Introduction: Marine-Lenhart syndrome is defined as Graves’ disease with co-existing toxic thyroid nodules. Approximately 25% to 30% of patients with Graves’ disease have accompanying nodules. More than 95% of these nodules are hypoactive, and thus, only a tiny percentage are hyperactive. In these patients, Graves’ disease and toxic nodules both contribute to thyrotoxicosis. Here we present a case that details this syndrome’s diagnosis, management, and treatment complication.

Clinical Case: A 68-year-old female presented to the primary care physician’s office with complaints of anxiety and heat intolerance. Three years before this visit, the patient was diagnosed with Graves’ disease. She had achieved remission after one year of methimazole therapy. During the office visit, the patient was in sinus tachycardia at 112 BPM. There were no signs of exophthalmos on examination, and the thyroid was not palpable. Further testing revealed thyrotoxicosis with suppressed TSH of <0.01 mcIU/mL (0.36-3.74) and elevated free T4 of 2.49 ng/dL (0.76-1.46). Thyrotropin receptor antibody (TRAb) was positive at 2.60 IU/L (0.00-1.75). The patient was started on atenolol. Although TRAb was positive, thyroid ultrasound and radioactive iodine uptake scan (RAIU) were ordered to look for alternative diagnoses. The thyroid ultrasound showed four nodules in the left lobe, the largest of which was 1.8×1.5×1.3 cm. RAIU showed increased 24-hour uptake of 45% and three areas of increased focal uptake in the left thyroid lobe consistent with toxic nodules. Definitive treatment was needed due to both toxic nodules and Graves’ disease. The patient agreed to radioiodine ablation therapy (RAI) and received a dose of 21 uCi. One month after receiving RAI, the patient complained of worsening anxiety and heat intolerance. On repeat testing, TSH was <0.01 mcIU/mL, and free T4 was 4.78 ng/dL. The patient developed radiation thyroiditis and was given methimazole 10mg daily for two weeks. Three weeks after the course of methimazole, the patient became hypothyroid and was managed with 88 mcg of levothyroxine daily with no symptoms.

Conclusion: Common causes of hyperthyroidism are Graves’ disease or autonomous functioning thyroid nodules per the American Thyroid Association. However, in hyperthyroid patients, Marine-Lenhart syndrome should be considered, especially those with thyrotoxicosis recurrence. This diagnosis steers management away from antithyroid drugs and toward RAI or thyroidectomy. For patients treated with RAI, antithyroid medications should be included as an adjunct therapy to reduce post-radiation thyroiditis.


Presentation: Saturday, June 11, 2022 1:00 p.m. - 3:00 p.m.