This special issue of Conference Review presents highlights from the 2014 Annual Scientific Meeting of the Macau Cardiology Association, which was held at the MGM Grand Macau from 5th to 9th July. The meeting featured local and international speakers and attracted over 200 delegates from Macau and Hong Kong, including cardiologists and general physicians as well as cardiovascular nurses, technicians and technologists.

The Macau Cardiology Association was founded in 2001 when the need was recognized to establish an academic cardiology association to maintain professional standards and good clinical practice. Its members include hospital and private practice cardiologists from throughout Macau. The Macau Cardiology Association is a member of the World Heart Federation. In addition to staging its own annual scientific meetings, the association is a regular participant in international cardiology meetings. The Macau Cardiology Association also organizes continuing medical education seminars for its members and promotes cardiovascular health awareness and education for the public.

The scientific programme for the Annual Scientific Meeting 2014 featured state-of-the-art presentations covering the management of coronary artery disease and advances in coronary stent development through to updates on cardioprotection and the management of hypertension and dyslipidaemia. The programme also featured a percutaneous coronary intervention workshop and live demonstration.

Keynote Speakers

Prof. Alberto MELLO e SILVA
Director of Service, Medicine Department, Hospital de Egas Moniz, Lisbon, Portugal

Prof. Mello e Silva is the President of the Portuguese Society of Atherosclerosis. He is also a member of many respected international cardiology societies. Dr Mello e Silva has authored many published articles and presented at conferences throughout Europe. His main area of interest is cardiovascular risk factors in a clinical context, including the relationship between hypertension and dyslipidaemia.

Dr. Chung Seung CHIANG
Consultant and Head, Division of Cardiology, Queen Elizabeth Hospital, Hong Kong
Chairman, Central Cardiac Committee of the Hospital Authority, Hong Kong

Dr. Chiang became a Fellow of the Royal College of Physicians of London, Edinburgh, and Glasgow and the American College of Cardiology during the period 2000 to 2003. He was President of the Hong Kong College of Cardiology from 2009 to 2011 and was the Chairman of the Organizing Committee for the 8th—21st Annual Scientific Congresses of the Hong Kong College of Cardiology during the period 2000 to 2013. Dr Chiang’s main interests are percutaneous coronary intervention and electrophysiological studies.

Dr. Danny Hoi Fan CHOW
Cardiologist, Department of Medicine at Princess Margaret Hospital, Hong Kong

Dr. Chow became a Fellow of the Hong Kong College of Physicians (Cardiology) in 2012 and a Fellow of the Hong Kong College of Physicians (Advanced Internal Medicine) in 2013. His main interest in cardiology is percutaneous coronary intervention. Dr Chow has earned numerous awards in this area from the Hong Kong College of Cardiology and HKSTENT. He also earned the Best Case Award in the Moderated Complex Case Competition of the Transcatheter Cardiovascular Therapeutics Asia-Pacific 2014 Cardiovascular Summit (Faculty of the Year).

Dr. Godwin Tat Chi LEUNG
Medical Director, Qualigenics Heart Centre, Hong Kong
Honorary Consultant Physician and Cardiologist, Canossa Hospital, Hong Kong

Dr. Leung obtained his medical degree from the Chinese University of Hong Kong before training in internal medicine and cardiology at the Pamela Youde Nethersole Eastern Hospital. He was awarded the Hong Kong Heart Foundation Scholarship in 1999 and received one year of training at the Mayo Clinic in the United States as the Mayo Clinic Fellow of Cardiovascular Disease. He was then elected a Fellow of the Hong Kong Academy of Medicine (Medicine) and the Hong Kong College of Cardiology and was also named international Fellow of the American Heart Association. Dr Leung is a member of the Hong Kong Cholesterol Management Working Group and a member of the Advisory Panel for the Cardiovascular Alliance. He has authored over 70 publications in the field of congestive heart failure, hypertension, lipid management, and interventional cardiology.

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Advances in Dyslipidaemia Management to Prevent Cardiovascular Events

Prof. Alberto Mello e Silva
Director of Service, Medicine Department, Hospital de Egas Moniz, Lisbon, Portugal

International guest speaker, Prof. Mello e Silva (Portugal) gave an insightful lecture on the latest advances in the treatment of dyslipidaemia. According to Prof. Mello e Silva, despite the proven efficacy of statins in reducing low-density lipoprotein (LDL)-cholesterol levels, a residual level of cardiovascular risk persists in patients even among those who achieve substantial reductions in their LDL-C levels. In explaining the origins of this residual risk, Prof. Mello e Silva cited genetic studies that have revealed a causal association between remnant cholesterol, which is total cholesterol minus the cholesterol contents of LDL and high-density lipoprotein (HDL), and an elevated risk of ischaemic heart disease, independent of levels of LDL-cholesterol (HDL-C).

