Risk of thromboembolism in non-valvular atrial fibrillation according to the presence or absence of hyperthyroidism

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**Introduction**: Patients with hyperthyroidism have higher risk of atrial fibrillation (AF). However, the risk of thromboembolic event in patients with hyperthyroidism-related AF is controversial. The aim of this study was to evaluate thromboembolism between patient with hyperthyroidism-related AF and non-thyroid AF.

**Methods**: The national retrospective cohort study enrolled AF population was derived from Taiwan National Health Insurance Research Database in the 4.3±3.2 year follow up period. The final analysis included 3,880 AF patients with concomitant hyperthyroidism (HT AF group), and 178,711 non-thyroid AF patients. The index date was when new-onset AF was diagnosed, and the interested outcome was thromboembolic event including ischemic stroke and systemic thromboembolism. The comparison between the HT AF and non-thyroid AF groups was made in a propensity score matched cohort and in a real-world setting of which the CHA2DS2-VASc level was treated as a stratum variable.

**Result**: The incidence of thromboembolism event and ischemic stroke were lower in HT AF patients than non-thyroid AF patients (1.6 versus 2.2 events per 100 person-years; HR, 0.73; 95% CI, 0.64 - 0.82 and 1.4 versus 1.8 events per 100 person-years; HR, 0.74; 95% CI, 0.64 - 0.84, respectively). In AF patients without anticoagulants, the incidence densities of thromboembolic event and ischemic stroke were significantly lower in HT AF group than those in non-thyroid AF group at CHA2DS2-VASc scores ≤ 4, while the differences disappeared in case of score ≥ 5. In addition, the incidence densities of thromboembolic event and ischemic stroke were lower than 1% at the score of 0 or 1 in the HT AF group.

**Conclusion**: Patient with HT AF had lower thromboembolic event, including ischemic stroke, than those with non-thyroid AF patients. Notably, the lower risk of thromboembolic events in case of HT AF with CHADS2-VASc score of 1 may discuss the benefit/risk of anticoagulation.