

## Objective

To describe the presence of psychotic symptomatology in a patient with hyperthyroidism

## Introduction

Psychiatric symptoms have been reported quite frequently in certain thyroid diseases, but more frequently in association with hypothyroidism [1]. Schizophrenia-like psychosis is a rare occurrence in hyperthyroidism and the link between these two is still poorly understood. We present a case of a male patient with psychosis induced by a toxic thyroid nodule (TTN).

## Case History

A 24 year old male with no reported past psychiatric history was admitted to our psychiatric inpatient unit for new onset psychosis. Patient upon evaluation was disorganized, paranoid and responding to internal stimuli. As per collateral information, patient was having excessive anxiety leading up to the onset of his psychotic symptoms. Also reported was excessive weight loss, along with symptoms such as headache, fatigue, irritability and mood swings. Prior to admission patient was having long periods of insomnia. Urine drug screen was negative for illicit substances. Head CT performed was negative for any organic pathology. Patient did not agree to blood draw in the first few days of his admission. Once labs were drawn, he was noted to have low TSH (0.008) and freeT4 of (1.7) (Table 1.). Further labs showed a T4 of (9.5) and T3 of (1.07). Pt was started on Risperidone 1mg twice daily to which patient responded poorly. Risperidone was discontinued and patient was then started on Haloperidol 5mg twice daily. On physical exam, left thyroid nodule was suspected. Endocrine was consulted and recommendations were followed that included obtaining a thyroid ultrasound and drawing labs for Thyroid peroxidase and thyroglobulin antibodies. This patient was positive for thyroid peroxidase antibodies. Thyroid ultrasound showed a single large left nodule (Fig 1). Further recommendations included doing a radioactive iodine uptake scan which upon completion showed a hyperfunctioning left thyroid nodule (Fig 2, 3). Patient was started on Methimazole 5mg orally daily. His psychiatric symptoms improved on Haloperidol and the patient was eventually discharged with recommendations of repeat thyroid function labs in 4-6 weeks.

