

## Thyrotoxicosis in a Patient with Thyroid Storm after of Radio-pharmaceutically Induced Therapeutic Lysis of Thyroid Gland

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### ABSTRACT:

Excessive production of thyroid hormone secretion causes thyroid storm, an uncommon illness. The earlier a thyroid storm is detected, the lower the risk of severity and fatality. Thyroid storm shows symptoms include unexplained loss of weight, hyperactivity, and anxiety. Thyrotoxicosis is most commonly caused by Graves' disease, toxic multinodular goitre, and toxic adenoma. A unusual instance of thyroid storm caused by radiopharmaceutical therapy is presented. 12 weeks after starting immunotherapy, the individual was hospitalized for a thyroid storm. This patient was treated with  $\beta$ -blockers, antithyroid drugs and steroids which shows good results in thyroid function test and symptoms.

**KEYWORDS:** Thyroid storm, Thyrotoxicosis,  $\beta$ -blockers

### CASE HISTORY:

An 40yrs old female with no other prior medical history showed features of hyperthyroidism.

The laboratory results confirmed the diagnosis of Graves's disease (hyperthyroidism with thyrotoxicosis).

Thyroid function tests were taken which includes Free T4, T3, TSH, anti-TSH receptor antibodies, antithyroglobulin and antithyroid peroxidase antibodies.

	Patient's lab value	Normal lab value
Free thyroxine (FT4)	3.92 ng/dL	Adult 0.7-1.9
Total triiodothyronine (T3)	459.00 ng/dL	80-220
Thyroid-stimulating hormone (TSH)	<0.037	0.35-5
Thyroxine (T4)	26.4ug/dL	5.0-12.0
Antithyroglobulin antibodies	>2450 IU/ml	Negative <60 IU/mL Equivocal 60-100IU/mL Positive >100 IU/mL
Antithyroid peroxidase antibodies	2878 IU/mL	<60
Anti-TSH receptor antibodies	43.8% Inhibit	<=16.0 % Unit

The individual was put on methimazole, but due to reactions, we were unable to maintain it, so we discontinued it and begun Benadryl and Advil instead. Her complaints subsided after one week. Prednisone and Atenolol 50 mg twice a day were also started.

We recommended radioiodine ablation to the patient after medication treatment for hyperthyroidism failed. With Grave's disease, the results revealed an oversized thyroid gland. After 2 weeks her thyroid functions tests lab values were as follows:

	Patient's lab value	Normal lab value
Free T4	>26.00 ng/dl	0.73-1.84
T3	1246.00 ng/dL	123-211 ng/dL
TSH	<0.026uIU/mL	0.35-5.0

**SYMPTOMS:**

CVS	Tachycardiawith atrial fibrillation and high pulse pressure ,chest pain, palpitations
Gastrointestinal	nausea, vomiting, diarrhea and jaundice
Centralnervous system	Tremors ,agitation, restlessness, delirium, psychosis, and coma
Others	shortness of breath, tremor, nervousness, increased sweating, disorientation, fatigue and fever

**ETIOLOGIES OF THYROID STORM:**

Radioactive iodine therapy, antithyroid medication discontinuation, thyroid hormone overload, uncontrolled diabetes, mental stress, pulmonary thromboembolism, pregnant toxemia, labour, traumas, acute infection, severe drug reaction, or myocardial infection are all reasons of thyroid storm.

Thyroid storm is determined by twofactors: radioactive iodine (RAI) therapy and antithyroid medication withdrawal. Increased thyroid hormone production from degenerating follicles results from a thyroid storm caused by RAI therapy. T4 and T3 values were equivalent in patients with thyroid storm and thyrotoxicosis, while free T4 values were considerably greater in thyroid storm patients. After discontinuing antithyroid medication in anticipation for RAI therapy, free serum T4 and T3 levels rise.

**DIAGNOSIS AND TREATMENT:**

Thyroid storm and hyperthyroidism really aren't distinguishable in any way. The signs of thyroid storm are used to identify it.Graves' illness and

thyrotoxicosis are treated with thyroid storm management. Thyroid storm can be treated with beta-blockers, antipyretics, fluids, and steroids. AdditionalFT4 to FT3 conversion is inhibited by corticosteroids.

**PATIENT FOLLOW UP:**

Thyroid hormone levels were raised due to 131I's destruction of thyroid cells. The individual had been prescribed medications to counteract the consequences of high thyroid hormone levels. Since the individual did not exhibit any features indicative of a thyroid storm, thyrotoxicosis is the most likely diagnosis after RAI treatment.

Increased level of free T4, total T4, and total T3 corroborate lab results. Thyroid tissue disintegration due to radio-iodine treatment was diagnosed due to high levels of thyroid hormoneand repressed TSH, with the possibility of thyroid storm.

After 8 weekson RAI, the patient was switched to daily dose of 37.5 mcg ofLevoxyland the other drug atenolol was discontinued.

TSH	7.14 mIU/L
Free T4	0.5 ng/mL
Total T3	79 ng/dL
Free T3	2.3 pg/mL

The individual was receiving insufficient substitute thyroid hormone, thus the Levoxyland dosage was upped to 75 mcg per day.

## CONCLUSION

Thyroid storm and hyperthyroidism really aren't distinguishable. In case of Radioactive induced Thyroid storm , Patient should be start on Beta blockers , other symptomatic management and Thyroid function test should be repeated every 2 weeks ;

withhold Levothyroxine until Thyroid hormone come upto normal levels.

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