Overview of the 82nd Annual Scientific Meeting of the Japanese Circulation Society

— Futurability: Pioneering the Future of Circulatory Medicine —

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The 82nd Annual Scientific Meeting of the Japanese Circulation Society was held in Osaka, Japan, on March 23–25, 2018, when the cherry blossoms were just opening everywhere around the venue. This was the 5th Annual Scientific Meeting of JCS in which a cardiovascular surgeon served as Congress Chairperson. The main theme of this meeting was “Futurability: Pioneering the Future of Circulatory Medicine”. The word, futurability, is a neologism of future ability, because we now have to contemplate what constitutes the essence of cardiovascular medicine, how it should develop as medicine for future generations, and how its ability should be displayed. The meeting was favored by splendid weather and the number of participants was recorded as being higher than 18,700. There were heated and profound discussions about the “futurability” of cardiology, cardiovascular surgery, and heart team medical care as well, in every session. The meeting was successfully completed and we sincerely appreciate the great cooperation and support from all affiliates.

Key Words: Cardiovascular medicine; Cardiovascular surgery; Future directions; Japanese Circulation Society

Overview and Meeting Theme

The 82nd Annual Scientific Meeting of the Japanese Circulation Society (JCS) was held in Osaka, Japan, on March 23–25, 2018, with the main theme of “Futurability: Pioneering the Future of Circulatory Medicine”. The word, “futurability”, is a neologism of “future” and “ability” and a registered trademark of Osaka University Hospital. We selected this word as an expression of our mission to think about the ability of prospective development and progress in the field of cardiology and cardiovascular surgery now and in the future. This was the 5th Annual Scientific Meeting of the JCS in which a cardiovascular surgeon has served as Congress Chairperson, and 2 great cardiovascular surgeons from our department, Emeritus Professor Hisao Manabe and Emeritus Professor Yasunaru Kawashima, have previously served as the Congress Chairperson of the 47th and 60th meetings, respectively.

The main venues were Osaka International Convention Center (**Figure 1A**), RIHGA Royal Hotel Osaka (**Figure 1B**), and Dojima River Forum. We integrated the venues around the Nakanoshima area, which is the financial, cultural and business center of Osaka and close to Tekijuku, the predecessor of Osaka University Graduate School of Medicine.

In the venues, there were 21 oral presentation rooms, 2 special rooms for joint seminars and special exhibitions, and 7 poster presentation rooms. There were lively discussions in each of the various sessions during the 3 sessional days (**Figure 2A,B**).

We have received a total of 3,700 regular abstracts including 163 abstracts from overseas, of which 2,582 were accepted (adoption rate, 69.8%). Among the accepted abstracts, 48 were in the Featured Research Session, 664 were English oral presentations, 213 were Japanese oral presentations, 1,112 were English poster presentations, and 545 were Japanese poster presentations. As for the Late-Breaking Sessions, we received 90 abstracts and 36 of them (40.0%) were accepted for presentation. Of the 79 applications that were submitted for the Case Report Award Session (CRAS), 28 were accepted at an adoption rate of 35.4%, and for oral presentations alone, the adoption rate was 13.9%. Furthermore, 10 out of 17 abstracts submitted for the symposium and 295 out of 318 applications for the regular presentation were accepted for the Team Medical Care sessions, with an adoption rate of 91.0% for the overall Team Medical Care sessions.

There were 18,704 participants consisting of 15,806 people who had paid the registration fee and other invited people

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Figure 1. Venues for the 82nd JCS Annual Scientific Meeting. (A) Osaka International Convention Center. (B) RIHGA Royal Hotel Osaka. There were meeting banners on the street lamps around the venue.

Figure 2. (A) Oral and (B) poster presentations at the 82nd JCS Annual Scientific Meeting.

including doctors from inside and outside Japan, medical students and management staff. The number of paying participants was the greatest ever. This annual scientific meeting hosted 15 special lectures and invited lectures, 9 plenary sessions, 21 symposia, 14 joint symposia with domestic and foreign scientific societies, including the AHA, ESC, and the ACC, 6 round-table discussions, 5 topic sessions, 7 controversy sessions, 9 meet-the-expert sessions, and many other featured sessions.

