ABSTRACTS

Abstracts for Invited Lectures:

IL1.

CARDIOVASCULAR RISK FACTORS IN HONG KONG – AN UPDATE

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The Hong Kong Cardiovascular Risk Factor Prevalence Study (CRISPS) was initiated in 1995-96, when 2895 Hong Kong adults aged 25-75 were recruited from the general population in Hong Kong using random domestic telephone numbers. This became a cohort study (CRISPS2) when 1944 participants were contacted and returned for follow-up in 2000-04. The third round of follow-up was conducted in 2005-08 (CRISPS3). The overall aim of the cohort study is to determine the prevalence of cardiovascular risk factors, including hypertension, diabetes and dyslipidaemia, and to find out the factors that predispose to the development of these conditions in Hong Kong Chinese. Previously, we have found that impaired glucose tolerance confers an overwhelming risk of developing diabetes. We have also traced the natural history of the development of the metabolic syndrome, which usually starts with central obesity, followed by dyslipidaemia and then diabetes and hypertension. We reported that the metabolic syndrome predicts the development of hypertension and is associated with increased mortality.

In CRISPS3, the prevalence of general obesity, defined as a body mass index (BMI) of 27.5 kg/m^2 or greater, has not increased since CRISPS1 (16.8% in CRISPS1, 15.7% in CRISPS2 and 14.9% in CRISPS3). However, the percentage of the cohort with abdominal obesity, defined as a waist circumference ≥90 cm in men or ≥80 cm in women, increased significantly from 25.4% in CRISPS1 to 41.4% in CRISPS3. At the same time, the prevalence of hypertension increased from 18.1% in CRISPS1 to 39.6% in CRISPS3. This increase remains significant after adjusting for age. Our findings confirm the importance of waist circumference in this population, as calculating the BMI alone may give a false sense of security. The prevalence of hypertension in Hong Kong is now approaching the level in developed countries such as the United States. Current efforts are channelled towards the detection and treatment of hypertension in middle and old age. The linear rise in the prevalence of hypertension with age means that measures to prevent hypertension, such as a healthy diet and regular physical activity, should start early in life. Our analysis of cancer incidence in CRISPS3 suggests a link between insulin resistance and risk of cancer, so tackling obesity may also be beneficial in terms of reducing cancer risk.

In CRISPS, DNA has been collected and analysed for association with the development of cardiovascular diseases. Some of these studies were done in collaboration with the Guangzhou Number 12 Hospital, where the Guangzhou Biobank Cohort Study – Cardiovascular Disease Subcohort study is carried out. One of the first fruits of this collaboration was the identification of a single nucleotide polymorphism in the APOA5 gene that is common in Chinese and has an important influence on plasma triglyceride level.

IL2.

BIOLOGICAL PACING: PROMISES AND CHALLENGES

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Electronic pacing has revolutionized the prevention and treatment of life-threatening bradyarrhythmias during the last half-century. Because electronic pacemakers are a palliative therapy that might be improved upon, investigators have begun using gene and cell therapy approaches to effect a cure. Strategies have coalesced to focus on achieving stable and autonomically responsive cardiac rhythms in a setting that ultimately would require no implanted hardware. Most groups working in the area are now using variations on the HCN (hyperpolarization-activated cyclic nucleotide-gated) family of genes to create biological pacemakers. Interventions have included the creation of mutant or chimeric HCN genes as well as co-incorporation of genes to modify sodium or potassium currents or cell-cell connectivity. In the gene therapy approach, adenoviral and lentiviral vectors are being explored. In cell therapy approaches, adult stem cells have been used to carry pacemaker genes to specific regions of the heart, and embryonic stem cells and induced pluripotent cells have been used to create pacemakers as well. Challenges to be met include many aspects of efficacy and safety. These include, but are not limited to, optimization of the pacemaker construct, understanding more regarding stability and duration of function and risk of proarrhythmia, and comprehending the extent to which biological pacing might or might not represent a clinically relevant supplement to or replacement for electronic pacing.