Significant Association of rs13376333 in KCNN3 on Chromosome 1q21 with Atrial Fibrillation in a Taiwanese Population

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Background: A recent genome-wide association study in individuals of European ancestry demonstrated a significant association of the single nucleotide polymorphism (SNP) rs13376333 in KCNN3 on chromosome 1q21 with lone AF, indicating a common genetic basis for AF. Objectives We sought to replicate the association between SNP rs13376333 in KCNN3 and AF in the Taiwanese population. Methods: We conducted a case-control association study and genotyped SNP rs13376333 in 214 lone AF patients (58.3 ± 11.4 years) versus 214 controls (57.7 ± 13.2 years), and 322 structural AF patients (69.6 ± 13.7 years) versus 322 controls (68.4 ± 14.2 years). Results: The associations between SNP rs13376333 and structural or lone AF were significant. In lone AF group, the frequency of the minor allele of SNP rs13376333 was 8.6% compared with 3.0% in controls (allelic p=0.001; odds ratio=3.02 [1.54-6.29]). The frequency of the minor allele of SNP rs13376333 was 6.5% in structural AF patients compared with 3.1% in controls (allelic p=0.004; odds ratio=2.18 [1.23-3.96]). Conclusions: Our results demonstrate that there are significant associations between SNP rs13376333 and the risk of developing both lone and structural AF in the Taiwanese population. The minor allele frequency of SNP rs13376333 was much lower in the Taiwanese population compared to that of the Caucasian populations. Keywords: atrial fibrillation, single nucleotide polymorphism, genetics