Case Report

Unusual Case of Hyperthyroidism

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ABSTRACT

Hyperthyroidism is a commonly encountered endocrine disease that can be associated with a wide array of symptoms. Among the latter, rhythmological manifestations are relatively frequent and comprise mainly supraventricular tachycardia (atrial fibrillation, flutter, sinus tachycardia, and atrial tachycardia). However, very few ventricular dysrhythmias have been described in literature. We report here the case of a woman in her late fifties who presented with hemodynamically unstable ventricular tachycardia in a context of thyrotoxicosis.

Introduction :

Ventricular tachycardia (VT) is potentially a lethal cardiac arrhythmia. Etiologies are diverse : It can arise as a consequence of ischemic or structural heart disease or electrolyte deficiencies (hypokalemia, hypocalcemia, hypomagnesemia). It is usually triggered by certain factors namely sympathomimetic agents (amphetamines or cocaine), drugs that prolong the QT interval, rheumatologic disorders (systemic lupus erythematosus and rheumatoid arthritis), digitalis toxicity, and inherited cardiac channelopathies like the Brugada syndrome.[1] Certain triggering factors are however quite rare, as depicted by the case presented below.

Case Report

The present case concerns a 61-year-old woman who presented with history of tingling sensation in both upper and lower limbs, chest discomfort since 4 hours. Patient had initially reported to private hospital from where she was referred to GMCH, Nagpur.

Soon after admission patient collapsed, had no pulse and respiratory efforts. She was given cardiac massage and immediately intubated with 7.5 mm tube. Patient revived and her ECG was taken. ECG was suggestive of wide complex tachycardia with varying QRS complex morphology with a rate of 150/min with AV dissociation and right QRS complex axis deviation. Polymorphic ventricular tachycardia was diagnosed and patient was immediately given DC shock with 100J energy. Post cardioversion patient became conscious, her pulse was felt, BP was 80/50 mmHg, she was started on inotrope support.

Figure 1 : **Polymorphic Ventricular tachycardia at presentation**

Figure 2 : **Post cardioversion ECG showing multiple Ventricular Premature Complexes**

Post cardioversion ECG showed multiple ventricular premature contractions and patient was initially given I/V Xylocard. Later patient was given Inj. Amiodarone 150 mg bolus over 5 min followed by infusion of 360 mg over 6 hours was started. On examination she was conscious, oriented to time, place and person, afebrile, BP was 90/60 mmhg on support. An irregular goitre swelling was present over anterior aspect of neck. Rest of the examination

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was well within normal limits. Patient thyroid profile was done which showed T3-139.8 ng/dl (70-230), T4-12.54 mg/dl (4.87-11.72), TSH < 0.01 micro/dl (0.35-0.50). Serum sodium - 140 meq/l, Serum potassium - 4.1 meq/l, calcium and magnesium were within normal limits. Serum CPK MB was also normal.

Amiodarone was stopped and she was given Tab. Metoprolol 25 mg and Carbimazole 10 mg. After an hour ECG was done which showed normal sinus with HR- 56/min. Patient was taken off inotrope support with BP of 110/80 mmHg.

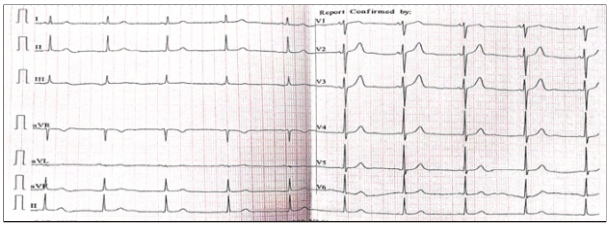

Figure 3 : **Normal sinus rhythm with rate of 60/min**

Tab. Metoprolol 25 mg was withheld in view of bradycardia. Patient was extubated as patient was hemodynamically stable. 2D ECHO showed concentric LVH with good left ventricular systolic function with EF - 65%, degenerative aortic and mitral valve without pericardial effusion. Chest X-Ray was normal.

