TOTAL AV BLOCK IN HYPERTHYROID

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Introduction: Cardiovascular manifestations are a frequent finding in hyperthyroidism and hypothyroidism. While hypothyroidism may cause bradycardia, low voltage QRS and heart block, hyperthyroidism (HT) is commonly associated with sinus tachycardia and supraventricular tachyarrhythmia. But a rare complication of thyrotoxicosis is impaired atrioventricular (AV) conduction.

Methods: A 30 year old man with seizures was referred to cardiology for total AV block. He had fever since last week, weight loss in 1 month, frequent bowel movements, diaphoresis, palpitation and also fatigue was noted. No remarkable previous medical history. IMT was 20kg/m2, BP was 80/50 mmHg, HR 40x/min, no fever. There were exophthalmos, enlarged symmetrical thyroid, mitral systolic murmur and diastolic murmur on the aorta. The extremity was warm, fine tremor and hyperhidrosis. Laboratory results was significant for TSHs <0.005 μIU/mL (0.30-4.68 μIU/mL), FT4 4.45 ng/dL (0.70-1.55 ng/dL), FT3 12.23 pmol/L (4.1-6.7 pmol/L) and increase in leucocyte 16.100/μL. ASTO and electrolyte were normal. Echo findings were EF 63%, mild regurgitation on aorta, mitral and tricuspid. Patients were diagnosed with Graves disease with TAVB on TPM. Methimazole 10 mg twice a day was given along with antibiotics and patient discharged with AV block grade 1.

Result: Cases of high-grade AV block complicating HT have been reported as early as 1970. The possible etiology of AV block in HT is still controversial. One proposed mechanism was excessive thyroid hormone increases the automaticity of the AV node due to inflammation of the conduction system. An autoimmune response in Grave’s disease, as a result of precipitating factors like infection, may cause inflammatory cells infiltrating myocardium and conduction pathway. Bradyarrhythmia leads to low cardiac output and blackout with abnormal movement mimicking epilepsy seizures. Control thyroid disease with antithyroid agents may help to restore to normal conduction. The pacemaker was rarely indicated unless there is a hemodynamic disturbance.

Conclusion: The mechanism by which hyperthyroid may cause AV block is still unknown, but a direct thyroid hormone was allegedly involved in inflammation and infiltration on the conduction system. The principal management of conduction abnormalities in thyroid disease is antithyroid agent aiming to control thyroid level itself and eliminating precipitating factors.