

The Summary of the 8th Chinese International Congress of Vascular Medicine (CCVM)

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The first Chinese International Congress of Vascular Medicine (CCVM) Annual Conference was held in 2004. The initial name of the conference was “The Chinese Annual Conference of Vascular Disease and Arterial Function”, which is the first international academic conference focused on the comprehensive studies of the biology, risk factors, biomarkers, detection, and prevention of the early stages of vascular diseases, as well as the non-invasive, interventional, and surgical treatment strategies of the vascular diseases. In 2006, CCVM started to work with the International Society for Vascular Disease (ISVH) to hold the first Asia-Pacific Forum on vascular diseases. From 2007, CCVM started to run the activity of the “Vascular Health Week in China” every year. During the Annual Conferences of CCVM from 2007 to 2011, CCVM also held the regional satellite CCVM/ISVH Forums in Taiyuan, Guangzhou, Shanghai, Guiyang, Huhhot, and Jinan. At the annual International Conference in Beijing, the top international and Chinese experts in research and treatment of vascular diseases have got together and discussed the cutting-edge vascular research and medicine, which significantly improved the knowledge and development of vascular medicine in China and the world. The interactions between the international and Chinese scholars at the CCVM meeting have attracted the attention of international scholars on the development of early detection, prevention, and treatment of the vascular diseases in China.

The 8th CCVM 2011 is the first international meeting of vascular diseases that was held by the Center of Vascular Medicine, Shougang Hospital, Peking University. The Center of Vascular Medicine at Shougang Hospital is the first national center of vascular disease, which is founded in China in 2010. This year’s CCVM conference was co-sponsored by the China Chapter of the ISVH; the Vascular Disease and Stroke Protection Committee of the Chinese Social Worker’s Association; the Center for Diagnosis and Treatment of Vascular Disease in Communities, Peking University; the Center of Vascular Medicine, Shougang Hospital, Peking University; Peking University Press Center; Guangdong General Hospital; Shandong Qianforshan Hospital, and Shanghai Rujin Hospital,

The Chairman of CCVM, Hongyu Wang, MD, PhD; the President of ISVH, James D. Cameron; the Past-President of ISVH, Roland Asmar, MD; the Head of the Science and Technology Education Department, Ministry of Public Health, Shuqing Jing; the Associate Director of Medicine Department, Peking University, Weigang Fang; the Vice President of Shougang Hospital, Peking University, Jingshan Liu; the Vice President of the Department of Recovery Medicine, the Chinese Social Worker’s Association, Deyun Li, gave their speeches at the Opening Ceremony of the CCVM 2011. Yiu-Fai Chen, PhD (University of Alabama, USA) and Kohji Shirai, MD, PhD (Toho University, Japan), the two Guest Professors of the Center of Vascular Medicine, Shougang Hospital, Peking University, received the certificates of appointment at the opening ceremony. The CCVM 2011 Conference invited many leading experts from international and Chinese academic institutes to give presentations and

discussed in recent vascular research, and give comments on the hot topics of vascular medicine. At the meeting, experts also introduced and discussed the most recent development in research and treatment of vascular diseases, including angiogenesis, pharmacogenomics, vascular hemodynamic, arterial function, the early detection, prevention and treatment of vascular diseases, and the care and recovery with the treatment of the vascular diseases.

A. The Basic Research of Vascular Diseases

Professor Yabing Chen of Department of Pathology, University of Alabama at Birmingham, USA, gave two presentations: 《Molecular Mechanisms of Vascular Calcification in Atherosclerosis》 and 《Regulation and Function of RANKL in Vascular Calcification》. She introduced the recent development of research in vascular calcification. Vascular calcification plays a very important role in the development of atherosclerosis and arteriosclerosis. With inflammatory, mechanical or metabolic stresses, interactions between endothelial cells, vascular smooth muscle cells, myofibroblasts and progenitor stem cells stimulate the osteogenesis in blood vessels and induce vascular calcification. Vascular calcification is a hall mark of atherosclerosis, hypertension, diabetic vascular diseases, vascular injury, chronic renal disease, and aging of the blood vessels. Vascular calcification will increase the stiffness and decrease the compliance of blood vessel, which will induce cardiac ischemia, left ventricular hypertrophy and failure, thrombosis, and de-stabilize the atherosclerotic plaques, which is a major cause of cardio- and cerebro-vascular diseases and mortality and morbidity worldwide.

