32 year old woman with subclinical hyperthyroidism

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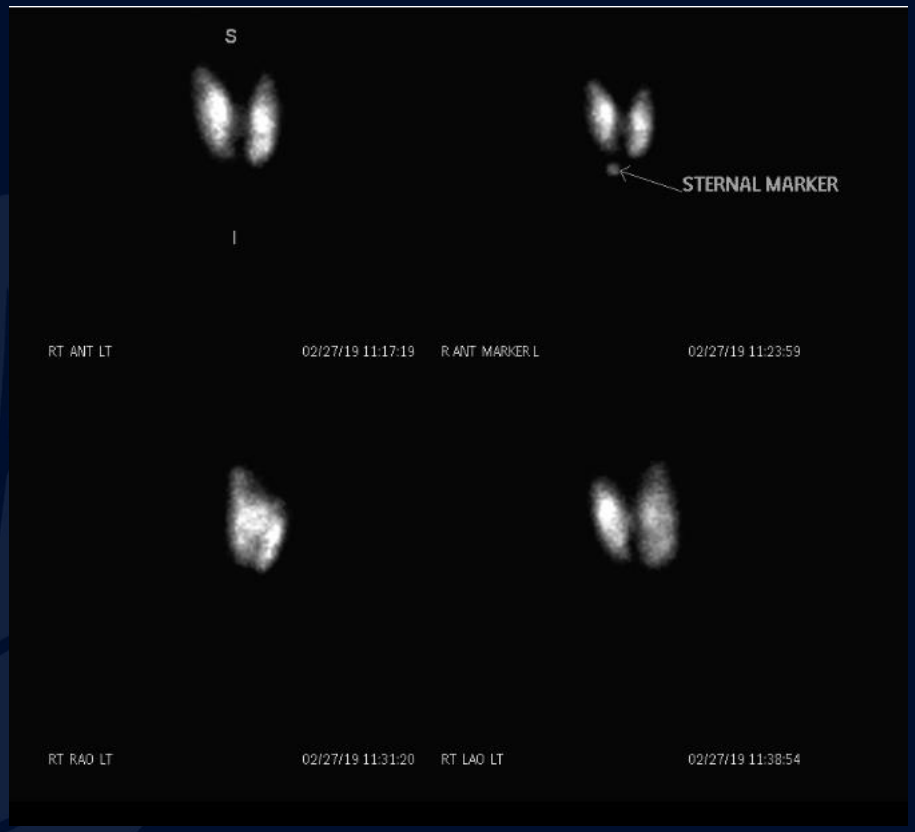

Set	Count Time	Thyroid cpm	Patient bkg cpm	Corrected Dose(cpm)	Hours	Uptake
1	60	311282	3366	652721	4.50	47.2%
2	60	170630	109	227079	24.61	75.1%

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Graves Disease

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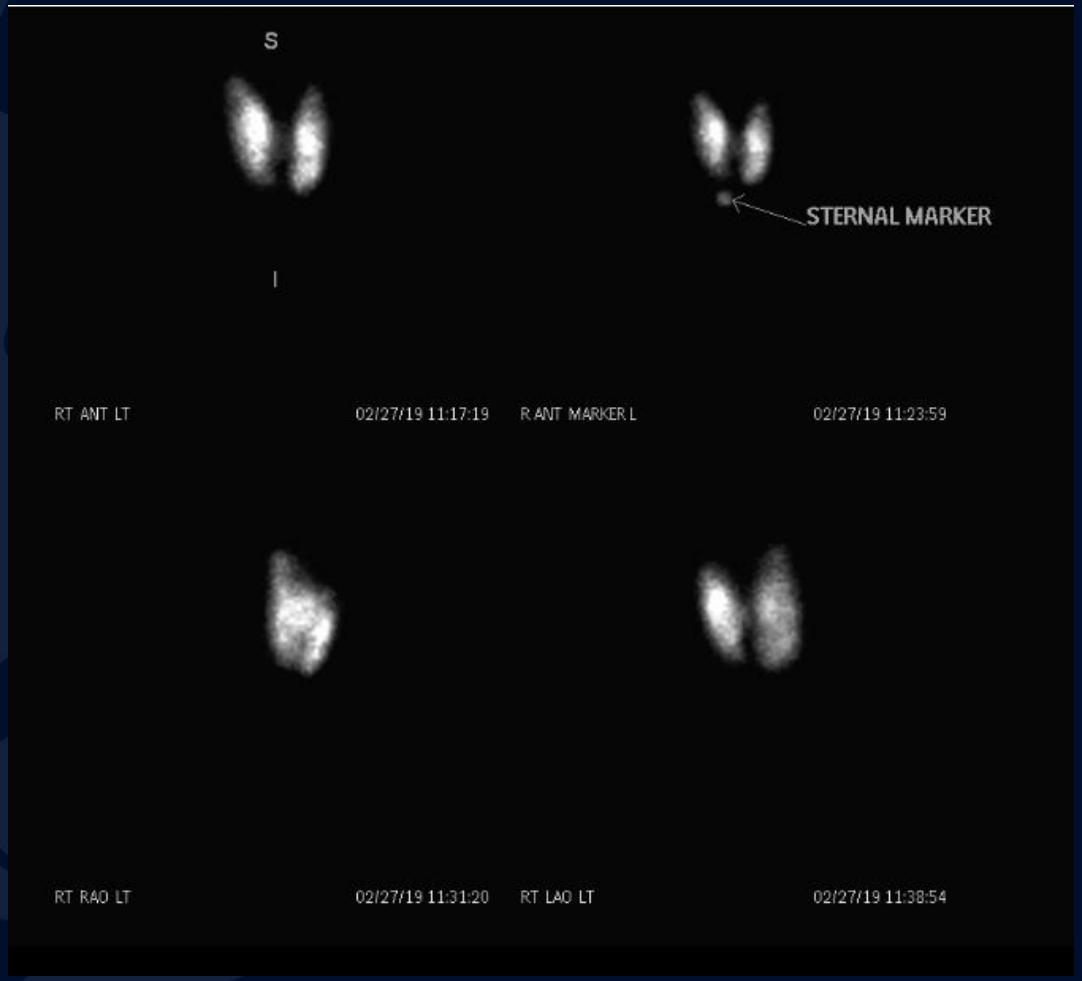