The observation that remnant cholesterol plays an important role in determining cardiovascular risk is driving the development of novel pharmacological agents to protect against heart disease. According to Prof. Mello e Silva, the principles of treatment underlying the next generation of lipid-lowering drugs are interference of lipoprotein synthesis in the liver and the facilitation of LDL-receptor activity. Of the novel agents that interfere with hepatic lipoprotein synthesis, mipomersen, an antisense oligonucleotide against apolipoprotein B (apoB) expression mRNA, and lipomide, a synthetic small-molecule inhibitor of microsomal triglyceride protein (MTP) activity, both induce dose-dependent reductions in apoB and total cholesterol. Evolocumab and alirocumab are among the emerging agents that promote LDL-receptor activity. Both are monoclonal antibodies against proprotein convertase subtilisin/kexin type 9 (PCSK9). Inhibition of PCSK9 stimulates LDL-receptor activity resulting in increased removal of cholesterol-rich LDL particles from the plasma. Prof. Mello e Silva also highlighted anacretapib and evacretapib. Although originally developed to increase HDL-C, these drugs enhance the break-down of apoB through their inhibition of cholesteryl ester transfer protein (CETP), which results in incremental lowering of LDL-C in addition to producing marked elevations of HDL-C. Prof. Mello e Silva concluded his lecture by surmising that, whether used as monotherapies or combined with other lipid-lowering drugs, these new agents will provide additional lipid-lowering benefits and expanded therapeutic options for patients who do not achieve target goals despite maximal statin therapy and for those who cannot tolerate high-dose statin therapy.

New Frontiers in Coronary Stent Development

Dr. Chung Seung CHIANG
Consultant and Head, Division of Cardiology, Queen Elizabeth Hospital, Hong Kong
Chairman, Central Cardiac Committee of the Hospital Authority, Hong Kong

Dr Chiang (HK) began his presentation by describing how, since the first percutaneous coronary intervention (PCI) was performed in 1977, transcatheter-based therapy has become the mainstay of treatment for patients with severe ischaemic heart disease. Today, intracoronary stenting using drug-eluting stents is the most popular mode of PCI. In 2011, a novel method of PCI arrived, the bioresorbable vascular scaffold (BVS), with the ABSORB BVS being the most widely available BVS at present. In contrast to the traditional drug-eluting stents, the ABSORB BVS is a non-metallic, non-permanent, drug-eluting mesh implant. With clinical trials having demonstrated that the efficacy and safety of the ABSORB BVS is similar to that of traditional drug-eluting stents, the potential advantages of the ABSORB BVS include restoration of natural vessel movement and response, future re-intervention is unobstructed, and allowance for simple follow-up with non-invasive diagnostic imaging. Since the introduction of the ABSORB BVS, a new generation of bioresorbable scaffolds has appeared, including the magnesium-based DREAMS, DESolve, and ReZolve bioresorbable scaffolds. These novel BVS have potential advantages over the ABSORB BVS, including increased radial strength, plasticity, and radio-opacity, and reduced strut thickness and resorption time. Dr Chiang did emphasise, however, that clinical experience with this new generation of bioresorbable scaffolds is limited.

Preclinical Data on the COMBO Dual Therapy Stent

Dr. Danny Hoi Fan CHOW
Cardiologist, Department of Medicine at Princess Margaret Hospital, Hong Kong

In this lecture, Dr. Chow (HK) explained how, despite the advances in drug-eluting stent technology, persistent issues such as delayed and incomplete arterial healing, and the late catch-up effect, have still be to be overcome with the traditional DES. The more recent phenomena of neo-atherosclerosis due to lack of proper healing has also added to concerns regarding the traditional DES, which is essentially a monotherapy primarily aimed at suppressing neointimal proliferation. According to Dr Chow, the deficiencies in current stent technology have driven the development of the COMBO dual therapy stent (DTS), which combines the anti-proliferative effect of DES monotherapy with the pro-healing effect of endothelial progenitor cell (EPC) capture. Dr Chow provided details of the dual therapy stent concept, including the design features of:

- EPC capture technology for accelerated endothelial coverage
- sirolimus elution for control of neointimal proliferation
- abluminal biodegradable polymer matrix to eliminate chronic inflammation.

Dr Chow reported the results of preclinical studies demonstrating that the COMBO DTS produces improvements in both strut and endothelial coverage versus traditional DES in animals, which supported the staging of clinical studies to validate the efficacy and safety of this novel device in humans.

What is True Vessel Healing?
Dual Therapy Stents versus Drug-Eluting Stents

Dr. Godwin Tat Chi LEUNG
Medical Director, Dualgenics Heart Centre, Hong Kong
Honorary Consultant Physician and Cardiologist, Canossa Hospital, Hong Kong

In this related lecture on dual therapy stents, Dr Leung (HK) also highlighted delayed arterial healing as being the ‘ Achilles’ heel of earlier generation stents. He explained how delayed or incomplete healing increases thrombotic threat and the risk of neo-atherosclerosis, which is a new progressive disease in the neo-intima. The issue of neo-atherosclerosis is addressed with the COMBO Dual Therapy Stent (DTS). This device combines the pro-healing of endothelial progenitor cell capture technology, which promotes endothelial coverage, with the anti-proliferative efficacy of the sirolimus-eluting biodegradable polymer matrix, which controls neo-intimal proliferation. Pre-clinical studies have demonstrated superior endothelial coverage and less neointima formation with the COMBO DTS versus a standard DES. Dr Leung also reported results from the subsequent EGO-COMBO clinical trial, which has demonstrated excellent early healing and optimal neointimal suppression at 2 years after COMBO DTS implantation, as assessed by intracoronary optical coherence tomography, in patients requiring PCI and stenting.