Professor Chaoshu Tang and Professor Kong Wei of Department of Medicine and Pathology, Peking University presented 《Analysis of Biomedicine Focus》 and 《Metalloprotease and Vascular Remodeling》, respectively. Dr. Wei's study has demonstrated that metalloprotease ADAMTS-7 can hydrolyze matrix protein COMP, which can be used as an interventional target to prevent atherosclerosis, restenosis, and vascular calcification. Professor Guang Wang of the 3rd Hospital, Peking University presented 《Adjustments of PPAR- α/γ Agonist to Vascular Endothelial Function and Atherosclerosis and Possible Mechanisms》. He explained the mechanisms that activation of peroxisome proliferator-activated receptors (PPARs) provides protection of endothelial function and atherosclerosis. He also summarized the clinical beneficial effects of PPAR agonists on endothelial functions.

Cardiovascular disease is the leading cause of death among women, in whom it develops more than 10 years later than men. This lag has been attributed to the protective effects of female sex hormones, particularly estrogen (E2) on vascular aging. Professor Yiu-Fai Chen of Department of Medicine, University of Alabama at Birmingham, USA presented 《The Mechanism of the Protective Effects of Estrogen on Vascular Diseases》 that explained the mechanisms of the vascular protective effects of E2. In animal studies, Dr. Chen's laboratory has demonstrated that in the setting of acute endoluminal injury, E2 inhibited inflammatory cytokine and chemokine expression, monocyte and neutrophil infiltration and neointima formation in carotid arteries of ovariectomized rat via an estrogen

receptor (ER) dependent mechanism. Dr. Chen has given a second talk on 《Target Delivery of Endothelial Cells for the Repair of Cardiovascular》. Dr. Chen has developed a new method to improve the efficiency of cell therapy for vascular diseases. He has demonstrated that transfection of endothelial cells transducer with IL8RA and IL8RB receptors can mimic the behavior of neutrophils and target and adhere to the injured blood vessels, thus minimizing the inflammatory response to vascular injury. The target delivery of endothelial cells to site of arteries with endoluminal injury or hearts with myocardial infarction provides a novel strategy for the prevention and treatment of cardiovascular diseases.

Pharmacogenetics is a new research field to study the genetic variation that gives rise to differing response to drugs, refers to genetic differences in metabolic pathways which can affect individual responses to drugs. Professor Cuilan Li of Peking University People's Hospital presented 《Pharmacogenomics and Cardiovascular Health in Women》. She took the point of view of women's health, discussed the therapeutic effect and adverse effects of several drugs used to treat arrhythmia and cardiovascular diseases.

B. The Detection and Evaluation of Vascular Diseases

Professor Hongyu Wang, the Chairman of CCVM 2011, President of China Chapter of ISVH, and Director of Center of Vascular Medicine, Shougang Hospital, Peking University, presented 《The Chinese Guideline for Early Vascular Disease Detection (2011): the 2nd Report》. Dr. Wang discussed how to combine the indices of pulse pressure, carotid intima-media thickness (carotid IMT), carotid plaque score, pulse wave velocity (PWV), cardio-ankle vascular index (CAVI), ankle-arm blood pressure index (ABI), and coronary artery calcification score to evaluate the vascular diseases. This is the first Chinese and International guideline for the detection of the early vascular diseases. The guidelines provide important tools for clinician to evaluate and treat vascular diseases.

Professor Kohji Shirai of Department of Sakurai Hospital, Toho University, Japan, talked about 《Clinical Application of CAVI》that introduced the cardio-ankle vascular index (CAVI) as a new index of the stiffness of the artery. CAVI is high in aged people and in many arteriosclerotic diseases such as coronary artery disease, carotid arteriosclerosis, chronic kidney disease and cerebrovascular disease, and is related to many coronary risk factors such as hypertension, diabetes mellitus, dyslipidemia and smoking. Further, CAVI decreases by controlling diabetes mellitus and hypertension, and also by abstaining smoking. These results suggest that CAVI is not only a physiological surrogate marker of athero- or arteriosclerosis, but also an indicator of controlling life style modification. Professor Shirai also reviewed the principle of CAVI and the current knowledge and the future outlook of CAVI.

