



RADIOLOGY

TEAM 435

Interactive lecture of radiology of endocrine diseases

[Color index: **Important** | **Notes** | Extra]

[[Editing file](#)]

- **Objectives:**

not given

- **Resources:**

- slides
- 433 team

- **Done by:**

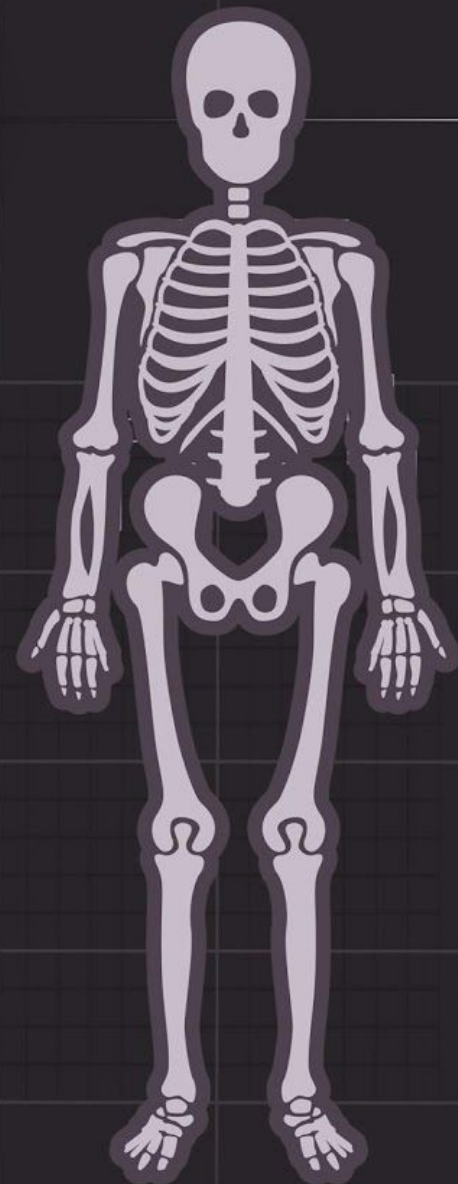
- Torki Alnasser
- Abdalnasser Alwabel

- **Team Leader:**

- Mohammed Alshel
- Amjad Alduhaish

- **Revised**

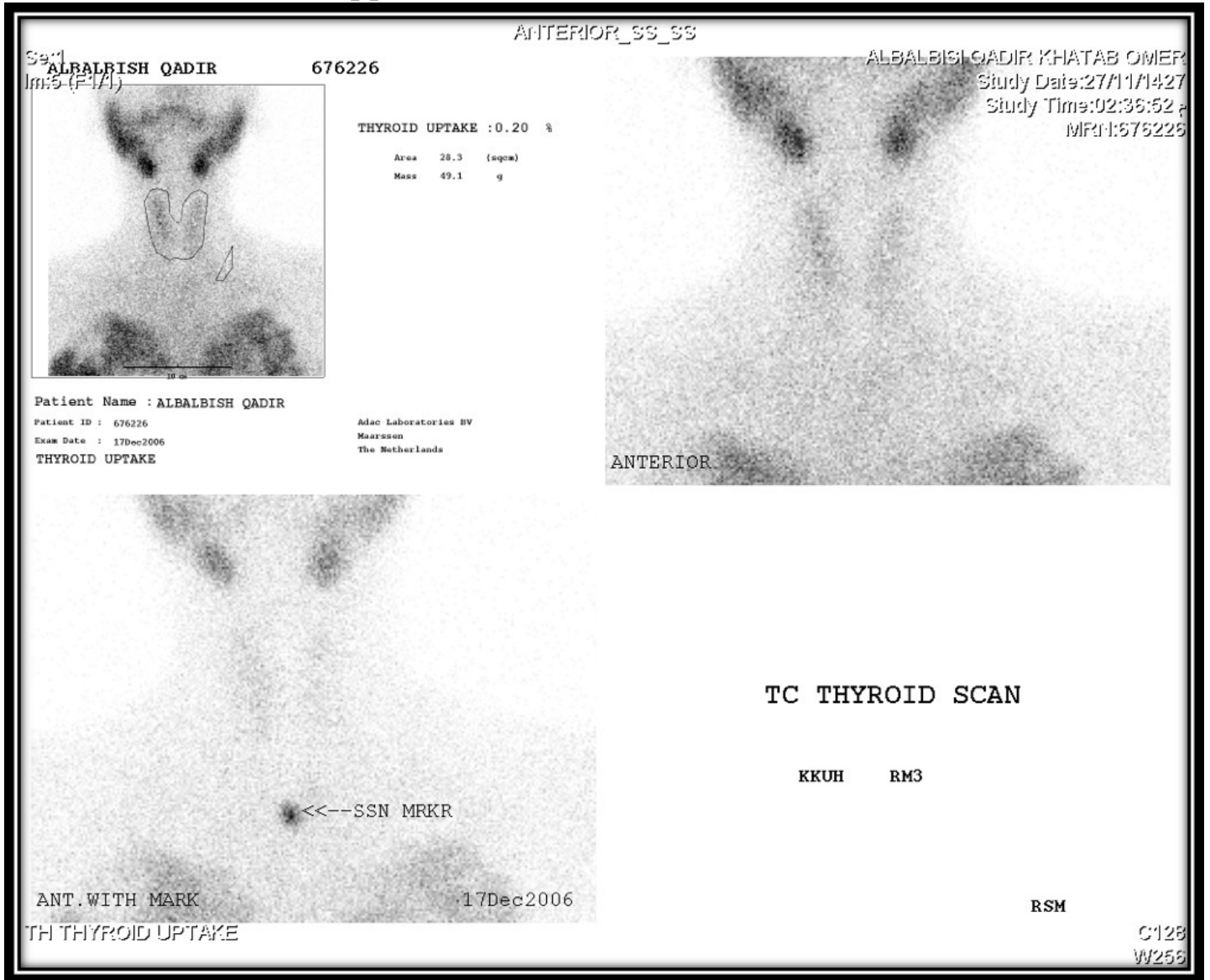
- Luluh Alzeghayer



Case 1

25 year old female presented with thyrotoxic symptoms 2 weeks after delivery.

Lab: Elevated T4 and suppressed TSH



What is the study?

Nuclear scan of the thyroid.

What is the agent used?

Tc-99m Pertechnetate.

What are the imaging findings?

Decreased uptake in both lobes 0.20% (Normal 0.5%-4%)

What is the most likely diagnosis?