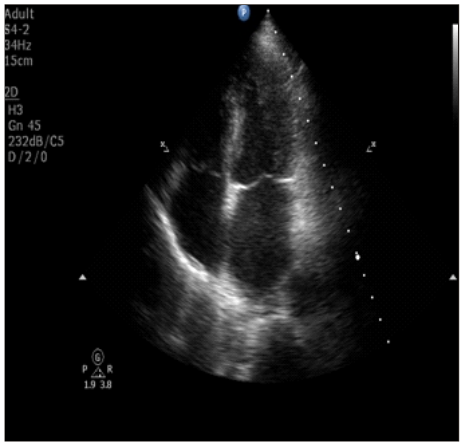

Figure 4 : **2D ECHO**

USG thyroid showed bulky, nodular, heterogenous and enlarged thyroid gland. Radioactive Thyroid

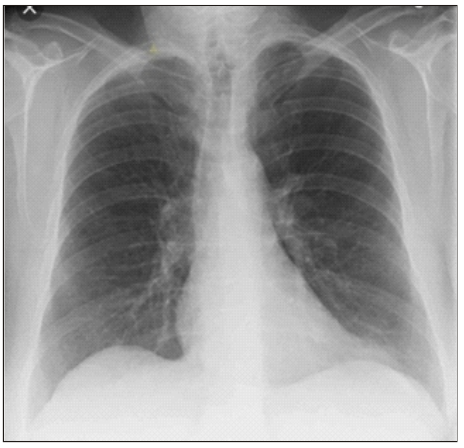

Figure 5 : **Normal Chest X-ray**

Uptake Scan showed heterogenous tracer uptake within enlarged thyroid gland, with mildly increased tracer trapping function for its size, possibility of Toxic Multinodular Goitre. Patient was later discharged on Tablet Carbimazole 10 mg tds and Metoprolol 25 mg od. As she was not willing for surgery, she underwent Radioactive Iodine ablation.

Discussion :

Most common clinical manifestations of thyrotoxic heart disease are heart rate disorders, in particular sinus tachycardia & Atrial fibrillation, which present in 5%-15% of patients. Ventricular arrhythmia which are potentially fatal are rare. There are few known cases of VT associated with hyperthyroidism. Thyroid hormones exert their effect on the cardiovascular system via both direct effects at the cellular level as well as by indirectly interacting with the sympathetic nervous system. The incidence of atria arrhythmias is more because of higher beta adrenergic receptor density in the atria, and difference in sensitivity of atrial and ventricular myocardial cells to effects of thyroid hormones. Several components of the cardiac myocyte -adrenergic system are regulated by thyroid hormone, such as the 1-adrenergic receptor and adenylate cyclase. This explains why treatment of hyperthyroidism with adrenergic blockade improves many, if not all, of the cardiovascular signs and symptoms associated with hyperthyroidism.

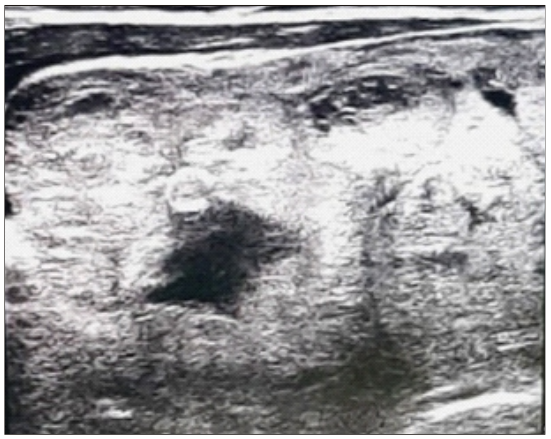

Figure 6 : **USG Thyroid**

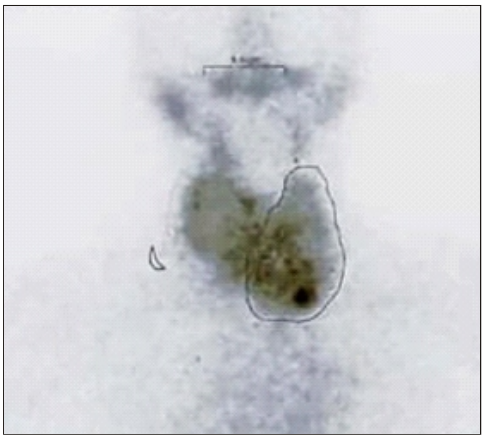

Figure 7 : **Thyroid Uptake Scan**