Professor Roland Asmar, the Past-President of ISVH and President of the Foundation-Medical Research Institute, Paris, France, reported 《Vascular Evaluation: Methodological Approaches, Why, What and How》. He reviewed the current technology, the principle and application of various instruments for the evaluation of arterial functions, and the results of large clinical trials using these instruments. His presentation made the audiences to catch up the advancement of the clinical technology for the detection of early stage of

vascular diseases. Another presentation of Professor Asmar was to discuss the 《Renin-Angiotensin-Aldosterone System and Arterial Stiffness》, which summarized the effect of renin-angiotensin system on vascular remodeling.

The President of ISVH, Professor James Cameron of La Trobe University and Monash Medical Centre, Melbourne, Australia, presented 《Heart Rate, Hypertension and Coronary Heart Disease》 that pointed out that heart rate is an important index of cardiovascular diseases that we usually ignore. He reported that the resting heart rate is often used as an overall indicator of cardiovascular health. Recent reports have implicated that high heart rate is associated with increased risk of adverse outcome in heart failure and in atherosclerosis with large clinical trials that suggest benefits of therapeutic lowering of heart rate. Conversely, it may be that in other cardiovascular conditions, including hypertension, that pharmacological modification of the heart rate is associated with adverse outcome compared to no-heart rate modifying agents. This possibility has raised significant implications for the choice of therapy for the primary treatment for hypertension. The second presentation of Professor Cameron was to discuss the 《Aortic Mechanical Effects on Coronary Blood Flow – An Underappreciated Patho-physiological Interaction》. He pointed out that the deleterious effect of aortic stiffening may be mediated by the effect of local changes in mechanics and geometry, secondary effects related to sub-optimal hemodynamic coupling. The increase in aortic stiffness can be used as biomarker of the progressive systemic conditions (e.g., aging, atherosclerosis and arteriosclerosis). Aortic stiffness is associated with adverse cardiovascular outcomes independently of blood pressure. Increased aortic stiffness increases aortic pulse wave velocity (PWV) and increased PWV has been shown to be an independent prognostic marker of cardiovascular and all cause mortality. Data from Dr. Cameron's laboratory has shown that aortic PWV is associated with coronary blood flow (CBF) both before and after percutaneous coronary intervention (PCI) and other investigators have shown that aortic strain is related to cardiovascular risk factor. Dr. Cameron has also confirmed that aortic strain assessed by cardiac CT is related to aging and presence of cardiovascular risk factors. Dr. Cameron also explained the methods for determining the aortic stiffness: the technique of cardiac CT and MRI.

Professor Kenji Takazawa of Hachioji Medical Center, Tokyo Medical University, Japan, presented 《Development of Reflection Wave Analysis in Systemic Circulation》. He pointed out that the ascending aortic pressure wave includes two systolic components. The early systolic component (SBP1) is derived from left ventricular ejection, and the late systolic component (SBP2) is derived from peripheral reflection wave. The ratio of the reflection pressure to the ejection pressure is the augmentation index (AI). He pointed out that AI is a function of aging, core blood pressure, left ventricular function, vascular hypertrophy, vascular stiffness, narrowing of vascular lumen, and function of endothelium. He also explained how to calculate AI and the changes in AI after drug treatment. Dr. Takazawa concluded that the reduction in reflection wave is essential treatment strategy for patients with myocardial infarction who had impaired cardiac function. The late systolic pressure produces excessive load of the left ventricle. Therefore, the AI is an important index of cardiac afterload.

Professor Shi Jun of the Health and Medical Center, Chinese PLA General Hospital presented 《Significance of Blood Pressure Variability for Diagnosis and Treatment of Hypertension》. He explained that blood pressure variability (BPV) is the fluctuation of blood pressure during a period of time. BPV can be presented by the co-efficient of variation of blood pressure by the time. Based on the results of Anglo-Scandinavian Cardiac Outcomes Trial (ASCOT), BPV is a better index to predict the cardio- and cerebro-vascular events, especially for the long term prediction. The concept of BPV provides a new tool for clinician for the evaluation and treatment of hypertension.

Professor Lisong Liu of Beijing Xuanwu Hospital presented 《Relationship between Coronary Atherosclerosis and Aorta Pulse Pressure in Hypertension》. Dr. Liu has collected coronary arterial imaging samples from 300 hypertensive patients. From the measurement of systolic (SBP) and diastolic (DBP) blood pressure at the root of aorta, he has demonstrated that the mean blood pressure and pulse pressure at the aortic root are greater in patients with coronary heart disease (CHD) than that of patients without CHD. These results suggest that arteriosclerosis can exacerbate the arterial stiffness and increase the aortic pulse pressure in hypertensive patients.