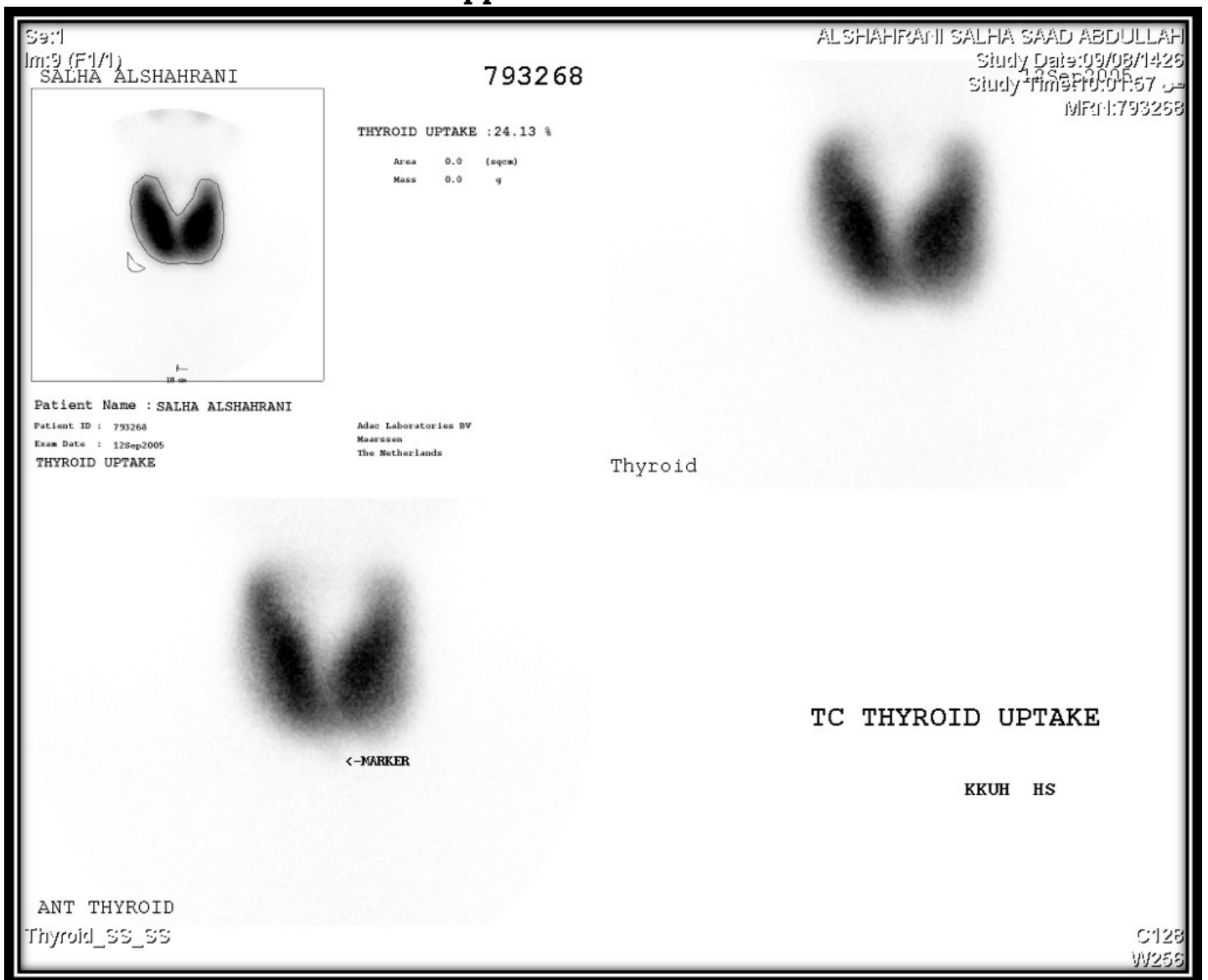
Subacute Thyroiditis (postpartum thyroiditis).

What is the treatment ?

Symptomatic treatment give beta blockers .

Case 2

25 year old female presented with thyrotoxic symptoms ,
Lab showed Elevated T4 and suppressed TSH



What is the study?

Nuclear scan of the thyroid.

What is the agent used?

Tc-99m Pertechnetate.

What are the imaging findings?

Bilateral diffuse uptake 24.13% (Normal 0.5%-4%)

What is the most likely diagnosis?

Graves disease.

What is the treatment?

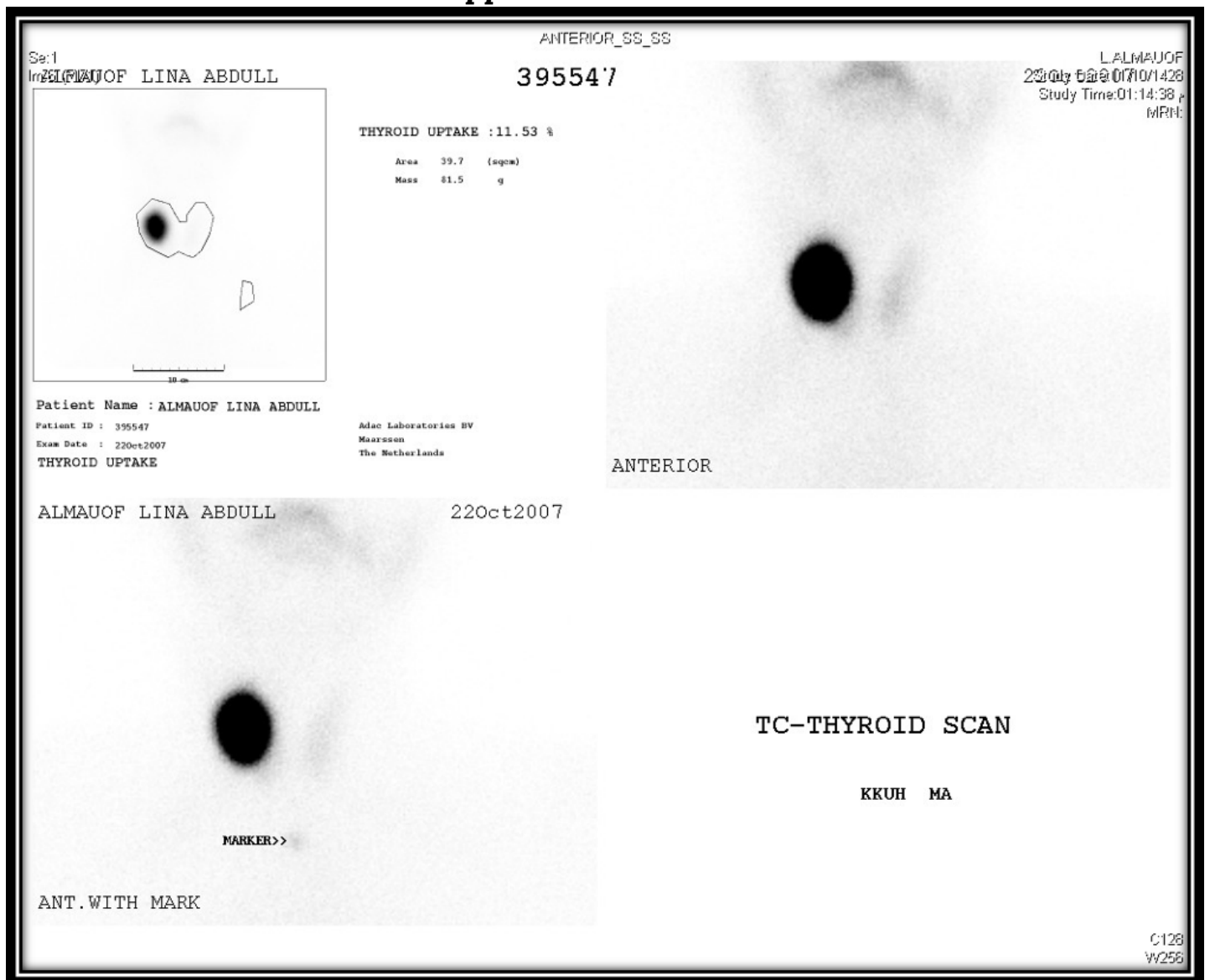
Need definitive treatment (3 modalities) : 1) Medical (Antithyroid). 2) Surgical . 3) Radioactive iodine(RAI).

Give 4 causes of increased thyroid uptake?

- 1) *Autonomous toxic nodule .*
- 2) *Multinodular toxic goiter (Plummer's Disease).*
- 3) *Enzyme defects (Dyshormonogenesis).*
- 4) *Iodine starvation >Iodine deficiency.*

Case 3

23 year old female presented with thyrotoxic symptoms ,
Lab showed Elevated T4 and suppressed TSH



What is the study?

Nuclear scan of the thyroid.

What is the agent used?

Tc-99m Pertechnetate.

What are the imaging findings?

Hot nodule on the right lobe suppressing the left Elevated uptake 11.53% (Normal 0.5%-4%)

What is the most likely diagnosis?

Single toxic nodule .

What is the treatment ?

