**The Beneficience of Anticoagulation Therapy in Atrial Fibrillation Related Hyperthyroidism: A Case Report**

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**Introduction**: Atrial fibrillation (AF) is the most common cardiac complication of hyperthyroidism (10%-25%). Patients with AF related hyperthyroidism are at high risk of stroke (3.9% per year), one of the therapies in such manner is anti-coagulant. The aim of this case report is to describe beneficence of anticoagulant in such condition.

**Methods**: CASE ILLUSTRATION 52 y.o woman presented with dyspnea on effort, excess sweating, and palpitation worsening since 3 days before admission. The patient had history of hyperthyroidism, hypertension and Diabetic Mellitus Type2(DMT2) since 2010, she took Propyltiouracil, Propanolol, irbesartan, and Metformin regularly. Physical examination: BP(140/80mmHG), RR(28x/minute), Pulse(130x/minute-irregular), temperature(37.5C). Exophthalmus(-), tremor on both hands(+). Laboratory showed: T3(8.01nmol/L), T4(>320nmol/L), INR(1.8), Cardiomegaly(CTR 65,2%)on chest x-ray. ECG showed AF RVR. CHA2DS2-VASc score was 3 (Hypertension, Female Gender, and DMT2), HAS-BLED score was 1 (Hypertension). Digoxin, Furosemide, Propyltiouracil, Propanolol, and warfarin were given to the patient.

**Result**: The mechanism of hyperthyroidism-induced AF was increased sinoatrial activity, a lower threshold for atrial activity, and shortened atrial repolarization. Thyroid hormone has numerous effects on coagulation associated with increased thrombotic risk, such as: shortened aPTT, increased fibrinogen levels, and increased factor VIII and factor X activity. Study by Chan et al show: Out of 9727 patients, 642 (6.6%) had concomitant hyperthyroidism and AF at diagnosis. For stroke prevention, 136 and 243 patients (21.1% and 37.9%) were prescribed warfarin and aspirin, respectively, whereas the remaining patients (41.0%) received no therapy. Ischemic stroke occurred in 50 patients (7.8%), and no patient developed hemorrhagic stroke. Patients with CHA2DS2-VASc of 0 did not develop stroke. Warfarin effectively reduced the incidence of stroke compared with aspirin or no therapy in patients with CHA2DS2-VASc ≥1 and non–self-limiting AF, but not in those with self-limiting AF or CHA2DS2-VASc of 0. Presence of hyperthyroidism did not confer additional risk of ischemic stroke compared with nonhyperthyroid AF.

**Conclusion**: Warfarin confers stroke prevention in patients with CHA2DS2-VASc ≥1 and non–self-limiting AF. In our patient, CHA2DS2-VASc score was 3 (Hypertension, Female Gender, and DMT2) and HAS-BLED score was 1 (Hypertension), this condition was a candidate for using of anti-coagulant for preventing stroke in AF related Hyperthyroidism.