The independent effect of insulin resistance on incidence of atrial fibrillation in non-diabetics

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Introduction: Patients with diabetes mellitus have an elevated risk of atrial fibrillation (AF). However, whether insulin resistance may elevate risk of AF incidence in non-diabetic is inconsistent. The aim of our study was to verify the association between insulin resistance and incidence of AF in non-diabetics.

Methods: We evaluated population-based cohorts embedded in the Korean Genome Epidemiology Study. Insulin resistance was expressed as Homeostasis Model Assessment for Insulin resistance (HOMA-IR). Baseline data including HOMA-IR and electrocardiography (ECG) were obtained at 2001. Subsequent biennial ECG was performed for identification of AF until 2016.

Result: Among the 8220 participants (46.8% male; median age 49 years), 25 participants had AF (0.3%) at baseline and 101 participants developed AF (1.2%) during follow up of 12 years. In multivariate Cox regression analysis, high HOMA-IR (≥1.4) was significantly associated with incident AF compared with low HOMA-IR (<1.40) (adjusted hazard ratio [HR] 1.9, 95% confidence interval [CI] 1.3-3.0). In subgroup analysis, these association was consistent regardless of obesity (BMI<25; adjust HR 1.8, 95% CI 1.1-3.0, BMI≥25; adjust HR 2.3, 95% CI 1.3-4.0).

Conclusion: Based on prospective cohort study, insulin resistance (HOMA-IR) was associated with AF independently of obesity in non-diabetics.