In his Congress Chairperson's Lecture entitled "Futurability for Cardiology and Cardiovascular Surgery", Dr. Yoshiki Sawa (**Figure 3A**) reviewed past progress of both cardiovascular medicine and surgery and emphasized the importance of coordination and complementation of both fields in the next generation.^{1,2} In the Mikamo Lecture, Dr. Alain Cribier (**Figure 3B**), the pioneer of transcatheter aortic valve implantation (TAVI), presented his career, details of the initial case of TAVI, and the development and current state of TAVI, which has spread rapidly all over the world.³ Dr. Shinya Yamanaka (**Figure 3C**), the inventor of induced pluripotent stem cells (iPS cells) and a laureate of the Nobel Prize in Physiology or Medicine, gave his lecture entitled "Recent progress in iPS cell research and application" in the Mashimo Memorial Lecture. He talked about the history of his research, including discovery of the iPS

cells, which could be converted from mature cells, and his struggles with the study.^{4,5} He also mentioned the present situation and future prospects of clinical application of iPS cells.⁶ The Main Hall in the Osaka International Convention Center was full, with the audience eager to hear the presentations by these globally notable figures. Additionally, several world-famous cardiologists and cardiovascular surgeons, including Dr. Magdi Yacoub, Dr. Tirone E. David, Dr. Axel Haverich, and more, presented their newest and interesting knowledge in their fields in the Special and Invited Lectures. Approximately 200 foreign physicians attended this meeting in total.

As a characteristic endeavor of this scientific meeting, we assigned a female chairperson as often as possible and the ratio was finally approximately 13.5% (66/490).

Welcome Ceremony

The welcome ceremony featured the Super-kids Orchestra concert conducted by Mr. Yutaka Sado, one of the most famous and capable conductors in the world (**Figure 4A**). The capacity audience was overwhelmed and moved by the world-class conducting and the single-minded musical performance.

Figure 3. (A) Yoshiki Sawa, MD, PhD, Professor of Osaka University Graduate School of Medicine, presenting the Congress Chairperson's Lecture. (B) Alain Cribier with the session's Chairperson, Yoshiki Sawa, at the Mikamo Lecture. (C) Shinya Yamanaka with the session's Chairperson, Yoshiki Sawa, at the Mashimo Memorial Lecture.

Figure 4. (A) Super-kids Orchestra conducted by Mr. Yutaka Sado as the Welcome Ceremony. (B) Panels based on the novels by Mr. Ryotaro Shiba as a special exhibition. (C) There were many visitors in the food court filled with the essence of Osaka cuisine. (D) Hands-on seminar of aortic valve sparing conducted by Dr. Tiron E. David, a giant in the field of cardiovascular surgery.

Osaka Declaration

Since the first heart transplantation was done by Professor Wada, the door of brain-dead transplantation has been shut for a long time. In order to resume and develop organ transplantation into a medical procedure with high universality as in Europe and the USA, a great deal of effort, including discussion about brain death and the Japanese sense of ethics, has been made over the past 31 years by senior clinicians in various fields to overcome disbelief and reluctance among the Japanese people. At last, the Act on Organ Transplantation was established in 1997 and heart transplantation was resumed on February 28 in 1999.⁷ Ever since, transplantation therapy has steadily developed in Japan under the regulations of the brain-death law. However, with a significant lack of donors, the Act on Organ Transplantation was revised in 2010 to overcome this problem and the number of donors has doubled. Despite this, the lack of donors remains an issue and further work is necessary to overcome various problems regarding brain-dead donor provision, such as a framework of organ donation that includes the handling of “end-of-life care” and donor facilities. It has been almost 20 years since the establishment of this historic law. In consideration of the existence of incalculable numbers of patients requiring a heart transplant, it is believed that further progress towards universal medical care in heart transplantation is necessary and that the whole nation needs to accept the lack of donor as a social problem to be solved. How to promote this issue at the national level is a key point in the development of transplantation therapy in the future. Therefore, the JCS announced the Osaka Declaration as an easy expression for everyone to understand – “Gift of Sincerity – Tie up together for heart transplant” – in the hope of leading to lively social discourse from now on.