Professor Tianhu Liu of Shichun Pixian People's Hospital presented 《Investigation of Vascular Health Protection in Hypertension》. His data indicated that after 12 months anti-hypertensive treatment, blood pressure decreased in all age groups of hypertensive patients. There are significant improvements in pulse pressure, arterial stiffness, PWV and CAVI after anti-hypertensive treatment, suggesting that anti-hypertensive treatment can improve arterial function and prevent the progress the arterial remodeling and stiffness.

ECG is the most popular clinical tool to evaluate the coronary heart disease. Professor Guangping Li of Division of Cardiology, the 2nd Hospital, Tianjin Medical University) presented 《Evaluation of Pulmonary Thrombosis Severity by ECG》. Dr. Li concluded that ECG cannot specifically detect acute pulmonary thrombosis. However, dynamic ECG can be used to exclude the other acute cardiovascular diseases. Dr. Li explained the 21 ECG score system that generated by Dr. Daniel. The negative predictive score is more valuable than the positive predictive score. The prognosis will be better if the score is ≤ 3 .

Ultrasonography and CT are important techniques to evaluate vascular diseases. Professor Yongqiang Hong of Affiliated Mingdong Hospital Fujian Medical University presented 《Based on Quality Intima-Media Thickness Evaluation of Development Trend of Blood Vessel with Age》. Dr. Hong combined the techniques of arterial ultrasonograph, PWV and CAVI to evaluate the arterial function. He concluded that aging is a determinate factor of arterial stiffness. Quality Intima-Media Thickness (QIMT) technique can accurately measure the diameter of carotid artery and the changes in difference between the left and right carotid artery intima-media thickness (CIMT). Professor Jingfu Li and Professor Xinheng Feng of the 3rd Hospital, Peking University presented 《Evaluation of Intracranial Vascular Lesion and Circle of Cerebral Artery Function by Transcranial Doppler

Ultrasonography》 and 《Evaluation of Progress of Left Ventricular Filling Pressure》, respectively. They discussed how to use the transcranial ultrasonic imaging to evaluate the carotid artery stenosis and the Willis ring structure, and the ultrasonic analysis to measure the left ventricular filling pressure. Professor Aishi Liu of Inner Mongolia Medical University Affiliated Hospital introduced the most recent progress of coronary CT angiography (CCTA), which is a consensus of experts in 2010 - 《Progress of CCTA: 2010 Expert Consensus》.

C. The Intervention and Treatment of Vascular Disease

There are several guidelines and expert consensus for the treatment of hypertension, coronary heart disease, and stroke. At this conference, the specialists raised intensive discussion on these hot topics. Professor Shiwei Yang of Capital Medical University Beijing Anzhen Hospital discussed the 《Secondary Prevention of Coronary Heart Disease – Blood Pressure, Glucose and Lipid, the Lower the Better?》. Dr. Yang reviewed the large international clinical trials of the secondary prevention of coronary heart diseases. Data indicate that it is not true that the lowering in blood sugar, blood pressure, and blood lipid is always better for health. There is a continuous increase in arteriosclerosis and renal arterial stenosis, which is reflected by the increase in the incidence of severe hypertension and chronic renal disease. Professor Meishun Cai of Division of Nephrology, Peking University People's Hospital presented 《the Progress of Diagnosis and Treatment of Renal Arterial Atherosclerotic Stenosis》. Dr. Cai discussed the clinical profile, the detection tools, the drug treatment, and the interventional therapy of the renal arterial stenosis. In the treatment of cerebrovascular disease, Professor Guohua Zhang of Division of Neurology, Inner Mongolia Medical University Affiliated Hospital presented the 《Clinical Transplantation of Human Neural Stem Cells in Treatment of Stroke Sequelat》. Professor Qinyi Zhang of Capital Medical University Beijing Anzhen Hospital discussed the recent progress of 《Carotid Endarterectomy and Stroke Pretension》. Professor Mingzhao Qin of Capital Medical University Beijing Tongren Hospital, and Professor Changwu Ruan of Shanghai 8th People's Hospital also reported 《The Progress of the Diagnosis and Treatment of Infective Endocarditis》 and 《The Progress of the Diagnosis and Treatment of Heart Failure》, respectively.

