HYPERTHYROIDISM & VENTRICULAR EVENTS

Title: Thyrotoxicosis-induced ventricular arrhythmias.

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SUMMARY

Background: Cardiac arrhythmias associated with thyrotoxicosis tend to be supraventricular in nature with atrial fibrillation being the most common. Ventricular arrhythmias are rarely associated with thyrotoxicosis and are considered to be secondary to intrinsic cardiac disease.

Summary: The authors present 3 patients with thyrotoxicosis and stable coronary disease in whom the primary cardiac rhythm disturbance was ventricular tachycardia. In all of these patients, the ventricular arrhythmias terminated with achievement of a euthyroid state. They hypothesize that the thyrotoxic state contributed to the etiology of, or lowered the threshold for the ventricular arrhythmias.

Conclusion: Prompt attention to the management of thyrotoxicosis in patients with a history of significant heart disease is warranted in order to avoid potentially fatal arrhythmias.

COMMENT

Thyrotoxicosis increases the demands on the heart both by chronotropic & inotropic alterations. Cardiac output is markedly increased, owing to increased stroke volume and rapid heart rate. Irritability of the heart is also increased. Investigation with stress echocardiography in hyperthyroidism shows impaired chronotropic, contractile, and vasodilatory cardiovascular reserves, that are reversible upon return to euthyroidism. Cardiac manifestations of hyperthyroidism include several possible events, among which tachycardia, left ventricular hypertrophy, premature atrial and ventricular contractions, atrial fibrillation (AF), angina with (or without) coronary artery disease, myocardial infarction, congestive heart disease, etc. Extrasystoles are frequent, and AF occurs in 6-12% of patients. Even subclinical hyperthyroidism is associated with a 5-fold greater chance of developing AF. AF is the most frequent of cardiac complications, and is known to occur more frequently in older patients. AF may be paroxysmal or persistent, and attempts to correct this arrhythmia in patients with persistent AF are often unsuccessful as long as they remain hyperthyroid. Congestive heart failure is another frequent complication in thyrotoxic patients with pre-existing organic heart disease (particularly if old). In the elderly hyperthyroid patient, cardiac symptoms may so dominate the clinical picture that the diagnosis of thyrotoxicosis may be overlooked. The importance of cardiovascular abnormalities is underscored by the observation that mortality of hyperthyroid patients is increased, mainly due to cardiovascular events, but it is frequently gratifying to observe normalization of cardiac findings once euthyroidism has been restored. The cases described in this case report concern one patient with amiodarone-
induced thyrotoxicosis (who eventually died from ventricular cardiac complications), a second case with amiodarone-induced thyrotoxicosis in a patient with toxic multinodular goiter who was successfully cured by thyroidectomy, and a third patient with complicated Graves’ disease who was also cured by thyroidectomy. These cases illustrate that ventricular arrhythmias may also occur (albeit unusually) in thyrotoxic patients, superimposed upon known – but hitherto stable – coronary artery disease.

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