

Hot nodule- always toxic?

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Introduction

“Hot nodule” in the context of isotope thyroid scan means an increased uptake of isotope by an area of the thyroid gland while other areas of the gland are not taking isotope (thereby cold). This is because of suppressed TSH by the overproduction of thyroid hormone by the hot (overactive) area. Commonest indications for getting an isotope scan are thyrotoxicosis (to differentiate between diffuse uptake i.e., Grave’s disease, patchy uptake i.e., toxic MNG or hot nodule i.e., toxic adenoma) and thyroiditis (uptake will be less or nil). We present a case that has been referred to us with an isotope scan showing “hot nodule”.

Case

A 19-yr-old girl noticed goitre recently and complained of tiredness and weight gain (BMI-26.6). On examination she had enlarged right thyroid lobe but left lobe was not palpable. Clinically she looked hypothyroid. She was carrying an isotope (Tc-99m) scan of thyroid (fig.1) that was reported as “hot nodule”.

Blood test showed elevated TSH with very low thyroxine [TSH – 377 (0.3-5.5 μ IU/mL), free T4 – 0.35 (0.8- 2.3 ng/dl)]. With a diagnosis of primary hypothyroidism she was started on thyroxine replacement with 50 mcg per day and escalated to 100 mcg two weeks later. Three months later, when last seen she was clinically and biochemically euthyroid (TSH-3.3 μ IU/mL) and her goitre has virtually disappeared.

Discussion

Thyroid hemiagenesis is a rare congenital anomaly where there is a failure of the embryologic development of a lobe of the thyroid gland^{1,2}. Thyroid hemiagenesis is more common in female and the left lobe of thyroid is absent far more frequently than right lobe, with a 4:1 ratio³. This condition is usually detected by the association of hyperthyroidism, hypothyroidism, colloid goiter, thyroiditis or thyroid carcinoma, among which hyperthyroidism is the most common². The presence of hypothyroidism is extremely rare⁴.

Our patient had agenesis of left lobe of thyroid and had developed primary hypothyroidism. Due to increased TSH drive to right hemithyroid, most of the Isotope was picked up by right lobe giving an incorrect diagnosis of hot nodule.

Fig – 1 Isotope scan of the thyroid gland showing excess uptake in the right lobe.

Diagnosis

Primary hypothyroidism in a case of agenesis of left hemi thyroid.

References

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