After the Osaka Declaration, a moving 3-way talk was given by Emeritus Professor Yasunaru Kawashima, Emeritus Professor Hitoshi Koyanagi, and Emeritus Professor Chuichi Kawai, in commemoration of the 20th anniversary of the establishment of the Act on Organ Transplantation.

Featured Sessions: “Futurability”

In addition to the Congress Chairperson’s Lecture, there were several featured sessions focused on the main theme of this meeting, “futurability”. Experts in percutaneous coronary intervention and coronary artery bypass grafting deeply discussed the “Futurability of Coronary Revascularization” in Symposium 1. In Plenary Session 1, entitled “Futurability of Therapeutic Strategy of Heart Failure”, the cutting-edge topics of basic science, including genome-based therapy, were discussed. “Futurability of Regeneration Therapy” was actively discussed in Plenary Session 4, reflecting the latest basic findings. It was noteworthy that the unique and unprecedented sessions, “Futurability of Terminal Care” and “Futurability of Cardiovascular Surgeons” made a great impression on the audience. Furthermore, future perspectives of aortic stent grafting and treatment for limb ischemia were argued in Symposium 3 and Symposium 16, respectively. All sessions featuring “futurability” had eager audiences and a favorable reception.

JCS Awards

The JCS Awards ceremony was held prior to the Congress Chairperson’s Lecture. The JCS Awards included the Japan Heart Foundation Satoh Memorial Award, the Young Investigator’s Award, the JCS CPIS (Cardiovascular Pharmacotherapy International Symposium) Award, the Circulation Journal Award, the Cardiovascular Imaging Award, and so on. Dr. Yamaguchi (Osaka University), who was the winner of the Japan Heart Foundation Satoh Memorial Award, gave a lecture entitled “The Role of Autophagic Degradation in Heart Failure”. He reported his new findings of a novel molecule, BCL2L13, involved in mitochondria-specific autophagy, known as mitophagy. He demonstrated that BCL2L13 was a functional homolog of Atg32, an essential molecule of mitophagy in yeast, and could induce mitochondrial fragmentation, which usually precedes mitophagy, and concluded that autophagic machinery would be a novel therapeutic target for heart failure (HF).^{8,9}

Arrhythmia

There were several vigorous debates in the arrhythmia sessions within the fields of basic, clinical and pathophysiological research. In Plenary Session 2 entitled “Recent Progress in Catheter Ablation for Ventricular Tachyarrhythmias”, Dr. Joshua D. Moss, from the University of California San Francisco, reviewed the most recent advances in ablation for ventricular tachyarrhythmia, including high-density mapping and image integration, enhanced delivery of radiofrequency energy, noninvasive ablation, and treatment of specialized populations such as patients with genetic arrhythmia syndromes and left ventricular assist device recipients. Symposium 5 focused on investigating the clinical conditions of cardiac sudden death and its prevention. Several experts discussed the pathophysiology of the early repolarization syndrome in this symposium. Furthermore, cardiologists and cardiovascular surgeons had a heated debate on effective treatment for atrial fibrillation, including catheter ablation, the Maze procedure, and left atrial appendage closure.

Antithrombotic Therapy

Antithrombotic therapy is still a major topic in cardiovascular disease. In the Late-Breaking Cohort Study 1, Dr. Yokoi (Fukuoka Sanno Hospital), Dr. Nakamura (Toho University Ohashi Hospital) and Dr. Hirayama (Nihon University) presented their interim results of a large-scale clinical trial of anticoagulant therapy, and Dr. Miyauchi (Juntendo University), Dr. Okumura (Nihon University) and Dr. Yamashita (Kyoto University) reported their recent analysis focused on anticoagulant therapy based on their large-sample registries. Important evidence regarding the safety and efficacy of antiplatelet drugs, direct oral anticoagulants (DOACs), warfarin, and new drugs was presented. Additionally, there was valuable discussion by several expert presenters in Topic 2 about optimal anticoagulation therapy for atrial fibrillation.