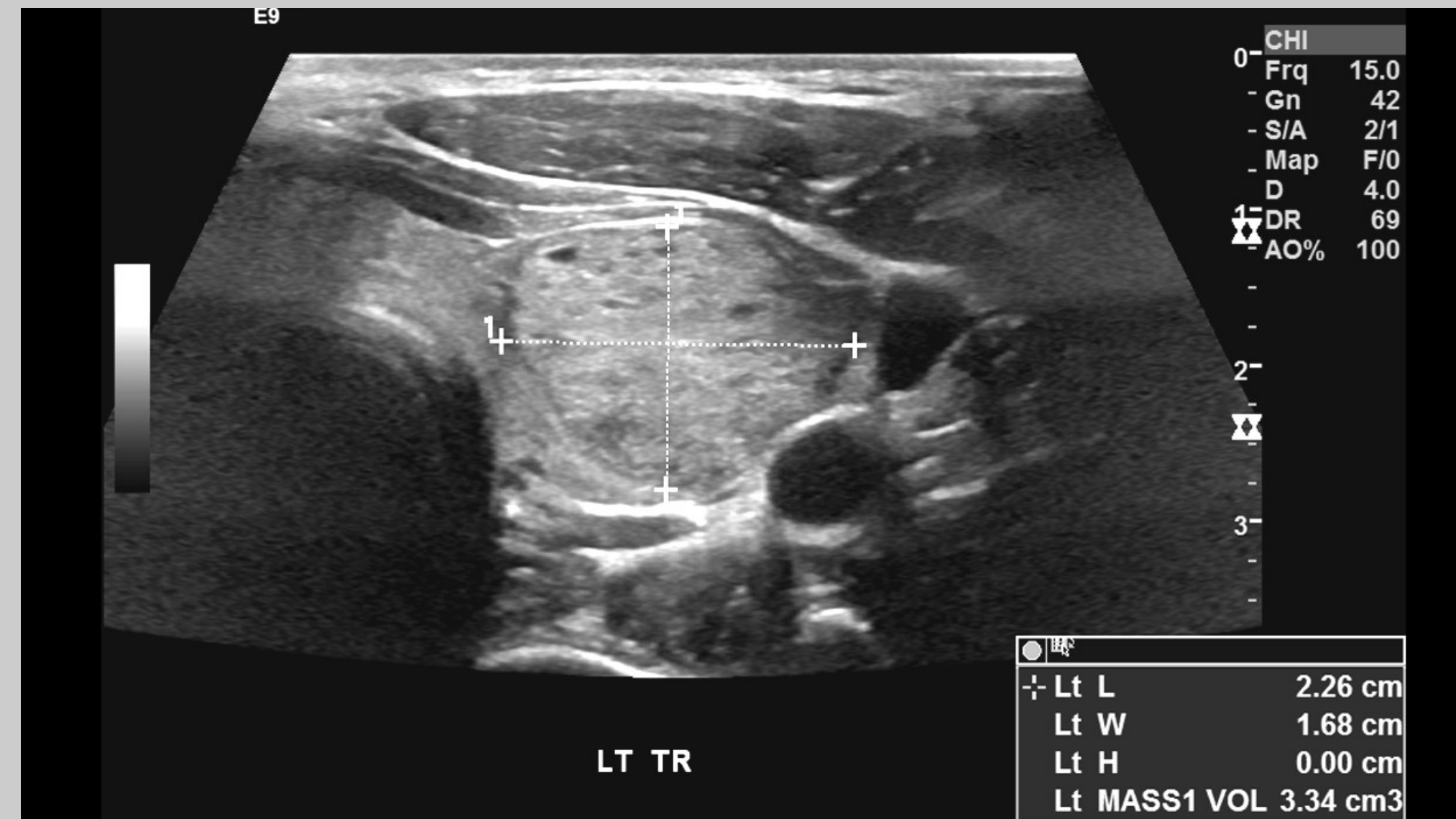


Figure 1. Single nodule in the left lobe on nearly replacing the mid and lower pole