1st option :RAI (Iodin 131) 1st line therapy ,

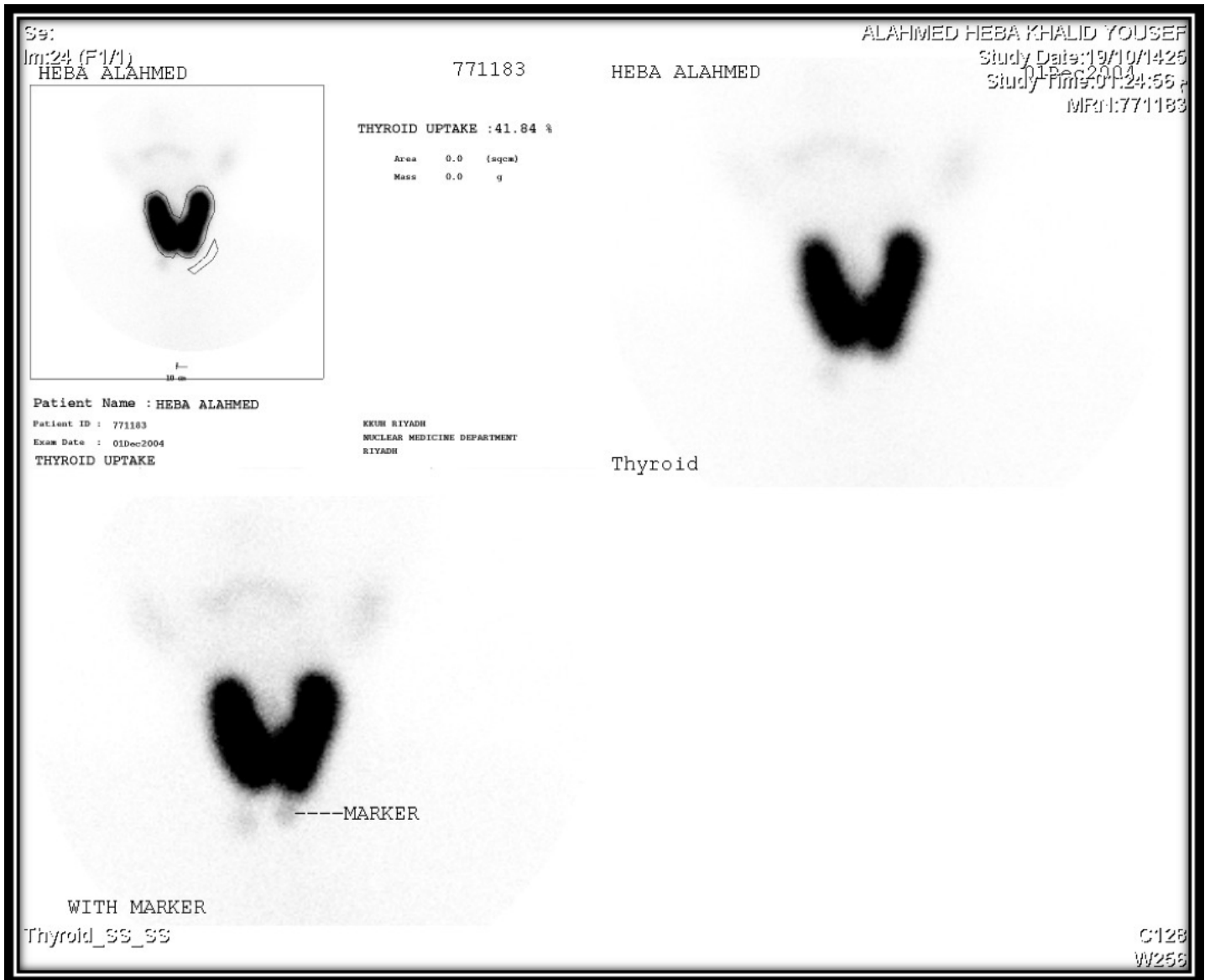
2 nd option : surgery

What is the chances of this nodule of being malignant?

low chance of being malignant < 5%.

Case 4

2 year old female presented with hypothyroidism symptoms
Lab showed elevated TSH and low T4



What is the study?

Nuclear scan of the thyroid (for a child).

What is the agent used?

Tc-99m Pertechnetate.

What are the imaging findings?

Enlarge gland with elevated uptake (41.84)

What is the most likely diagnosis?

Dyshormonogenesis

Iodine deficiency will have the same scenario except it's unlikely to appear in a 2 y.o

young patient presented with hypothyroidism symptoms
Lab showed elevated TSH and low T4



What is the study?

Nuclear scan of the thyroid (for a child).

What is the agent used?

Tc-99m Pertechnetate .

What are the imaging findings?

Absence of thyroid gland .

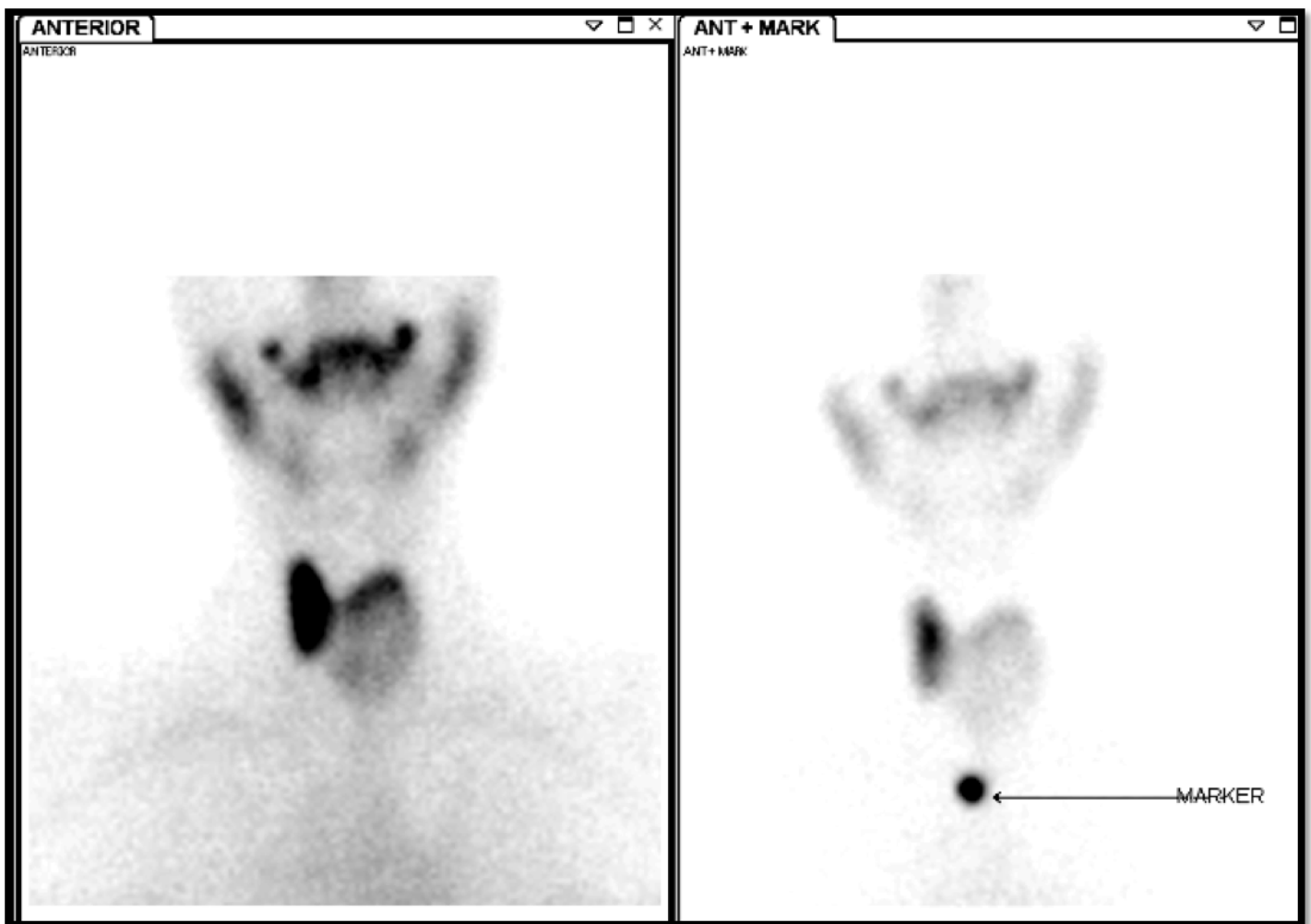
What is the most likely diagnosis?

Agenesis .

What is the treatment ?

Thyroxin.

patient presented with palpable neck mass



What is the study?

Nuclear scan of the thyroid

What is the agent used?

Tc-99m Pertechnetate .

What are the imaging findings?

left cold nodule

What is the most likely diagnosis?