Heart Failure

One of the major topics of this meeting was treatment for HF, so the number of papers concerned with HF was the

Figure 5. Commemorative photograph of the doctors and staff of the Department of Cardiovascular Surgery, Osaka University Graduate School of Medicine.

largest among all categories. The most novel theme in this field was HF with mid-range ejection fraction (HFmrEF), which was introduced in the ESC Guideline 2016.^{10,11} HFmrEF is a new category of HF between HF with reduced EF (HFrEF) and HF with preserved EF (HFpEF). In Controversy 2, the consequence of classifying HF by EF and the concept of HFmrEF were topics of lively discussion. The main points of the presentation were that HFmrEF has a prevalence of 10–20% among HF patients and these patients have clinical characteristics that are more similar to those of the HFpEF cohort than the HFrEF patients, although the HFmrEF population is more similar to the HFrEF population regarding the comorbidity of coronary artery disease. Additionally, there were many interesting questions and answers. Moreover, several Japanese large-size clinical studies and registries were presented in the Late Breaking Cohort Study 2. Dr. Anzai (Hokkaido University) demonstrated the clinical characteristics, management, and outcomes of Japanese patients hospitalized for HFpEF from the JASPER Nationwide Registry. He reported that Japanese HFpEF patients were less obese and had a substantially higher prevalence of atrial fibrillation and a lower incidence of subsequent events compared with those in other Western countries, and also emphasized that this important international difference might imply specific preventive and therapeutic strategies for hospitalized Japanese patients with HFpEF.¹² Furthermore, the SUPPORT Trial, the JCDTR Database, the JANIES-LVD Study and the FRAGILE-HF Study were introduced in this session.

As for end-stage HF, the optimal time to introduce mechanical circulatory support, including ventricular assist device, was discussed in Special Session 14 and issues to be solved regarding the introduction of Destination Therapy were argued in Topic 1. Furthermore, palliative care for the end-stage HF population, which draws great interest today, was discussed by expert physicians and nurses in Special Session 16, gathering a very attentive audience. Similarly, all sessions concerned with Team Medical Care

were filled with eager physicians, nurses, and other co-medical staff, reflecting a great deal of attention to the concept of the “Heart Team” in the field of cardiovascular medicine.

Imaging

Recent development of cardiovascular imaging in the field of circulatory medicine is remarkable. In Plenary Session 3 entitled “The Recent Advances in the Assessment of Valvular Heart Diseases with Imaging Modalities”, expert researchers validated their concepts of assessing the mitral regurgitation with various modalities. The ESC-JCS Joint Symposium and Plenary Session 9 focused on the most novel theme: imaging in the assessment of coronary artery disease and myocardial ischemia. Moreover, several special sessions focusing on the practical use of echocardiography, including a hands-on session for young residents, made a great impression on the audience.

Structural Heart Disease

TAVI has been widely accepted as an alternative to surgical aortic valve replacement and its indication is now expanding from high-risk patients to intermediate-risk patients in the EU and USA. What about low-risk patients? Experts with a lot of experience debated this issue in Controversy 7 and discussed the optimal indication at this time in Japan based on up-to-date Japanese and worldwide TAVI data. At present, results of the international clinical trial of TAVI for low-risk patients are anxiously awaited. Additionally, the feasibility, safety, and potential efficacy of the aortic and mitral valve-in-valve procedures were shown by Dr. Yamashita (National Cerebral and Cardiovascular Center) in Late-Breaking Clinical Trial 3. This technique might be a boon for high-risk patients with a degenerated bioprosthesis. Moreover, in the same session, excellent 1-year outcomes of the AVJ-514 Trial, in which mitral regurgitation was treated with a percutaneous clipping system, were

presented by Dr. Saito (Shonan Kamakura General Hospital).

Special Exhibitions, Gala Dinner, and the Food Court

We attached a great deal of importance to hospitality at this meeting. As a special exhibition, we displayed panels and many medicine-related items based on the novels by Mr. Ryotaro Shiba, who is a former graduate of Osaka University (**Figure 4B**). The Gala Dinner and the tasty dishes in the food court were filled with the essence of Osakan culture and cuisine (**Figure 4C**). In addition, there were other interesting and unique events, programs, and items, including the “Dojo (training hall) of Legends”, a hands-on seminar of aortic valve sparing conducted by Dr. Tiron E. David (**Figure 4D**), a panel exhibition of the “20-year Trail of Heart Transplantation in Japan”, a display of the oldest surviving Japanese medical text, “Ishinpo”, and some items showing the symbolic character of this meeting, “Black Jack”, which is a comic character created by the great manga artist, Mr. Osamu Tezuka, who is a former graduate of Osaka University. We believe that all participants were deeply satisfied with our hospitality.

