

Disorders of the Thyroid Gland

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Lectures

- 1. Diseases of the thyroid gland.**
2. Diseases of the adrenal gland.
3. Disorders of calcium homeostasis. Osteoporosis, osteomalacia.
4. Diabetes mellitus
5. Disorders of the hypothalamus and the pituitary: acromegaly, diabetes insipidus.
Endocrine and metabolic emergencies.
6. Introduction to hematology. Anemias. Blood groups and transfusion.
7. Bleeding disorders and their relevance in dental practice
8. Thrombophilias. Prevention and treatment of arterial and venous thromboembolism.
9. Myeloproliferative diseases. Myelodysplasia. Acute leukemias.
10. Hodgkin disease. Non-Hodgkin lymphomas. Multiple myeloma. Emergencies in hematology.
11. Systemic autoimmune diseases: SLE, PSS, Sjögren sy, dermatomyositis, polymyositis.
12. Infections of the oropharynx and the respiratory tract. Infective endocarditis.
Infections of the gastrointestinal and the urinary tract. Sepsis.

Connection to the dentistry:

close to each other neighbor

higher operation risk

radiating pain

macroglossia

osteoporosis

agranulocytosis

bone metastasis

Agenda

Overview

Struma nodosa

Hyperthyroidism

Hypothyroidism

Inflammation of thyroid gland

Malignancy of thyroid gland

nyaki
verőér

nyaki visszér

gégefőizom

jobb oldali
pajzsmirigy-
lebeny

középső
lebeny

kulcscsont alatti
verőér

nyelvcsont

felső
pajzsmirigy
verőér

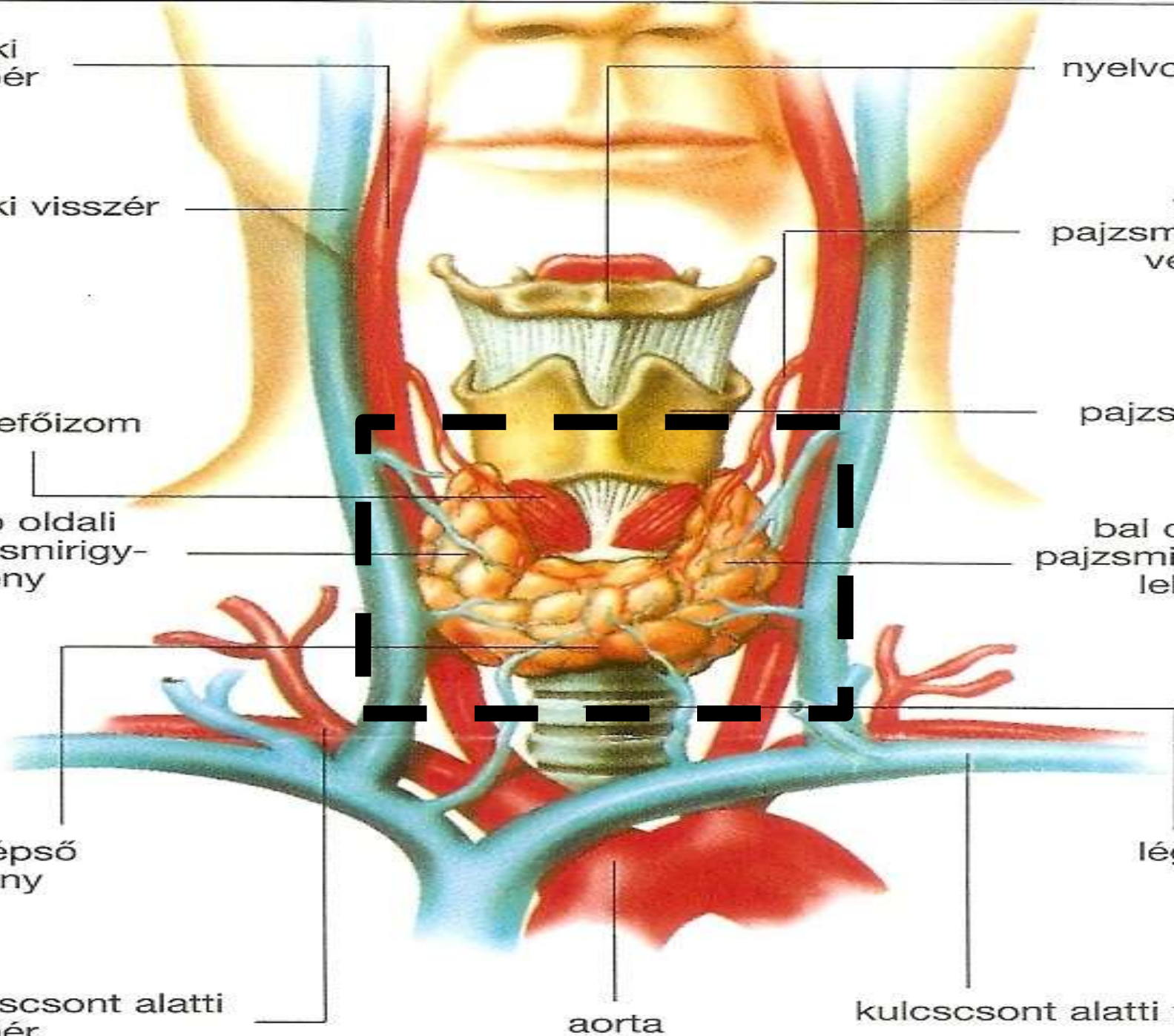
pajzsporc

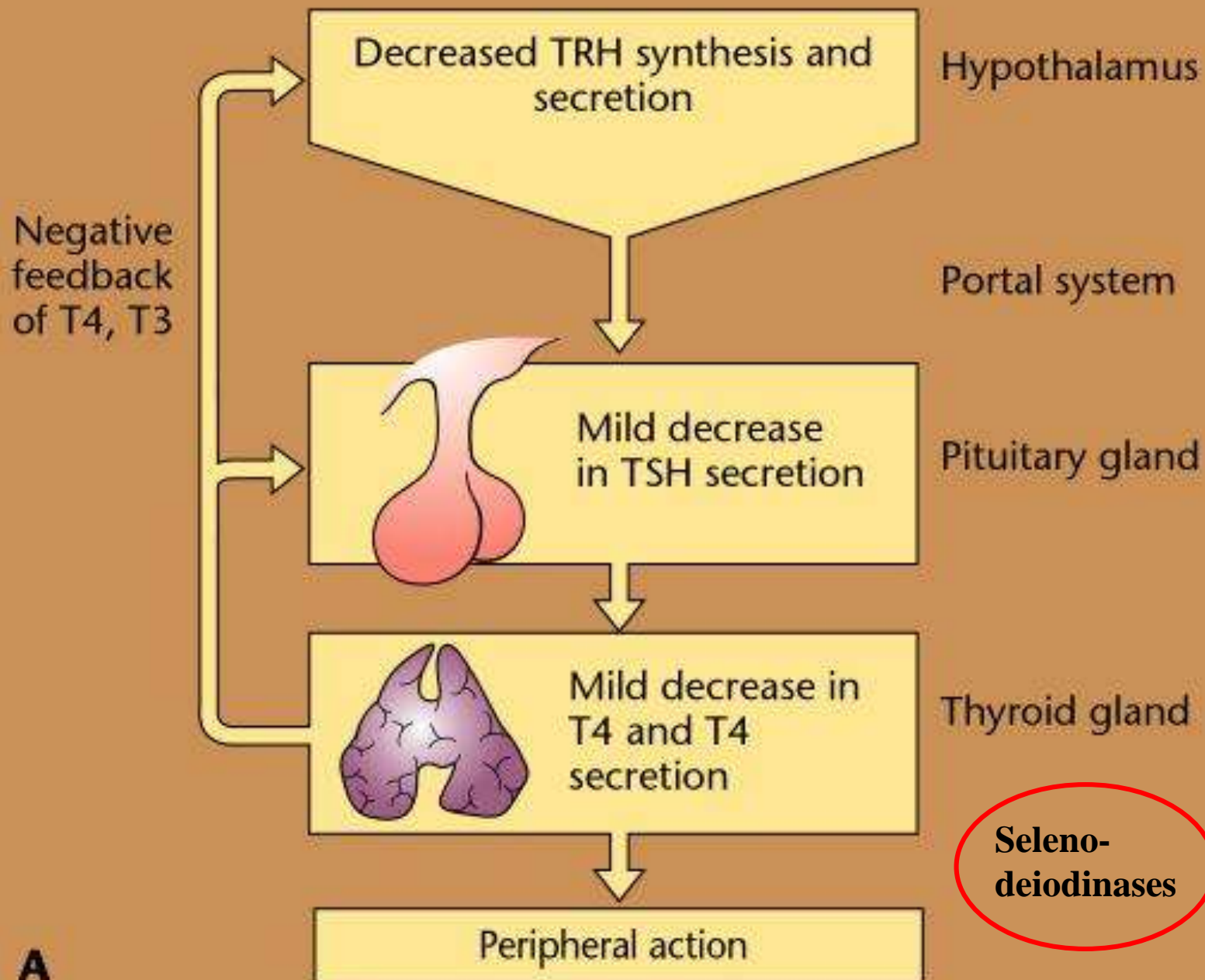
bal oldali
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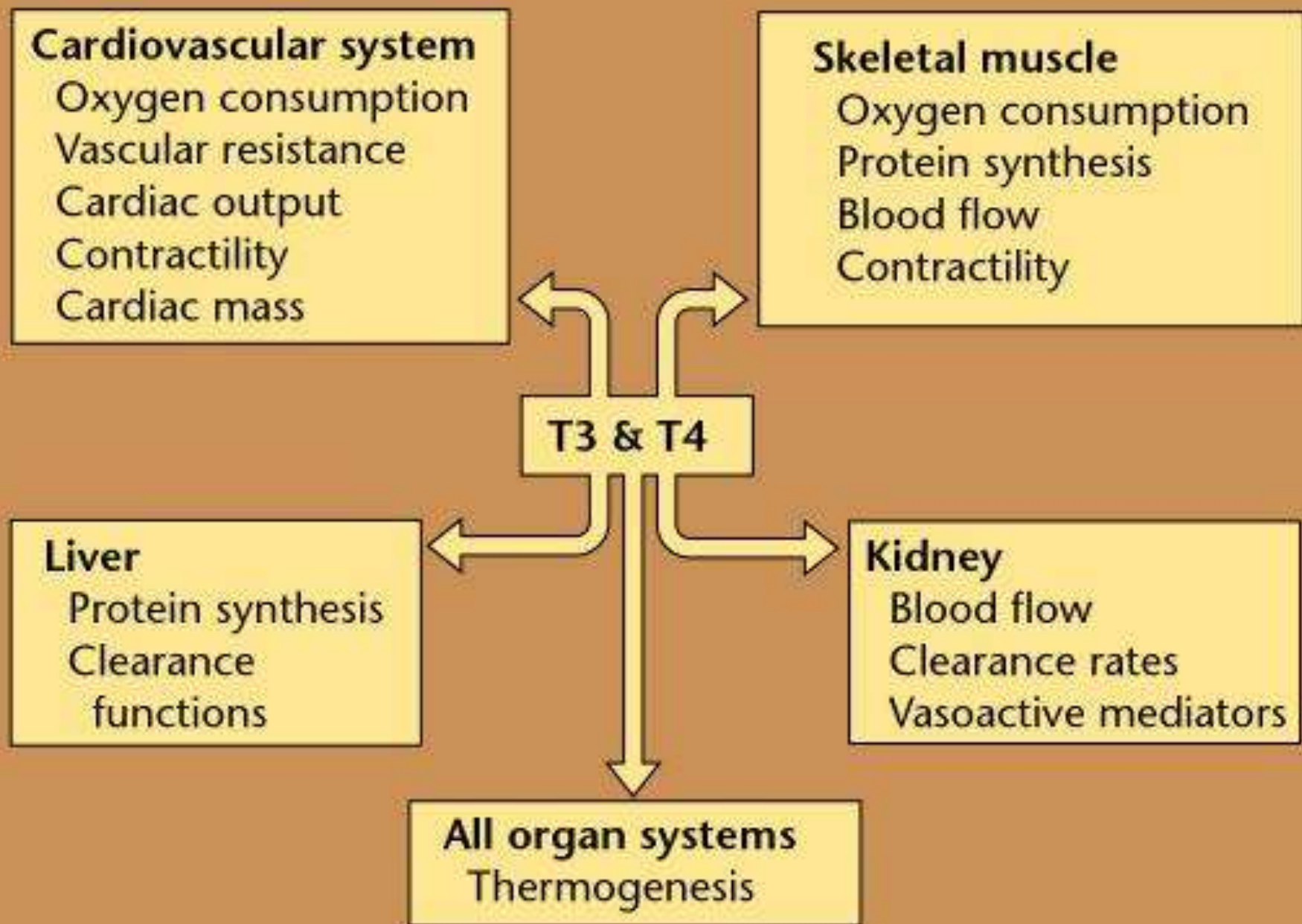
aorta