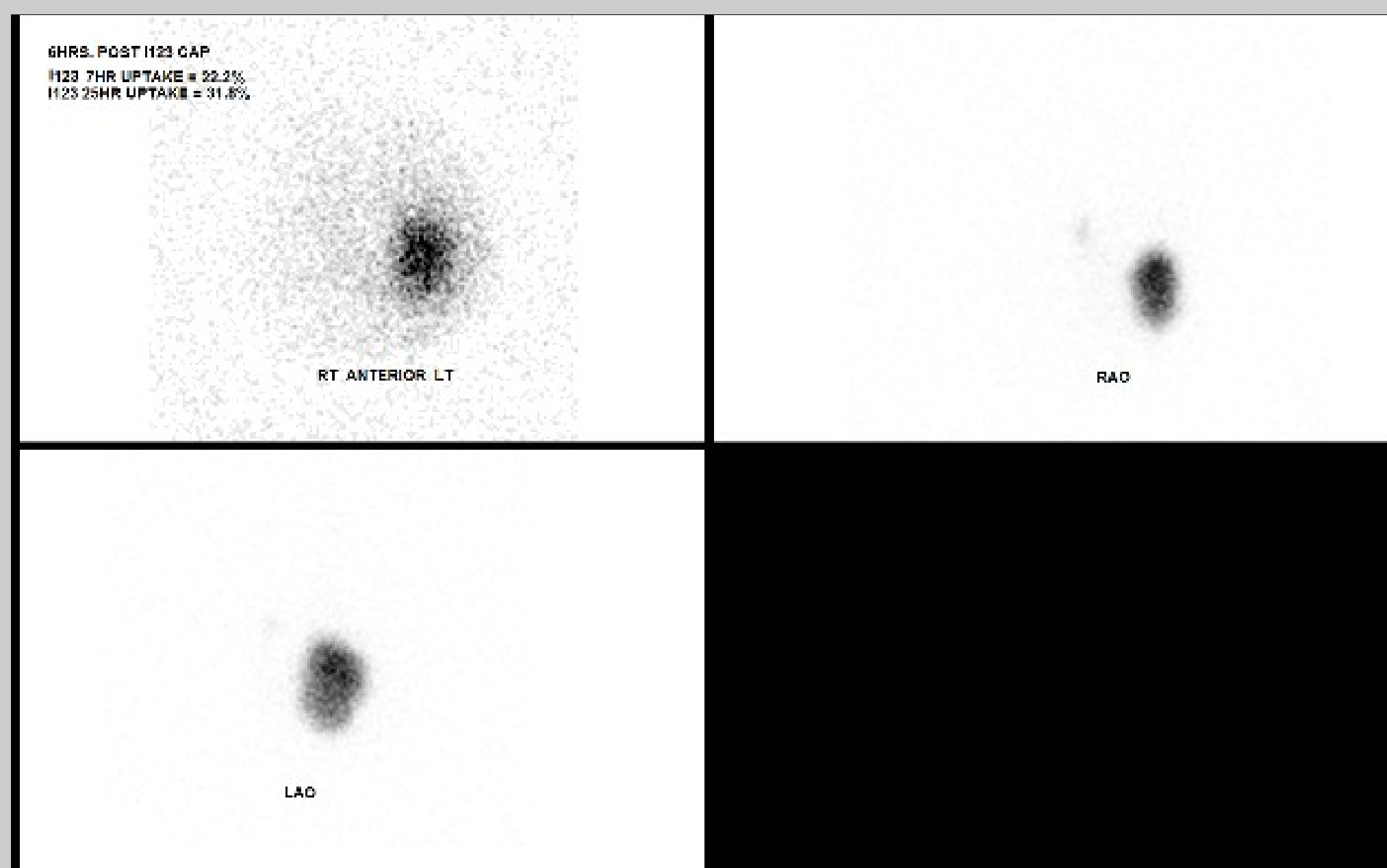


Figure 2. The calculated thyroid uptake was 22% at 7 hours and 32% 25 hours

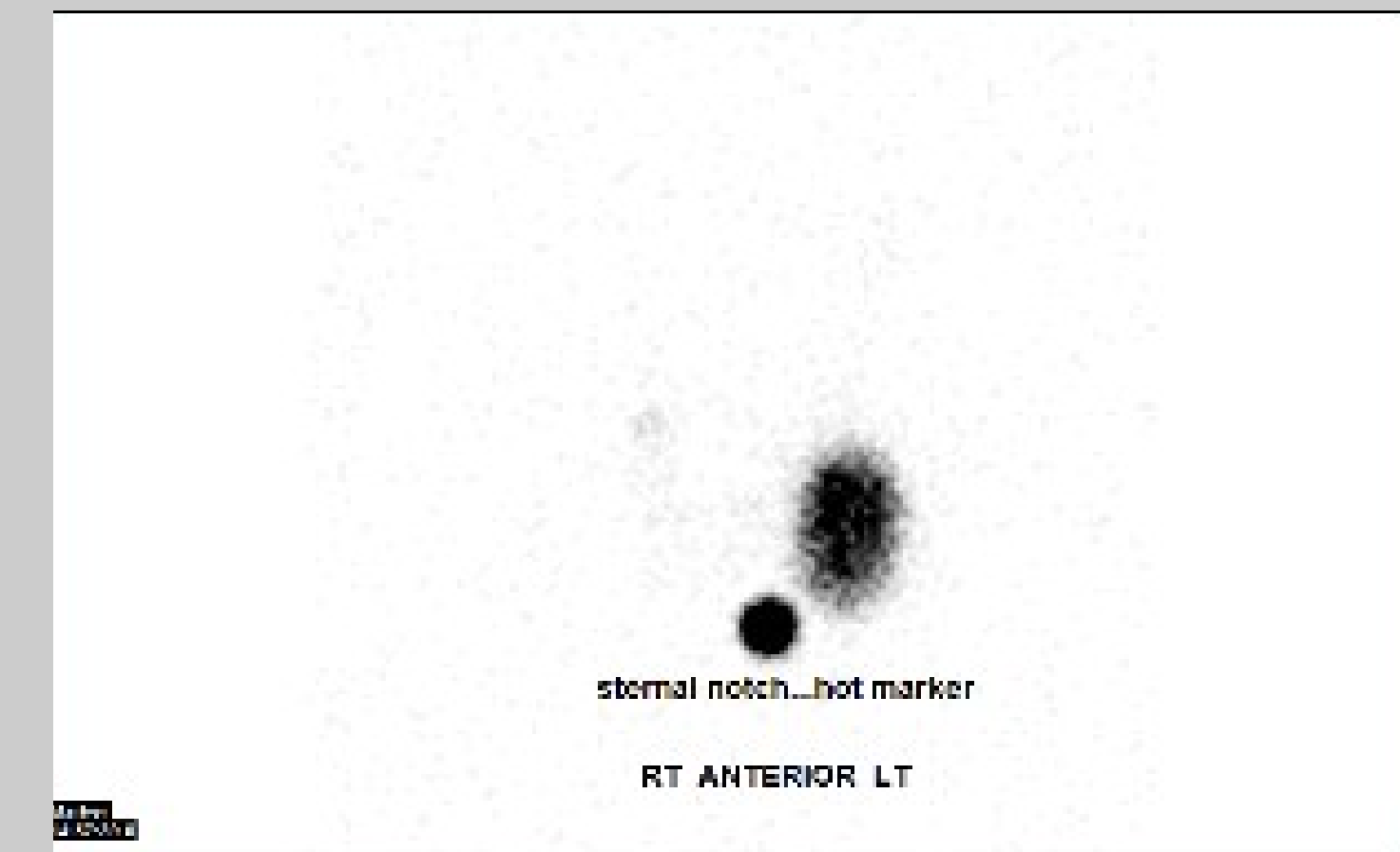


Figure 3. The iodine activity is localized to the left lobe with longest dimension in the craniocaudal axis similar to the recent ultrasound consistent with a hyperfunctioning thyroid nodule. Sternal notch for orientation

## Discussion

The brain has amongst the highest expression of thyroid hormone receptors of any organ and neurons are often more sensitive to thyroid abnormalities - including overt or subclinical hyperthyroidism and thyrotoxicosis, thyroiditis, and hypothyroidism [1]. However, psychosis is a rare complication in hyperthyroidism and the pathogenesis is still unclear, it was reported in 1% of cases and most patients who develop psychosis have been previously diagnosed with mania and/or delirium [2]. It is noted that adrenergic hyperactivity observed in patients with a hyperactive thyroid nodule could influence certain brain functions. In this case patient was initially treated with risperidone. The systemic review and case report by Golub and Rodack (2018) stated that risperidone proved efficacious in an elderly patient with similar presentation [3]. However, in our case the patient showed no improvement. Once Risperidone was discontinued and Haloperidol was initiated, patient showed improvement in his psychiatric symptoms. Thyroid disease should be considered in the differential diagnosis of a large spectrum of psychiatric symptoms; early treatment of the hormone or metabolic alteration can minimize the morbidity of a secondary pathology.