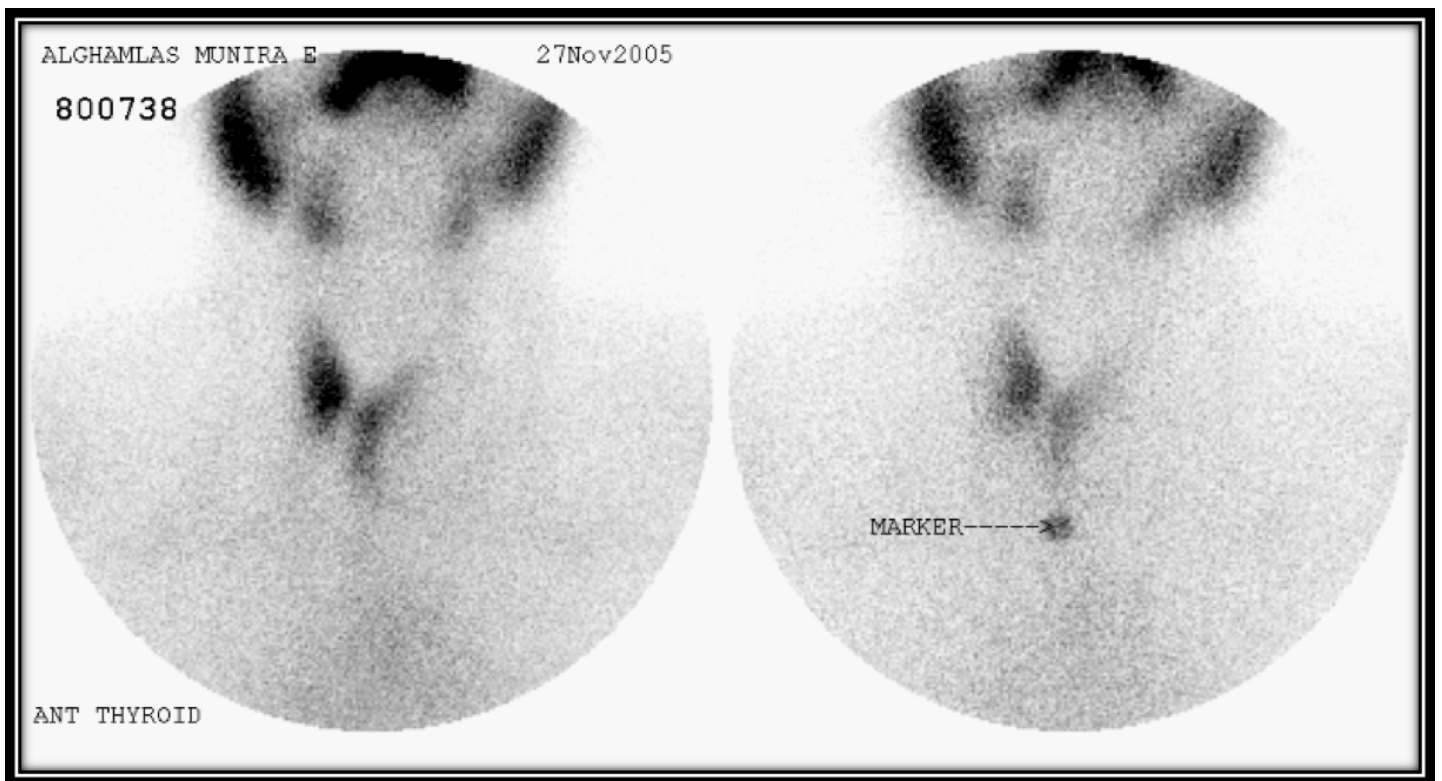
mass on the left side with 15%-20% chance to be malignant ,

What is the treatment ?

FNA to confirm

if it turns malignant next step is surgery to remove it

patient presented with palpable neck mass



What is the study?

Nuclear scan of the thyroid .

What is the agent used?

Tc-99m Pertechnetate .

What are the imaging findings?

Decrease uptake in left upper thyroid lobe(Cold nodule).

mass in left lobe push the thyroid to right

(marker is useful here to tell if there is tracheal shift.).

What is the most likely diagnosis?

Mass on the left side

What are the chance of this nodule to be malignant?

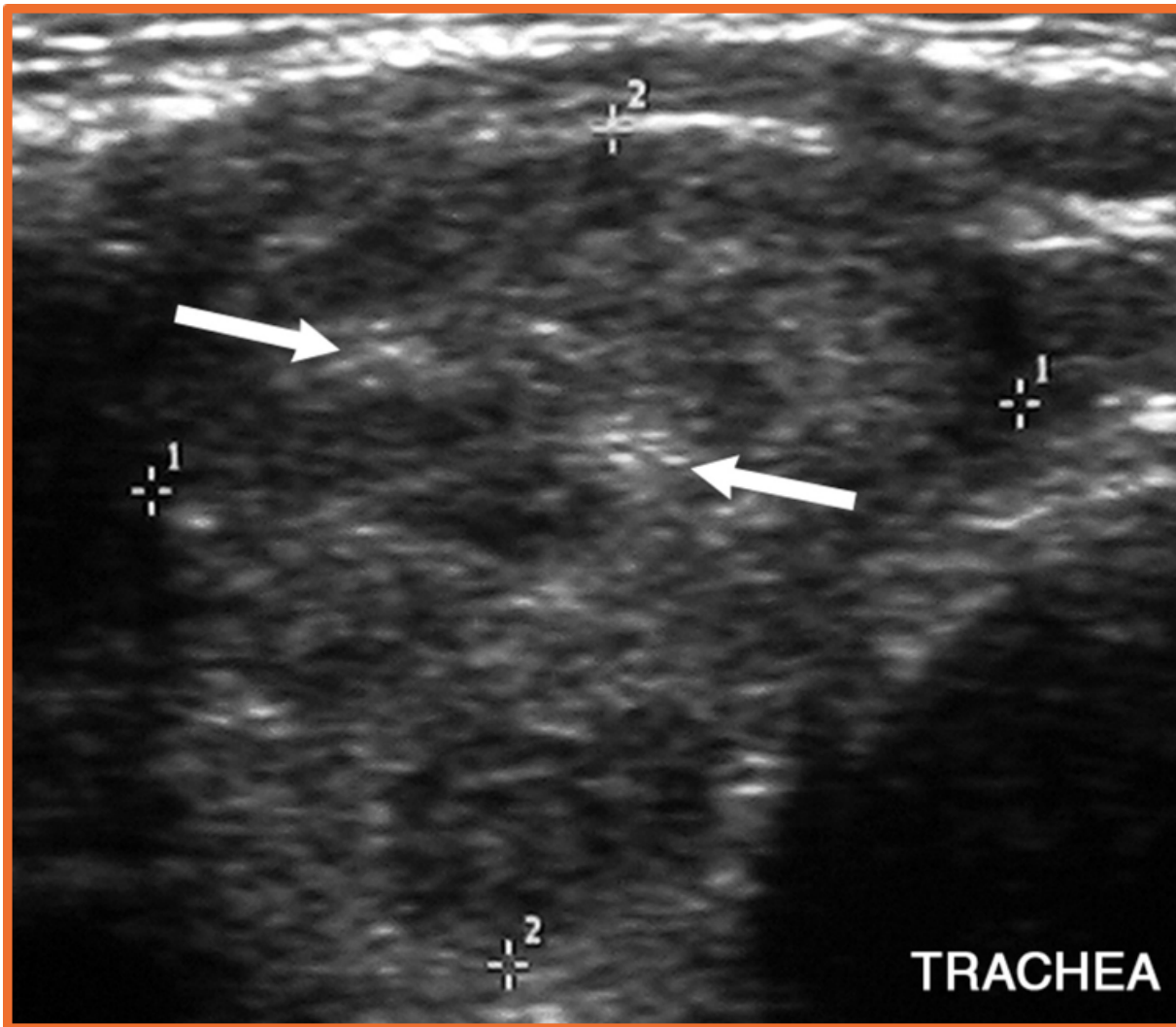
15%-20%

What is the treatment ?

FNA to confirm

if it turns malignant next step is surgery to remove it

42 year old man presented with Right Thyroid mass?



What is the study?

sonogram (ultrasound)

What are the imaging findings?

