The increased risk of stroke and systemic embolism in hyperthyroidism related atrial fibrillation: A Korean nationwide cohort study

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**Introduction:** Atrial fibrillation (AF) commonly occurs in the patients who had hyperthyroidism. AF associated with hyperthyroidism is thought to be transient and not to recur after hyperthyroidism is controlled. However, the data of prognosis was limited. We aimed to evaluate the risk of the AF related to hyperthyroidism.

**Methods:** Using a National Health Insurance Service (NHIS) database, between January 1, 2005 and December 31, 2016, we identified 626,699 new-onset, nonvalvular AF aged ≥18 years who were oral anticoagulation naïve. Among them, 21,348 AF patients were associated with hyperthyroidism. After 3:1 propensity score (PS) matching, stroke/systemic embolism (SE) and all-cause death were compared between hyperthyroidism related AF group and general AF group.

**Result:** During median follow-up of 5.9 years, 53.3% of hyperthyroidism related AF recurred. The risk of stroke/SE was higher in hyperthyroidism related AF (hazard ratio [HR] 1.06; 95% confidence interval [CI] 1.00-1.12; P=0.037). The risk of all-cause death was similar (HR 1.02; 95% CI 0.95-1.05; P=0.394). Within 1 year from AF diagnosis, hyperthyroidism related AF had much higher stroke/SE risk than general AF group (HR 1.25; 95% CI 1.14-1.37 P<0.001). After 1 year of AF diagnosis, the risk of stroke SE become similar (HR 0.98; 95% CI 0.92-1.05; P=0.516). The results were similar according to different age and CHA2DS2-VASc score subgroups.

**Conclusion:** Hyperthyroidism related AF was not transient and associated with higher stroke/SE risk. The risk was higher within 1 year after AF diagnosis. Like general AF, patients with hyperthyroidism related AF should had regular follow-up and anticoagulation should be considered.