Gender-specific relationship between abdominal obesity and prevalence of new-onset atrial fibrillation in the general Japanese population

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Background: The number of incidences of atrial fibrillation (AF) is expected to rise rapidly in the near future because of the increased number of geriatric patients in Japanese society. In addition, obesity is increasing in the general Japanese population. Although a higher body mass index is associated with a higher risk of AF, the relationship between abdominal obesity (large waist circumference) and new-onset AF is unclear.

Methods and results: We performed a longitudinal retrospective observational study from January 2007 to October 2018 using the annual health checkup data. Data from 58,844 adults (29,572 males, age 54±13 years) without baseline AF, who underwent routine health checkups, were analyzed. We performed logistic regression analyses to determine the strength of the association between abdominal obesity and new-onset AF. We also examined the effect of abdominal obesity on the incidences of AF stratified by gender. During a median follow-up of 4 years, we recorded new cases of AF in 322 (0.5%) individuals. In univariate analysis, a large waist circumference was significantly associated with new-onset AF, both in males [hazard ratio (HR) 1.04, 95% confidence interval (CI) 1.02 to 1.05, $p<0.001$] and in females (HR 1.04, 95% CI 1.01 to 1.06, p=0.002), respectively. In multivariate analysis adjusted for clinical variables (age, hypertension, dyslipidemia, estimated glomerular filtration rate, habitual drinking and diabetes), a large waist circumference was significantly and independently associated with new-onset AF in males (HR 1.04, 95% CI 1.03 to 1.06, $p<0.001$), but not in females (HR 1.01, 95% CI 0.99 to 1.04, p=0.269).

Conclusion: Abdominal obesity is independently associated with an increased risk of new-onset AF in males. This association in males might imply some sex-specific mechanisms. There might be a gender difference in the effectiveness of interventions to decrease abdominal obesity to prevent AF.