Nuclear medicine thyroid uptake scan with iodine-123 demonstrates homogeneous symmetric uptake of radiotracer.

No hot or cold nodules are present.

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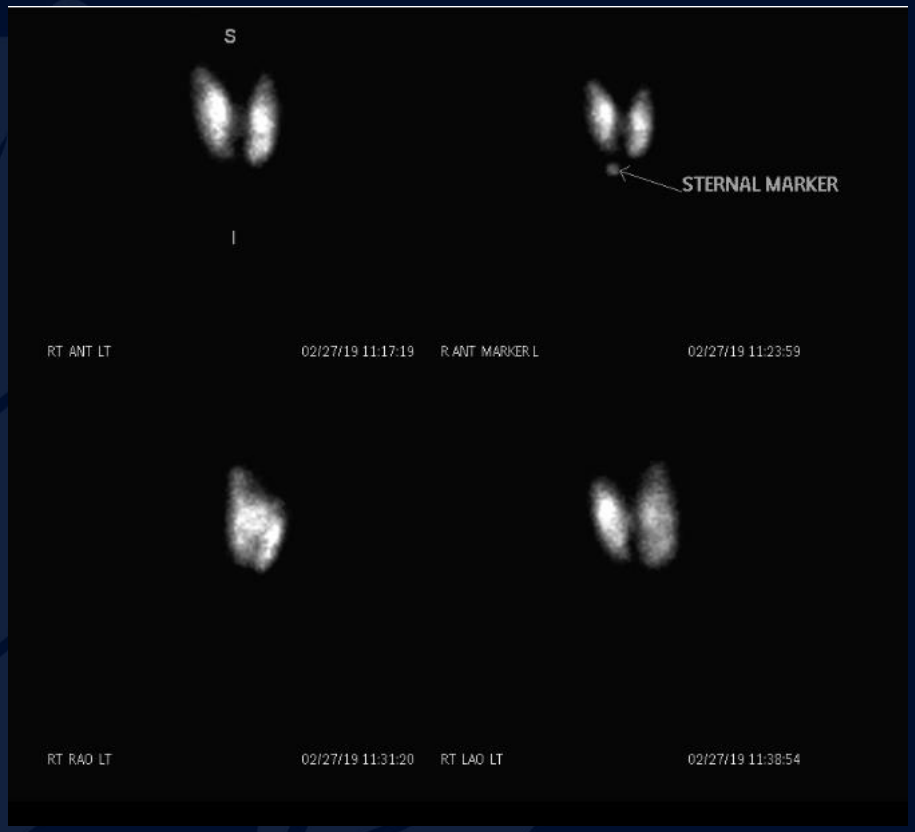

Radioactive iodine uptake is increased at 4 and 24 hours

NORMAL:
4 hours: 5-15%
24 hours: 10-30%

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Background

- Autoimmune disorder caused by antibodies to the TSH receptors on follicular cells of the thyroid
- Lab findings: TSH suppressed, elevated thyroid hormone, positive thyroid receptor antibodies
- More common in women
- Often presents in middle age

Treatment

- I-131 therapy unless pregnant, breastfeeding, or severe Graves ophthalmopathy
- Antithyroid medications and thyroidectomy are alternatives to I-131

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Thyroid scintigraphy

- Thyroid is usually enlarged
- Diffuse homogeneous fairly symmetrically increased radioactive iodine uptake at 4 and 24 hours

Ultrasound findings of Graves disease

- Heterogeneous echotexture
- Hyperechoic
- Increased vascularity (thyroid inferno pattern)

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Differential diagnosis for increased uptake on nuclear medicine thyroid scan

- Toxic multinodular goiter: hot nodules with background suppressed thyroid activity
- Toxic autonomous nodule: hyperthyroidism due to hyperfunctioning nodule
- Marine-Lenhart syndrome (nodular Graves disease): variant of Graves disease with cold nodules
- Silent thyroiditis during recovery phase: diffusely increased activity, has to be distinguished from Graves disease by clinical information

References

1. Scintigraphic Manifestations of Thyrotoxicosis. Intenzo, dePapp, Jabbour, Miller, Kim, & Capuzzi. Radiographics. Volume 23, No. 4. https://pubs.rsna.org/doi/full/10.1148/rg.234025716.
2. Becker K., Gillis E. Graves Disease. Radiology Online 2019. University of Connecticut.

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