OP-04

GLYCEMIC CONTROL AND COGNITIVE FUNCTION AFTER 50 YEARS OF TYPE 1 DIABETES

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INTRODUCTION

While cognitive dysfunction is well-studied in type 2 diabetes (T2D), research in type 1 diabetes (T1D) remains scant. In the Medalist Study at Joslin Diabetes Center ("Medalists"), individuals with ≥50 years of TID were previously shown to have impaired cognitive function, similar to those with T2D. However, the association of glycemic control with cognitive impairment has not been investigated.

METHODOLOGY

Medalists with no pre-existing CNS conditions or intake of medications affecting cognitive function were recruited for this cross-sectional study. They underwent the following tests: The Rey Auditory Verbal Learning Test assessing both immediate and delayed memory; the Wechsler Memory Scale III assessing working memory; the Delis-Kaplan Executive Function System assessing executive function; and the Grooved Pegboard Test assessing motor skills for both the dominant (DH) and non-dominant (NDH) hand. The association of glycemic control with cognitive function was evaluated using linear regression.

RESULTS

In the overall cohort (n=110), HbA1c was significantly associated with worse executive function even after adjusting for covariates (p=0.01). Medalists in the highest HbA1c tertile (7.5-9.2%) also trended (p=0.08) towards worse executive function as compared to Medalists in the middle (6.8-7.4%) and lowest (5.0-6.7%) tertiles. Furthermore, HbA1c was significantly associated with worse DH motor skills (p=0.047), and trended (p=0.09) towards association with worse immediate memory, among Medalists in the lowest tertile of disease duration (50-51 years).

CONCLUSION

Worse glycemic control was associated with cognitive dysfunction in the Medalists. Given the increasing life expectancy of individuals with T1D, a multidisciplinary approach is recommended to promote strategies that prevent cognitive decline.

KEY WORDS

cognitive dysfunction, type 1 diabetes, glycated hemoglobin A

OP-05

FREQUENCY AND DIVERSITY OF POTENTIAL GENETIC MAKERS OF NUTRITION-RELATED DISEASES GENERATED FROM THE NEXT GENERATION SEQUENCING (NGS) PANEL

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INTRODUCTION

The ubiquity of lifestyle diseases is a challenge in the contemporary health of Filipinos that requires solid and practical answers**.** To lessen the impact of non-communicable diseases (NCDs) on individuals and society, a comprehensive approach is needed, one that requires careful consideration of all the factors and risks associated with NCDs, as well as promote the interventions to prevent and control them. The study identified and profiled Single Nucleotide Polymorphisms (SNPs) associated with NCDs among adult Filipinos living in National Capital Region (NCR). The identification of SNPs will help in the assessment of likelihood of developing aforementioned diseases.

METHODOLOGY

Whole human blood samples from anonymized selected NCR participants were used for genomic deoxyribonucleic (DNA) extraction. Genomic DNA was isolated using the QIAamp DNA Blood Mini Kit. About 50 ng of anonymized DNA samples were sequenced using the Ion Torrent Proton (Life Technologies). Data were analyzed using the Ampliseq™ Variant Caller plug-in within the Ion Torrent Suite software (Invitrogen Life Technologies) and annotated using Ion Reporter software version 5.4.

RESULTS

The targeted sequencing of 502 published genes and SNPs associated with NCDs and other nutrition-related diseases was performed to a total of 1,160 samples. The identification of genes and SNPs underlying common non-communicable diseases and other nutrition-related diseases performed in the Filipino population has tremendously helped determined level of susceptibility of the population towards development of debilitating but preventable diseases such as T2DM, obesity, cardiovascular diseases, osteoporosis and micronutrient deficiency.

CONCLUSION AND RECOMMENDATION
Genotyping of published SNP variants that interact with dietary composition to modulate biomarkers and health outcomes can provide a framework for the development of novel foods that are genotype dependent, in addition to the development of personalized dietary recommendations, aimed towards a more individualized/personalized strategy of health promotion, prevention and management of nutrition related diseases.

KEY WORDS
genotype, single nucleotide polymorphisms, non-communicable diseases

OP-06

THIGH AND WAIST CIRCUMFERENCE AND GLYCEMIC VARIABILITY AND CAROTID ATHEROSCLEROSIS IN KOREAN PATIENTS WITH TYPE 2 DIABETES

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INTRODUCTION
To investigate whether thigh circumference and waist circumference are associated with glycemic variability and carotid atherosclerosis in patients with type 2 diabetes mellitus(T2DM).

METHODOLOGY
This study performed in 3,075 Korean patients with T2DM. The hemoglobin glycation index (HGI) was defined as the measured HbA1c minus predicted HbA1c, which was calculated from the linear relationship between HbA1c and fasting plasma glucose levels. When the HGI value was 0 or more, it was considered to have high glycemic variability (GV). Carotid atherosclerosis was defined as having a clearly isolated focal plaque or focal wall thickening >50% of the surrounding intima-media thickness (IMT).

RESULTS
The presence of the GV was lower with increasing thigh circumference quartiles in men and was higher with increasing waist circumference quartiles in women after adjusting for confounding variables that could affect GV. There was an augmentative effect of thigh and waist circumference on the frequency of high GV, which was dramatically higher waist-to-thigh circumference ratio quartile (adjusted odds ratio for high GV for the highest quartile of waist-to-thigh circumference compared with the lowest quartile being 1.595 and 1.570 in men and women, respectively). The larger the thigh circumference, the less carotid atherosclerosis was, and in women this significant relationship disappeared after adjusting for potential confounders.

CONCLUSION
The GV appears to be affected by the thigh circumference in men and waist circumference in women. In addition, a low thigh circumference and high waist circumference was strongly associated with higher GV in Korean diabetic patients. In particular, thigh circumference was associated with carotid atherosclerosis in men.

KEY WORDS
thigh circumference waist circumference glycemic variability carotid atherosclerosis