## Conclusions

Psychosis can present in a number of ways and can have different causes. Psychosis associated with thyroid nodule is rare but possible. The onset of psychotic syndrome is an important clinical element whose underlying medical cause must be clarified. In this case it was important to get a full clinical history of the patient along with relevant labs and proper physical examination. The differential diagnosis of a psychotic disorder in light of a medical disease should always be considered in order to promptly diagnose and treat the underlying cause to reduce the morbidity and or mortality associated with it.

Labs	Value
TSH (0.35-5.5L)	0.008
ft4 (0.89-1.76ng/dl)	1.7
T4 (4.5-10.9)	9.5
T3 (0.6-1.81)	1.07
TSI (<140)	<89
Thyroglobulin Ab	negative
Thyroid peroxidase Ab (<9 IU/ml)	102

Table 1.

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## References

- Marian, G & A Nica, E & E Ionescu, B & Ghinea, D. (2009). Hyperthyroidism—cause of depression and psychosis: a case report. *Journal of medicine and life*. 2. 440-2.
- Gagliardi JP, Clary GL. Treatment of Thyrotoxicosis – Induced Psychosis. *Psychopharmacology. Bulletin*. 2002;36:7–13.
- Golub D, Rodack V (2018). Antipsychotics in Hyperthyroid-Related Psychosis: Case Report and Systematic Review. *Neuro Endocrinol Lett*. 39(1): 65-74.
- Ferracci F., Carnevale A. The neurological disorder associated with thyroid autoimmunity. *Journal of Neurology*. 2006;253(8):975–984.
- Keshavan M. S., Kaneko Y. Secondary psychoses: An update. *World Psychiatry*. 2013;12(1):4–15.