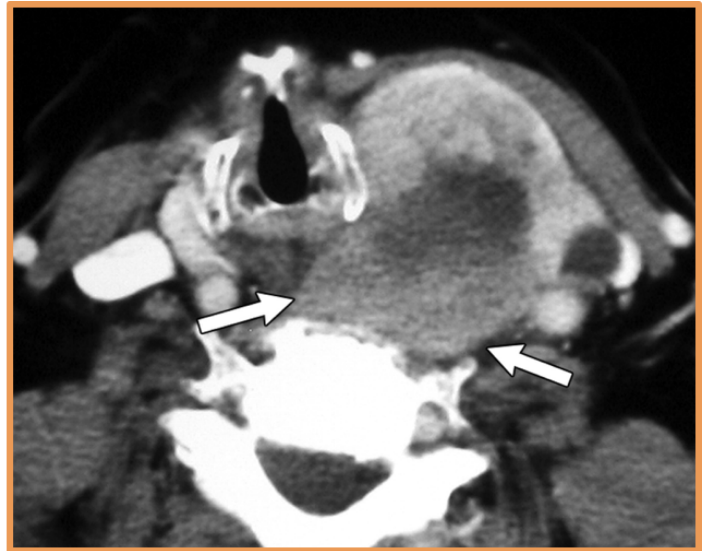
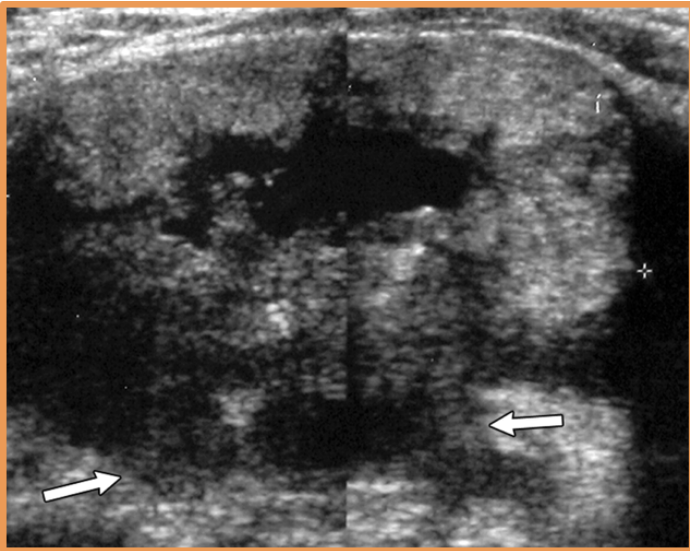
Transverse sonogram of the right lobe of the thyroid demonstrates:

Punctate echogenic foci without posterior acoustic shadowing, findings indicative of microcalcifications (arrows).

What is the most likely diagnosis?

thyroid carcinoma FNA to confirm

84 year old female presented with goiter



What is the study?

ultrasound & contrast-enhanced CT

What are the imaging findings?

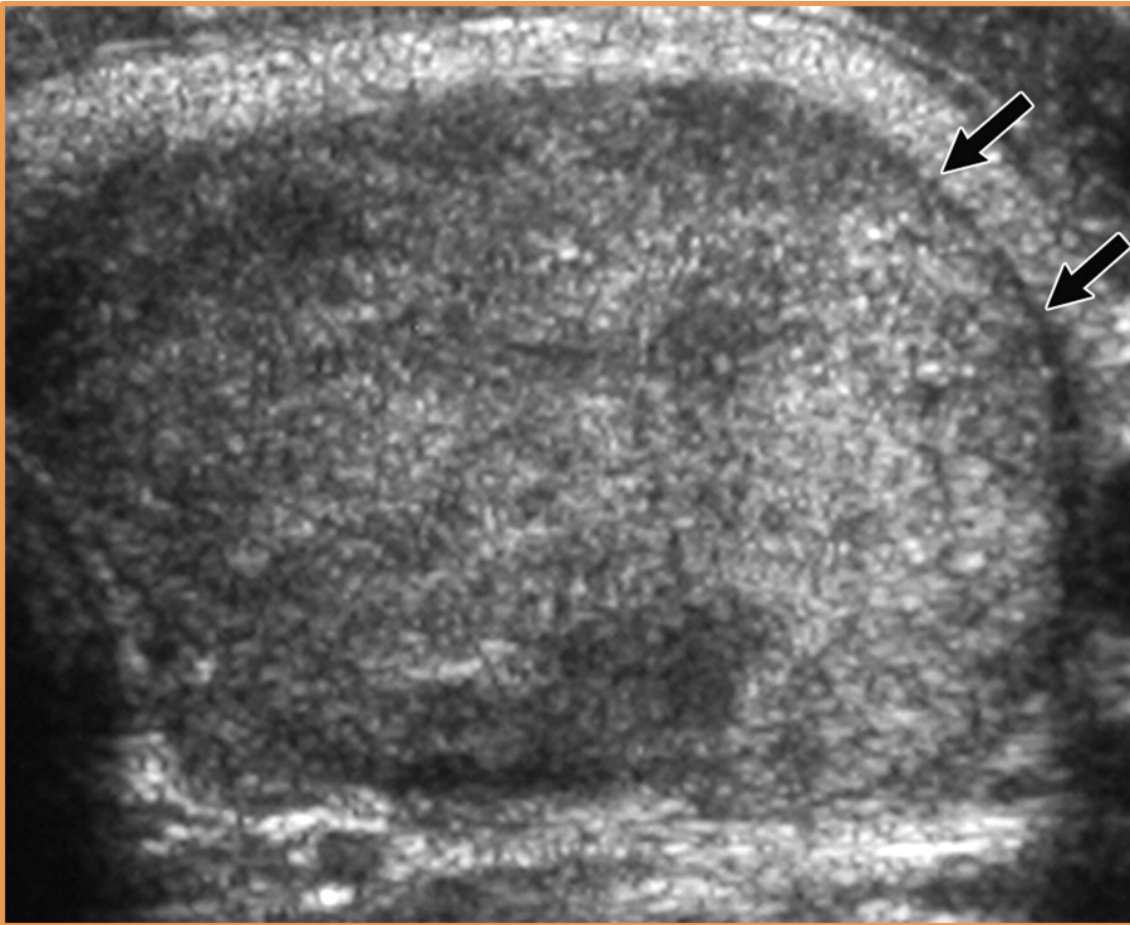
Transverse sonogram of the left lobe of the thyroid shows an advanced tumor with infiltrative posterior margins (arrows) and invasion of prevertebral muscle.

Axial contrast-enhanced CT image shows a large tumor that has invaded the prevertebral muscle (arrows)

What is the most likely diagnosis?

you need FNA to confirm but most likely it's Anaplastic thyroid carcinoma (anaplastic is very aggressive it usually invade the surrounding tissue)

30 year old woman presented with neck mass



What is the study?

sonogram (ultrasound)

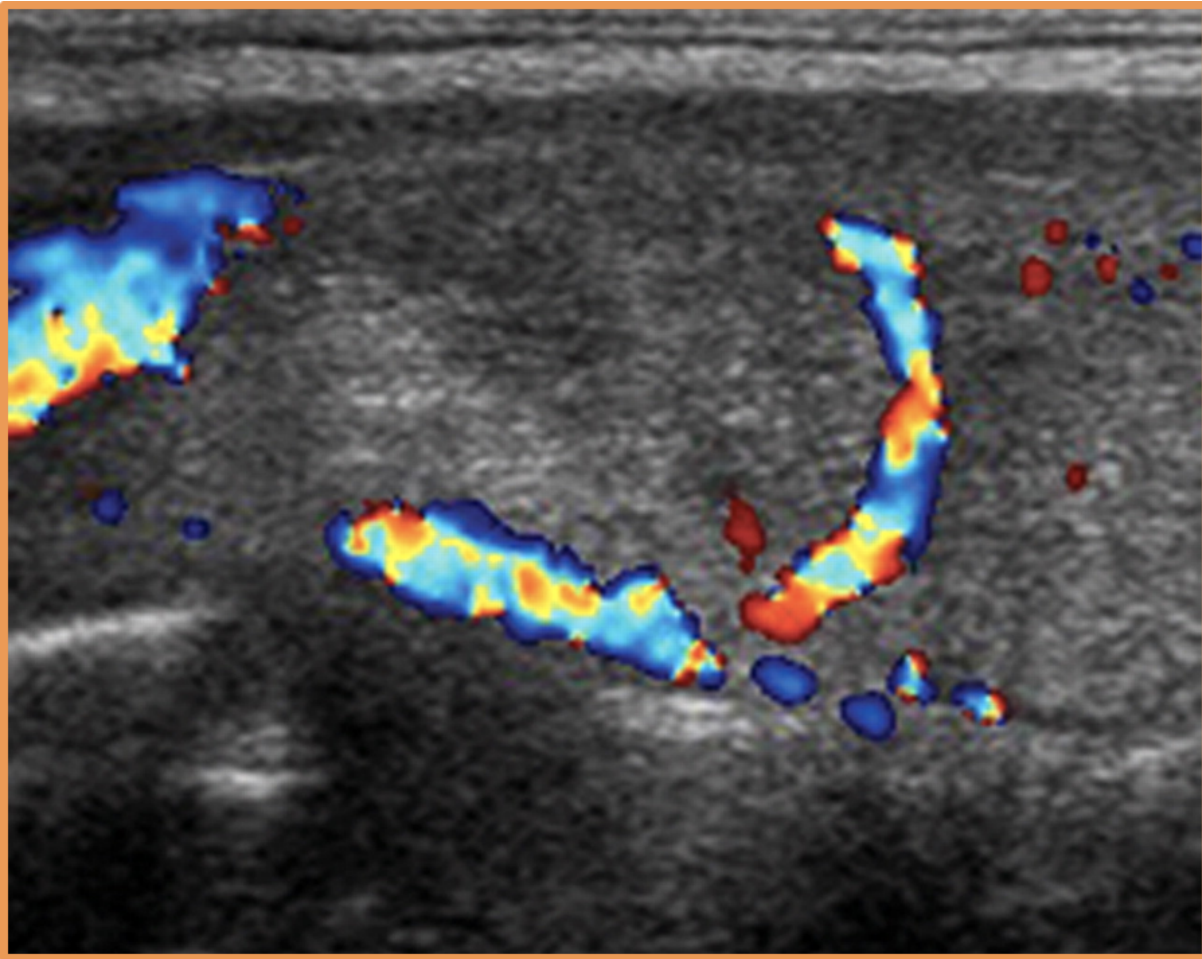
What are the imaging findings?