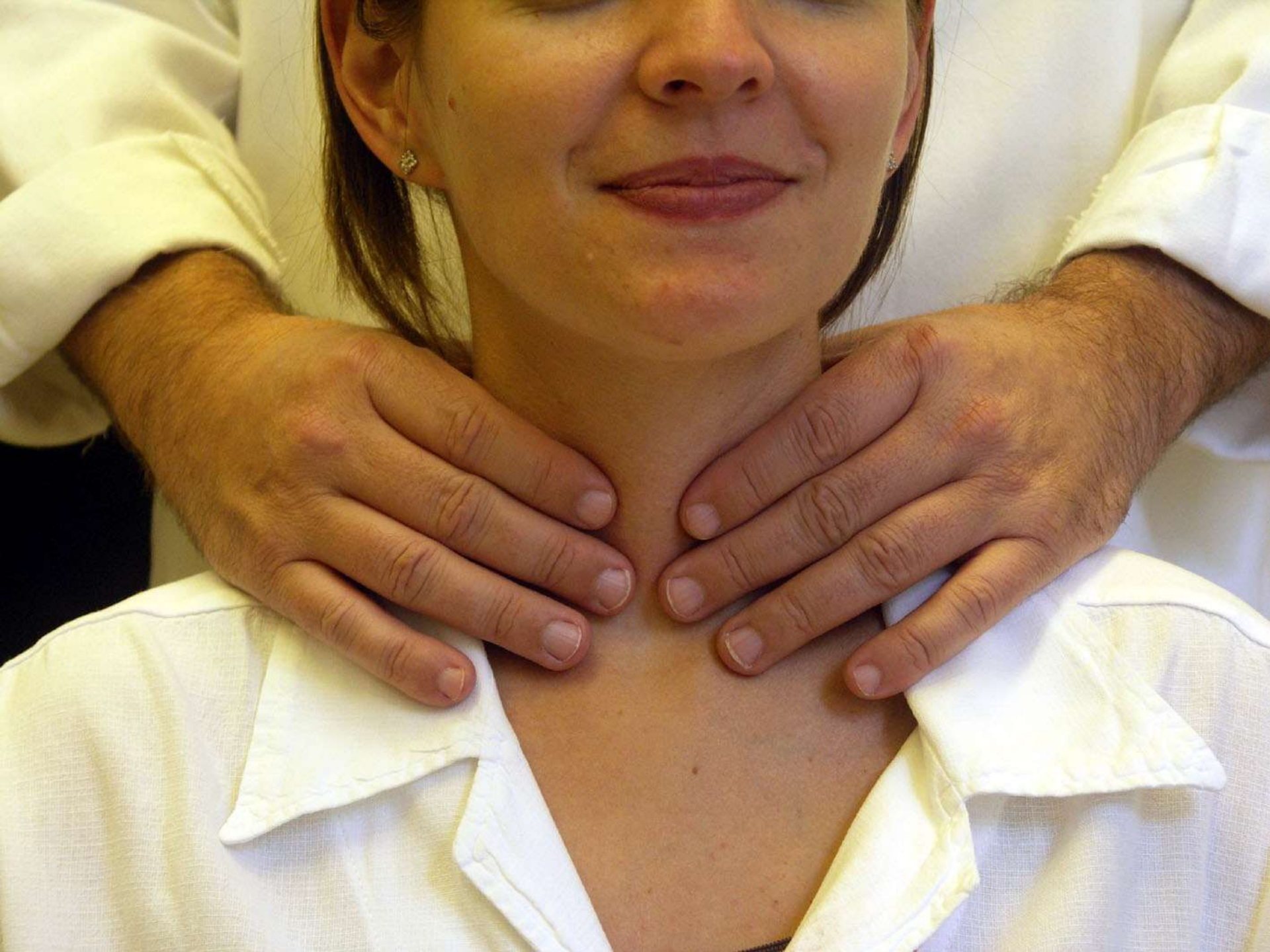
kulcscsont alatti véna





