

million over the same time period. With approximately 50% of those with diabetes being aged 40-59, the socio-economic impact of diabetes on individuals and their families, as well as on societies, will be significant.

Cardiovascular disease, the major complication of diabetes, also varies across the region. As westernization and urbanisation have spread, so CVD has begun to emerge as a major health threat. Although coronary heart disease has been the major manifestation of CVD in western populations, cerebrovascular disease is more common in Asian populations.

DWP3-A

Determinants of diabetes mellitus and cardiovascular diseases in the Asia Pacific region

Anushka Patel

Director, Cardiovascular Division, George Institute for International Health, University of Sydney, Sydney, Australia

The prevalence of diabetes mellitus and the incidence of atherothrombotic vascular diseases are sharply rising in most countries within the Asia Pacific region. The Asia Pacific Cohort Studies Collaboration (APCSC), an individual participant data meta-analysis of cohort studies from a number of Asian countries as well as from Australia and New Zealand, allows reliable evaluation of the associations between conventional and metabolic risks, and cardiovascular diseases in these populations. APCSC, which includes data from more than half a million individuals, also provides a unique opportunity to compare the nature and magnitude of these associations between predominantly East Asian populations, and populations of mainly European descent from Australia and New Zealand. As well as summarising the main findings of APCSC, this presentation will focus on the trends of the major determinants of diabetes mellitus and cardiovascular diseases in the Asia Pacific region and the implications of such trends on future projections of disease burden relating to diabetes and related conditions.

DWP4-A

Obesity and cardiometabolic risk factors in diabetes: role of novel adipokines

Karen S.L. Lam

Rosie TT Young Chair in Endocrinology and Metabolism, Department of Medicine, University of Hong Kong, Hong Kong

Obesity, especially central obesity, is a major risk factor of Type 2 diabetes. Data from the World Health Organisation indicate that obesity contributes to 58% of the cases of diabetes worldwide. Recent evidence suggest that dysregulation of adipokine production from the adipose tissue, now considered the body's largest endocrine organ, plays a crucial role in linking obesity to Type 2 diabetes. The best evidence has been obtained from studies on adiponectin with data from prospective studies demonstrating that hypoadiponectinaemia precedes and predicts the development of Type 2 diabetes and other obesity-related cardiometabolic risk factors, including hypertension. More recently, several novel adipokines with altered circulating levels in Type 2 diabetes have been described. These include reduced levels of angiotensin-like protein 4, which we have shown to possess insulin sensitising properties, and raised levels of retinol binding protein-4, an adipokine associated with insulin resistance. Using proteomics and genomic-based strategies, we have been actively looking for other adipokines which can serve as biomarkers for the prediction of diabetes and cardiometabolic risk. We have identified three novel obesity-associated circulating biomarkers, adipocyte fatty acid binding protein (A-FABP), epidermal fatty

acid binding protein (E-FABP) and lipocalin-2, all being small lipid-binding proteins produced by adipocytes. High serum levels of these adipokines are associated with parameters of adiposity, insulin resistance and inflammation. Serum A-FABP and E-FABP are, individually and additively, associated with carotid intima-medial thickness in cross-sectional studies. Serum A-FABP, which correlates with adipose tissue A-FABP expression, also predicts the development of the metabolic syndrome, diabetes and coronary atherosclerosis in long-term prospective studies in our population. On the other hand, lipocalin-2 levels are elevated in diabetes, and their reduction following treatment with rosiglitazone correlates with the improvement in insulin sensitivity. These findings from our clinical studies suggest that the adipose tissue contributes to obesity-related diabetes and cardiometabolic risk through its endocrine function. That these novel biomarkers are also potential therapeutic targets for diabetes and obesity-related cardiometabolic risk is well exemplified by a recent study showing that an orally active small-molecule inhibitor of A-FABP protects against Type 2 diabetes and severe atherosclerosis in mouse models.

DWP5-A

Ethnicity, diabetes and complications

E. Shyong Tai

Clinical Scientist, Singapore Health Services, Singapore

As the prevalence of diabetes mellitus increases worldwide, it appears likely that developing countries in the Asia Pacific regions will experience some of the greatest increases over the next 20-30 years. Several factors give rise to this increased risk including: 1) the decline in mortality from infectious diseases and malnutrition leading to increasing numbers of individuals living to older ages; 2) urbanization which has led to an increase in the levels of obesity; 3) populations with particular susceptibility to diabetes mellitus. The population of Singapore comprises three major ethnic groups, Chinese, Malays and Asian Indians. Despite undergoing rapid urbanization over a very similar period, these three ethnic groups exhibit marked differences in susceptibility to Type 2 diabetes mellitus. Asian Indians exhibit the greatest risk for Type 2 diabetes mellitus, followed by Malays and Chinese. Emerging data suggests that the phenotypes associated with Type 2 diabetes mellitus also differs between ethnic groups. Compared to Chinese and Asian Indians, Malays with diabetes mellitus tend to have much high body mass index and greater elevation of blood pressure. In contrast, Asian Indians have lower body mass index, a more central distribution of body fat, and relatively low blood pressure. More recently, it is becoming evident that the different ethnic groups may also exhibit differences in the patterns of complications associated with Type 2 diabetes mellitus. Whereas Asian Indians appear to have a particular propensity to develop coronary artery disease in association with Type 2 diabetes mellitus, Malays have a greater propensity to develop albuminuria. The pathophysiologic basis for these ethnic differences remain unclear. An understanding of these differences may help us understand the pathogenesis of Type 2 diabetes mellitus and its complications.

DWP6-A

Is diabetes risk determined before mid-childhood?

Jane E. Harding

Liggins Institute, University of Auckland, Auckland, New Zealand

Epidemiological studies in the early 1990s showed that small size at birth was associated with increased risk of glucose intolerance and diabetes in later life. These associations applied not