Transverse sonogram of the left lobe of the thyroid shows a follicular adenoma with a hypoechoic halo (arrows).

What is the most likely diagnosis?

Follicular adenoma , FNA to confirm

36 year old woman presented with neck mass



What is the study?

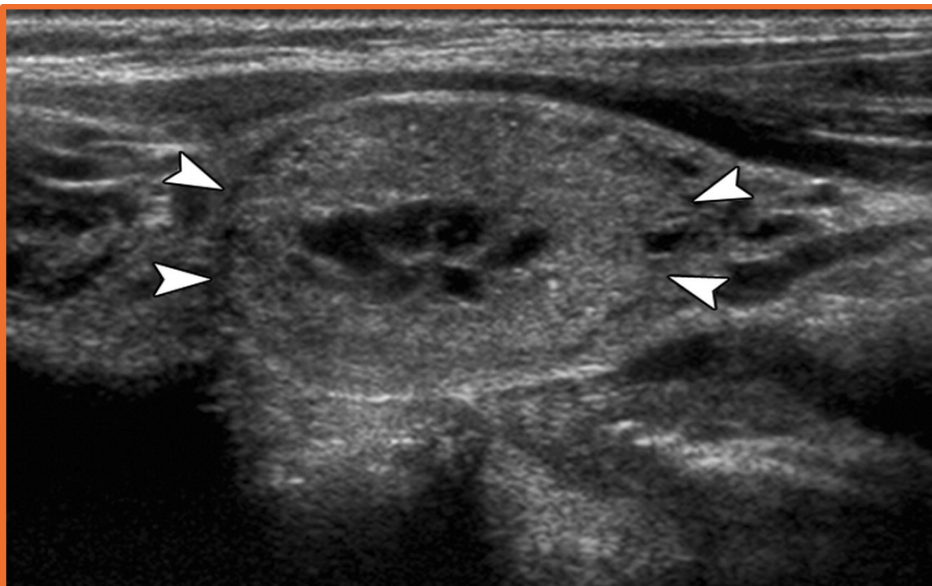
Doppler ultrasound

What are the imaging findings?

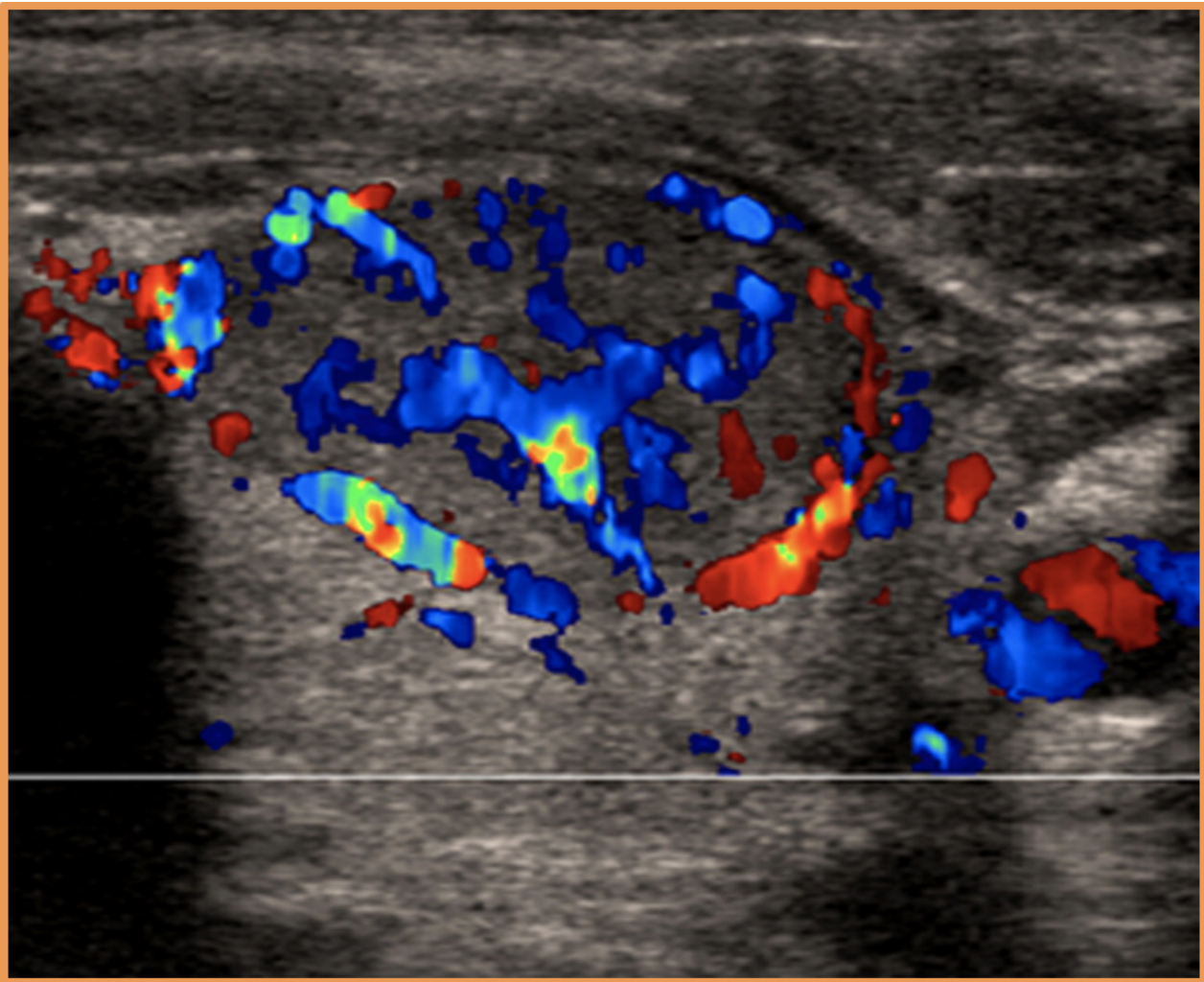
Longitudinal color Doppler sonogram of the right lobe of the thyroid shows perinodular blood flow around a follicular adenoma (benign nodules are less vascular than malignant nodules)

What is the most likely diagnosis?

follicular adenoma , FNA to confirm



US images of thyroid nodules of varying parenchymal composition (solid to cystic).
Proved to be benign at cytologic examination “no psammoma bodies”



What is the study?