Diabetes is a major risk factor of coronary heart disease. How to improve the metabolism of blood sugar and decrease the mortality and morbidity of patients with diabetes-induced cardiovascular complications are always the core issue of the treatment of diabetes. Professor Zhaoheng Hu of Division of Endocrinology, Peking University People's Hospital reported the 《Control of Diabetes Mellitus and Benefit of Cardiovascular Disease》. He has reviewed the data of several large international clinical trials for the lowing blood sugar treatment. Data indicate that lowing of blood sugar has significant beneficial effects on peripheral small blood vessel diseases. However, the preventive effects on the large vessel diseases are not significant. Dr. Hu also gave his own point of view on the treatment of blood sugar in patients with acute vascular diseases.

Activation of vagal nerve activity induced fainting is a dysfunction of vagal reflex that mainly happened in young people. Professor Jiyun Wang of Capital Medical University

Beijing Tongren Hospital discussed the 《Body Antipressure Action and Learning Position for Vasovagal Prevention》. Professor Youzhong An of Peking University People's Hospital presented the 《Management Strategy for Vascular Emergency》 at the Vascular Emergency Forum.

Nursing and rehabilitation are essential parts of the treatment of cardiovascular diseases, Professor Xiuying Guo and Shao Kai of Peking University Shougang Hospital presented 《Nursing and Vascular Disease》 and 《Recovery Strategy of Vascular Disease》, respectively, at the Rehabilitation of Vascular Disease Forum.

Professor Kenji Takazawa of Hachioji Medical Center, Tokyo Medical University, Japan presented 《Casein Hydrolysate Containing Val-Pro-Pro 与 Ile-Pro-Pro Improved Central Blood Pressure and arterial stiffness in Stage-1 Hypertensive Subjects》. He reported that Val-Pro-Pro and Ile-Pro-Pro are milk-derived peptides that have ACE inhibitory activity and anti-hypertensive, and anti-arterial stiffness effects. His data indicate that diet rich in Val-Pro-Pro and Ile-Pro-Pro can decrease core blood pressure and ba-PWV, which can also reverse the early arterial stiffness. These results indicate that casein hydrolysate containing Val-Pro-Pro and Ile-Pro-Pro has beneficial effect on arterial properties.

At the Forum of Interventional Treatment of Cardiovascular Diseases, the Chinese and international specialists of cardiovascular research and treatment exchanged their experience. They also presented and analyzed some classic clinical cases. Professor Xiongjing Jiang of Division of Cardiology, Fu-Wai Hospital reported his experience in the 《Treatment and Indication of the Percutaneous Transluminal Renal Vascular Intervention》. Professor Ruiyan Zhang of Ruijin Hospital, Shanghai Jiao Tong University School of Medicine reviewed the 《Interventional (PCI) and Surgical Treatment of End Stage Renal Disease (ESRD)》. Professor Zhimin Ma of Beijing Tongren Hospital and Professor Shenglong Chen of Peking University People's Hospital gave specific talks about 《Coronary Revascularization》 and 《Secondary Coronary Artery Bypass Grafting》, respectively. We also had specialists from Guangzhou to talk about the peripheral vascular interventional and surgical treatment.

D. Related Research and Studies

Professor Yuan Gu of General Medicine Section, Chinese Medical Association, Capital Medical University gave a special presentation on the 《Roles of General Practitioner in Prevention and Control of Cardiovascular Diseases》. Dr. Gu indicated that hypertension, diabetes and coronary heart disease are all chronic diseases. These chronic diseases are associated with life style and preventable. Without treatment, these chronic diseases can generated many complications and threaten to the life. The current treatment strategies of specialists in large clinical institutes are not practical, nor effective for managing these chronic diseases. Dr. Gu emphasized that we need to generate new models for the treatment that should coordinate the general practitioners and family physicians in the community to manage these diseases. The new model should include evaluation, provide guidance,

treatment, follow up, transfer patients, and patient interview to reach the treatment goals. Professor Hui Bao of Department of Gerontology, Peking University People's Hospital presented 《Metabolic Syndrome and Characteristic of Vascular Lesion in the Elderly》 and Professor Xuewu Zhang of Department of Rheumatology, Peking University People's Hospital presented 《Macrovascular Lesion in Rheumatism》, respectively. They discussed the characteristics of metabolic syndrome and vascular diseases in elder patients and the vascular disease of large vessels in patients with rheumatoid arthritis.