

## CALF CIRCUMFERENCE ASSOCIATED WITH GENETIC VARIANT OF NEUROLIGIN-4 GENE: TAICHUNG COMMUNITY HEALTH STUDY FOR ELDERLS (TCHS-C)

### 老人小腿圍的大小與 NLGN4X 基因多型性之變異有關

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**Background:** Sarcopenia is an increasingly recognized problem in the elderly, which has been defined as the loss of skeletal muscle mass and strength that occurs with advancing age. Calf circumference is an easy measurement for skeletal muscle quantity or muscle mass. NLGN4 is the gene for the Neuroligin-4 (NL4), a neuronal-specific brain membrane protein. In humans, NLGN4 is located on the X chromosome. The genetic variants of NLGN4 affect the biological function of NL4. One single nucleotide polymorphism (SNP) of NLGN4 is considered in this study. The purpose of this study was to determine if SNP rs5916271 of NLGN4 is associated with calf circumference in Taiwanese elders.

**Methods:** SNP rs5916271 of NLGN4 in a total of 472 unrelated elders (251 males and 221 females) were genotyped. This SNP have two alleles, A and C, resulting in three genotypes, A homozygotes (AA), heterozygotes (AC), and C homozygotes (CC). Linkage disequilibrium (LD) was analyzed for this SNP. Muscle quantity or muscle mass was determined by calf circumference measured by a millimeter graded tape, registering it in centimeters, with up to two decimals. A cut-point of less than lowest quintile according to gender subgroups (33.1 cm in males and 31.5 in females) was considered as low muscle mass (121 elders as low

muscle mass and 351 elders as normal muscle mass).

**Results:** The minor allele frequency for rs5916271 was 0.1913. After adjusting for age and gender, our study indicates that SNP rs5916271 C allele was significantly associated with decreased calf circumference ( $\beta=-0.52$  cm,  $p=0.008$ ). In addition, the adjusted odds ratios of low calf circumference were 2.20 (95% CI: 1.16-4.19) among elders with SNP rs5916271 C allele compared with elders with A allele.

**Conclusion:** We conclude that polymorphism rs5916271 in the NLGN4 gene affects calf circumference, indicating rs5916271 appears to be a susceptibility biomarker of calf circumference. But further study may be required.