Doppler ultrasound

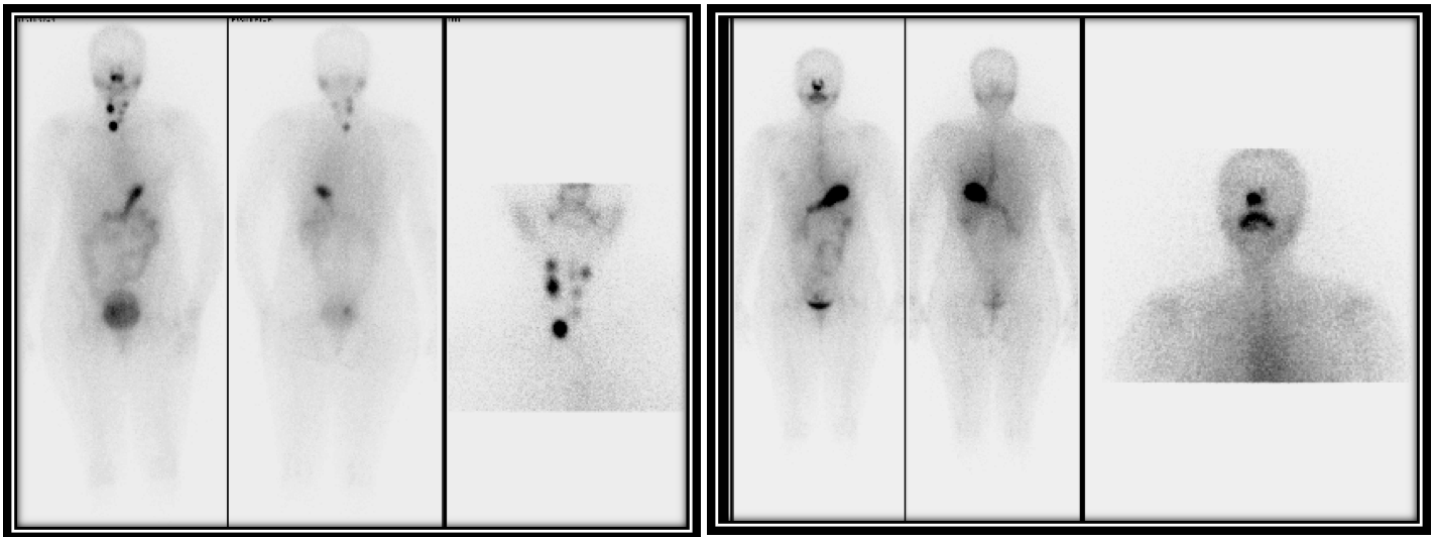
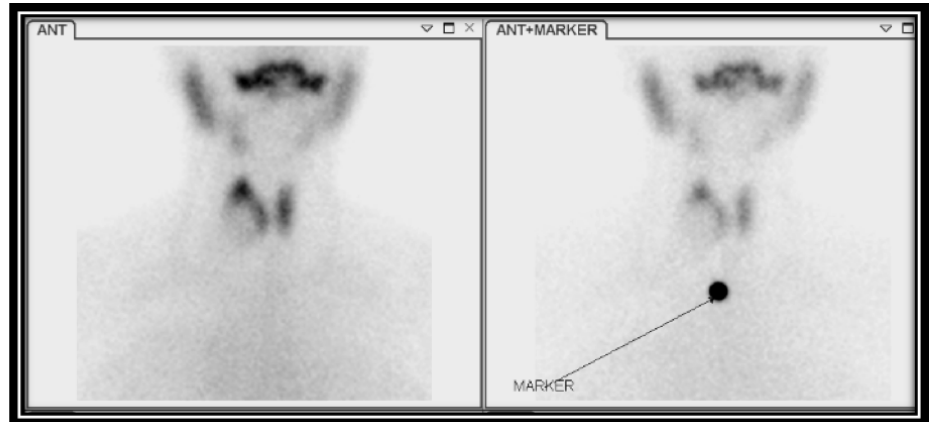
What are the imaging findings?

colour Doppler mode shows marked internal vascularity, indicating increased likelihood that nodule is malignant.

What is the most likely diagnosis?

Proved to be papillary carcinoma at cytologic examination

32 year old female patient presented with neck swelling



What is the study?

nuclear thyroid scan

What is the agent used?

I123 isotope

What are the imaging findings?

in JAN 2014 (upper pic) we have cold nodule in right lower lobe of thyroid we do thyroidectomy we didn't operate lymph node

on MARCH 2014 (lower left) we see multiple hot nodule that spread locally in the neck to lymph node we suspect this patient to have papillary carcinoma (due to mode of transmission) we give her radiation therapy with iodine 100 mg 131

OCTOBER 2014 (lower right) we do scan to exclude any remnant . patient respond to treatment

What is the most likely diagnosis?

papillary carcinoma

prognosis ?

It is good because papillary has only lymph node metastasis

(follicular has hematogenous metastasis -bad prognosis-)

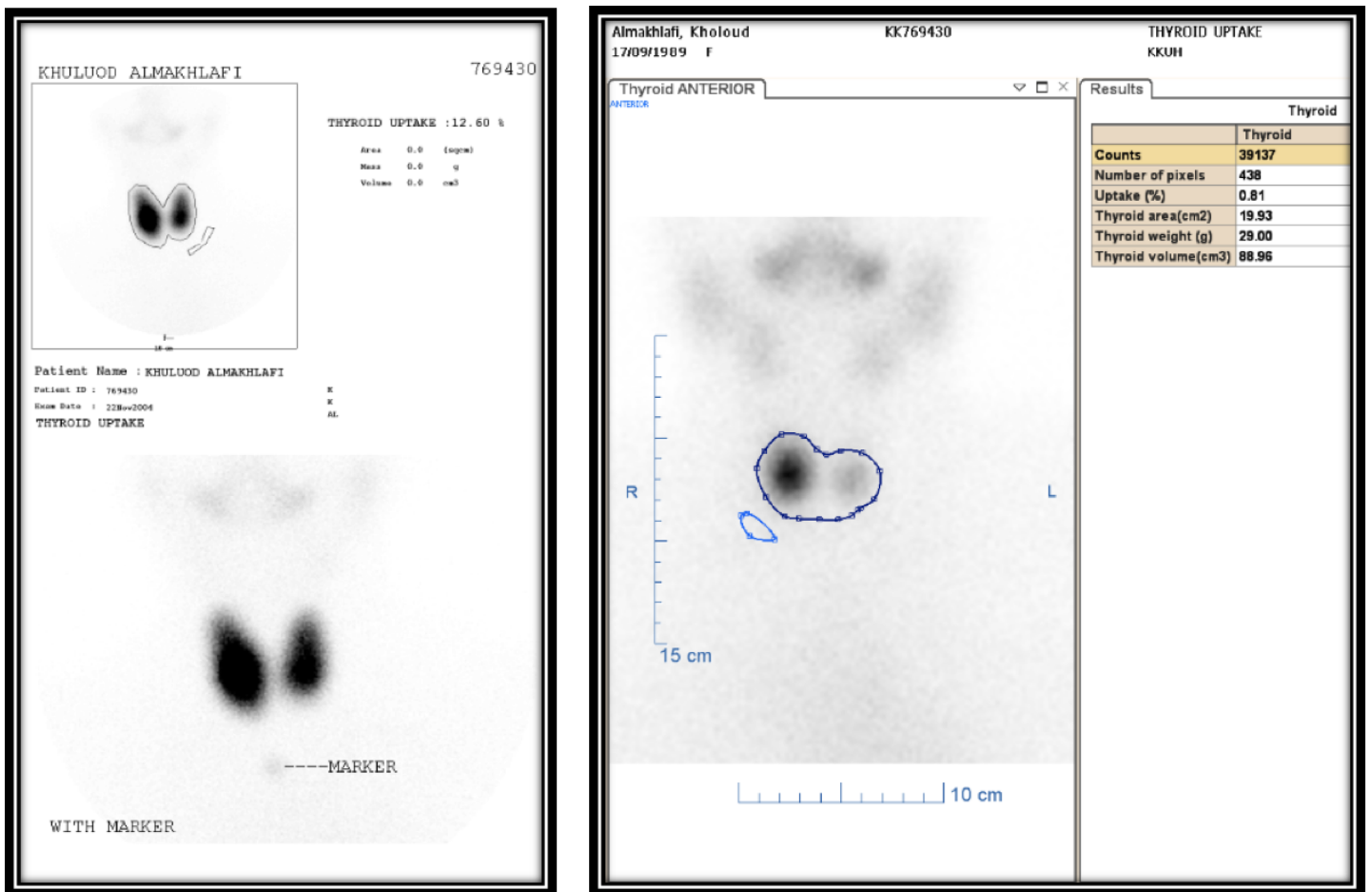
What is the marker for well-differentiated thyroid tumors?

Thyroglobulin

What is the marker for Medullary carcinoma ?

Calcitonin

26 year old female patient presented with thyrotoxicosis symptoms



What is the study?

Nuclear scan of the thyroid .