Closing Remarks

The 82nd Annual Scientific Meeting of the JCS successfully offered future perspectives in both cardiology and cardiovascular surgery for the next generation. We believe that all participants were able to participate in the lively discussion about the future ability of cardiovascular medicine, which was the main theme of the meeting, and enjoyed not only the meeting but also the culture and food of our beautiful city, Osaka. We also believe that this meeting will be remembered by all participants and on the record. This report is based on the viewpoints of both the authors and contributors. **Figure 5** is a commemorative photograph of the doctors and staff of the Department of Cardiovascular Surgery, Osaka University Graduate School of Medicine, taken just after closing of the meeting.

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Disclosure Statement

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References

1. Committee for Scientific Affairs, The Japanese Association for Thoracic Surgery, Masuda M, Okumura M, Doki Y, Endo S, Hirata Y, Kobayashi J, et al. Thoracic and cardiovascular surgery in Japan during 2014: Annual report by The Japanese Association for Thoracic Surgery. *Gen Thorac Cardiovasc Surg* 2016; **64**: 665–697.
2. Yasuda S, Nakao K, Nishimura K, Miyamoto Y, Sumita Y, Shishido T, et al; on the behalf of JROAD Investigators. The current status of cardiovascular medicine in Japan: Analysis of a large number of health records from a nationwide claim-based database, JROAD-DPC. *Circ J* 2016; **80**: 2327–2335.
3. Cribier A. The development of transcatheter aortic valve replacement (TAVR). *Glob Cardiol Sci Pract* 2016; **4**: e201632.
4. Takahashi K, Yamanaka S. Induction of pluripotent stem cells from mouse embryonic and adult fibroblast cultures by defined factors. *Cell* 2006; **126**: 663–676.
5. Takahashi K, Tanabe K, Ohnuki M, Narita M, Ichisaka T, Tomoda K, et al. Induction of pluripotent stem cells from adult human fibroblasts by defined factors. *Cell* 2007; **131**: 861–872.
6. Mandai M, Watanabe A, Kurimoto Y, Hiram Y, Morinaga C, Daimon T, et al. Autologous induced stem-cell-derived retinal cells for macular degeneration. *N Engl J Med* 2017; **376**: 1038–1046.
7. Matsuda H, Fukushima N, Sawa Y, Nishimura M, Matsumiya G, Shirakura R. First brain dead donor heart transplantation under new legislation in Japan. *Jpn J Thorac Cardiovasc Surg* 1999; **47**: 499–505.
8. Otsu K, Murakawa T, Yamaguchi O. BCL2L13 is a mammalian homolog of the yeast mitophagy receptor Atg32. *Autophagy* 2015; **11**: 1932–1933.
9. Yamaguchi O, Otsu K. Novel in vivo tool to evaluate autophagic activity in the heart. *Circ J* 2010; **74**: 49–50.
10. Ponikowski P, Voors AA, Anker SD, Bueno H, Cleland JGF, Coats AJS, et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC). Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. *Eur Heart J* 2016; **37**: 2129–2200.
11. Hsu JJ, Ziaeian B, Fonarow GC. Heart failure with mid-range (borderline) ejection fraction: Clinical implications and future directions. *JACC Heart Fail* 2017; **5**: 763–771.
12. Nagai T, Yoshikawa T, Saito Y, Takeishi Y, Yamamoto K, Ogawa H, et al; JASPER Investigators. Clinical characteristics, management, and outcomes of Japanese patients hospitalized for heart failure with preserved ejection fraction: A report from the Japanese Heart Failure Syndrome With Preserved Ejection Fraction (JASPER) Registry. *Circ J* 2018; **82**: 1534–1545.