAVI operators with this technique has increased. In Plenary Session 5, entitled “Current Strategies of Diagnosis and Treatment in Aortic Valve Disease”, Dr John G. Webb, an invited lecturer, focused on the importance of cooperation between cardiovascular surgeons and internists. In addition to the topic of TAVI, Featured Research Session 8 provided a forum regarding future perspectives on percutaneous mitral valve repair in patients with mitral regurgitation.
AF-suppressant therapies as well as a basis for the development of biomarkers for the investigation and follow-up of arrhythmia. Furthermore, some investigators also reported that oxidative stress plays a crucial role in the development of inflammatory atrial fibrosis, suggesting the importance of inflammation in the development of AF.

In the Round Table Discussion session on the management of electrical storm in life-threatening ventricular tachyarrhythmia, The Nippon Storm Study, which was a prospective observational study designed to clarify the clinical aspects of electrical storm, was discussed. This study, recently completed, and the Japanese real-world incidence of electrical storm in patients with implantable cardiac shock device was reported in this session. In addition, pharmacological interventions for electrical storm and the management of implantable cardiac shock devices for electrical storm were discussed in this session.

Closing Remarks

The 79th Annual Scientific Meeting of the JCS successfully offered future perspectives in cardiovascular medicine. This report was based on the viewpoint of each author.

Figure 3 shows commemorative photograph of the doctors and staff of the National Cerebral and Cardiovascular Center Hospital and Kumamoto University.

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References