What is the agent used?

Tc-99m Pertechnetate .

What are the imaging findings?

increase uptake 12,6% in (november 2004 left pic) patient receive treatment and has good response in (april 2005 right pic) take another image found to be decrease in uptake with 0.81%

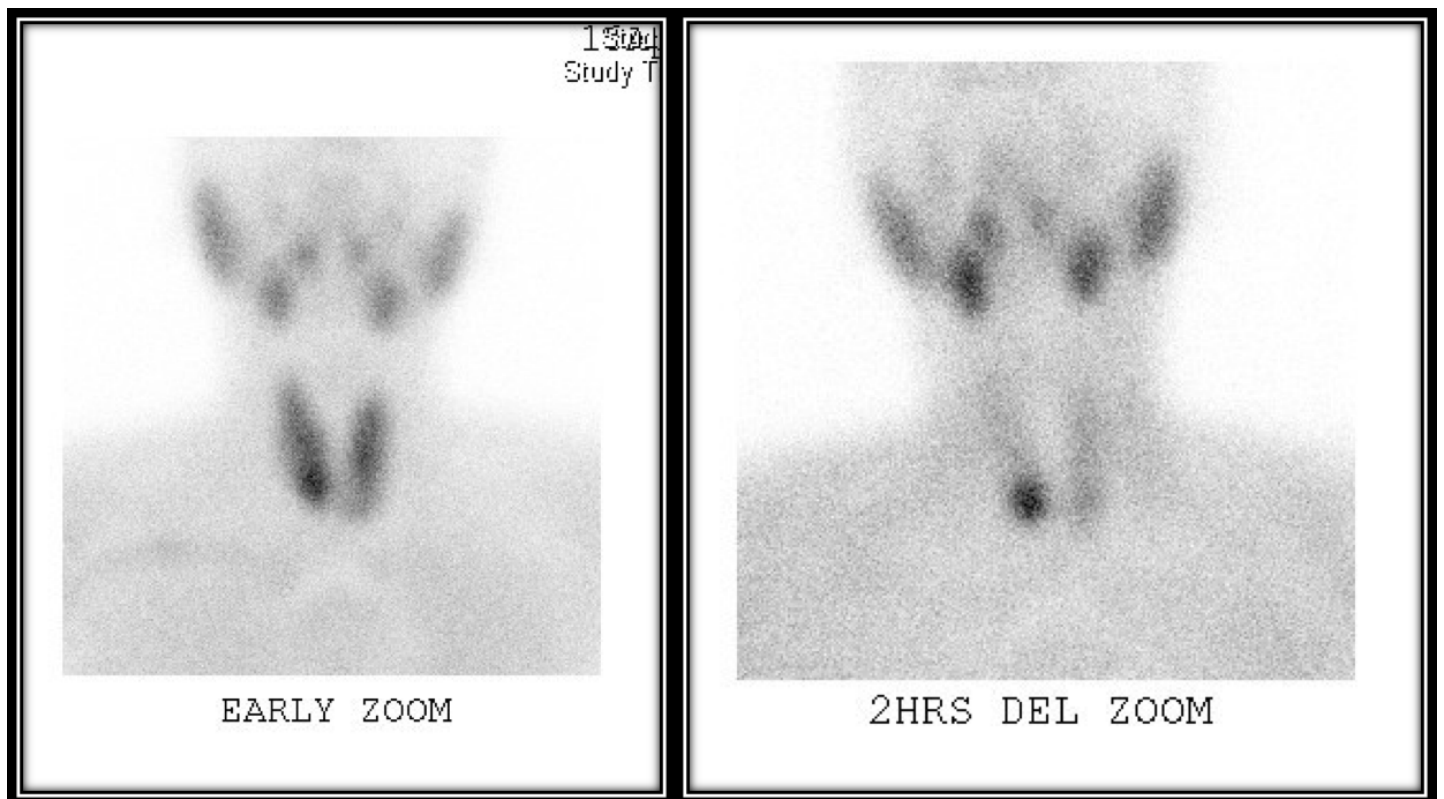
What is the most likely diagnosis?

graves (november) , treated with iodine 5-15 mg 131

what is the main side effect of iodine 131 ?

hypothyroidism (april)

patient with High PTH and High Ca



What is the study?

Parathyroid scan.

What is the agent used?

Tc-99m Sestamibi (Dual Phase).

What are the imaging findings?

Right lower parathyroid nodule .

What is the most likely diagnosis?

Parathyroid adenoma.

patient with High PTH and High Ca



What is the study?

Parathyroid scan.

What is the agent used?

Tc-99m Sestamibi (Dual Phase).

What are the imaging findings?

False negative because it is from the clear cells Which has no mitochondria.

What is the most likely diagnosis?

Parathyroid adenoma.

patient with High PTH and High Ca



What is the study?

Parathyroid scan & SPECT CT.

What is the agent used?

Tc-99m Sestamibi (Dual Phase).

What are the imaging findings?

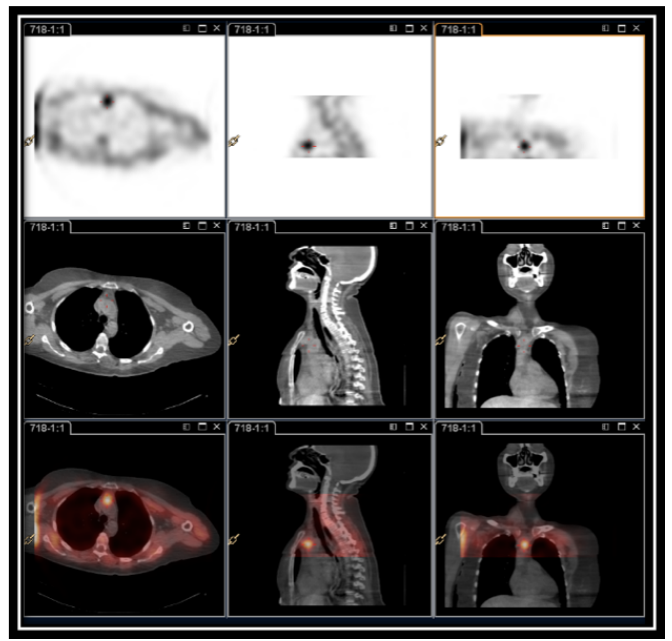
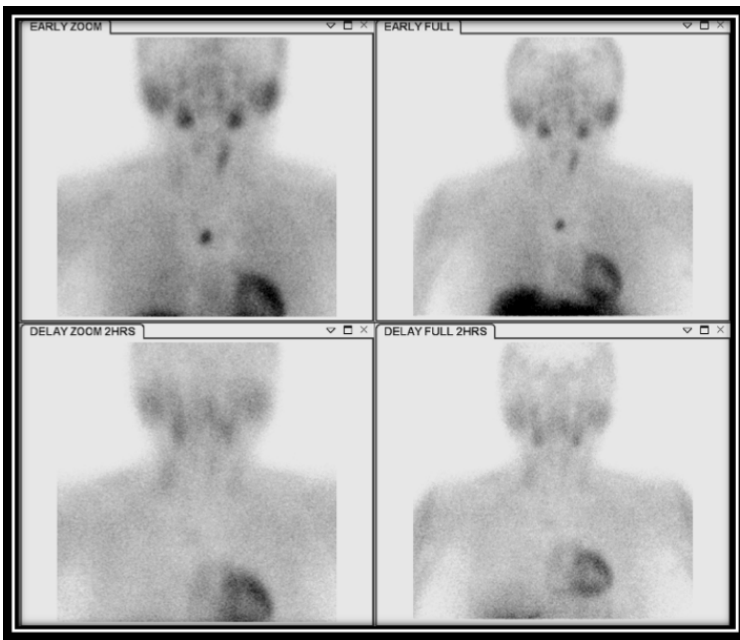
Adenoma laterally anterior to trachea approved by SPECT CT .

What is the most likely diagnosis?

Eutopic Parathyroid adenoma.

To help the surgeon we order SPECT CT to localize tumor .

30 year old male patient with suspected hyperparathyroidism



What is the study?

Parathyroid scan and SPECT CT.

What is the agent used?

Tc-99m Sestamibi (Dual Phase) ,(SPECT CT)

What are the imaging findings?

Ectopic retrosternal nodule (PT adenoma)

What is the plan of treatment?

both Thoracic and endocrine surgeons need to be involved in this surgery .