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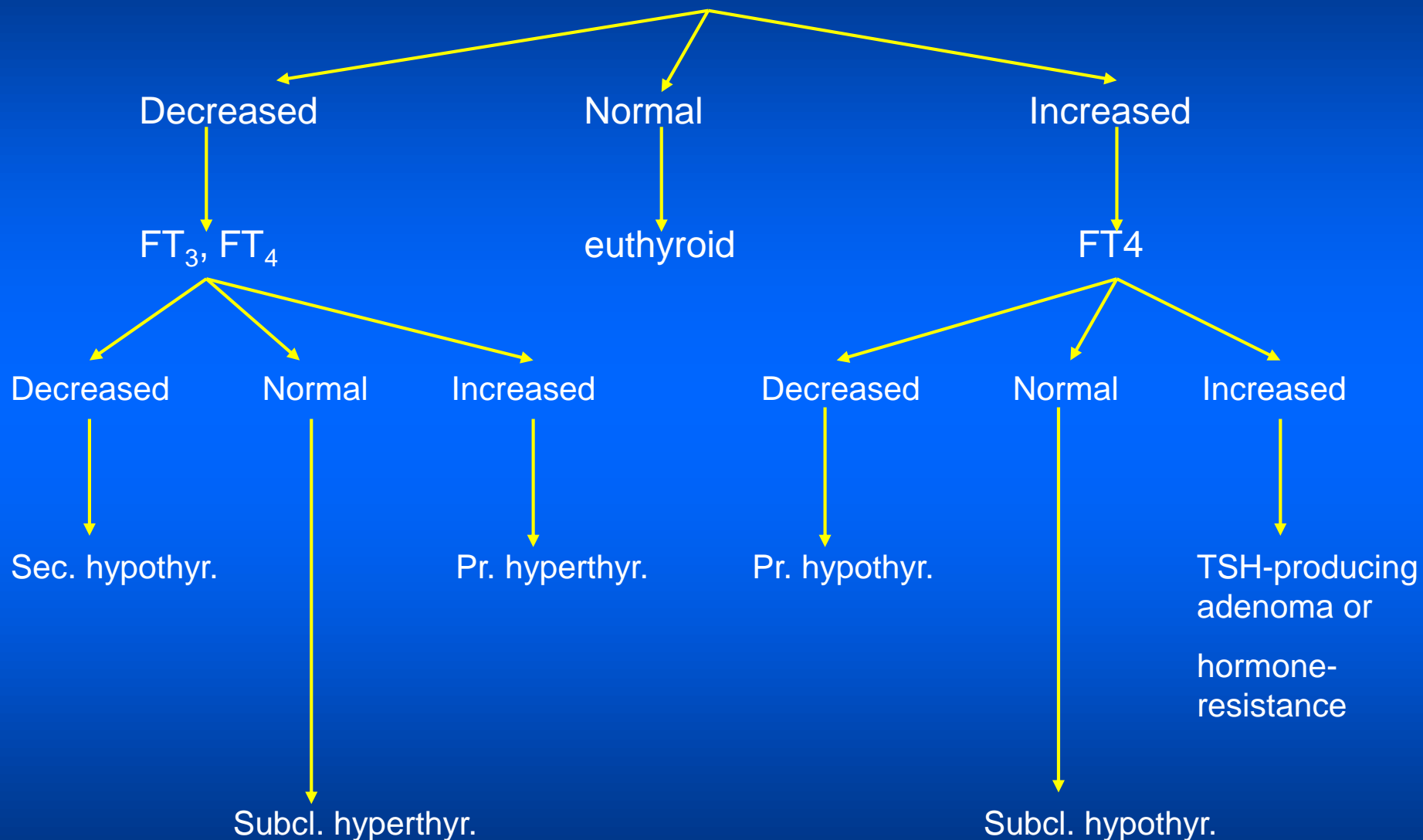




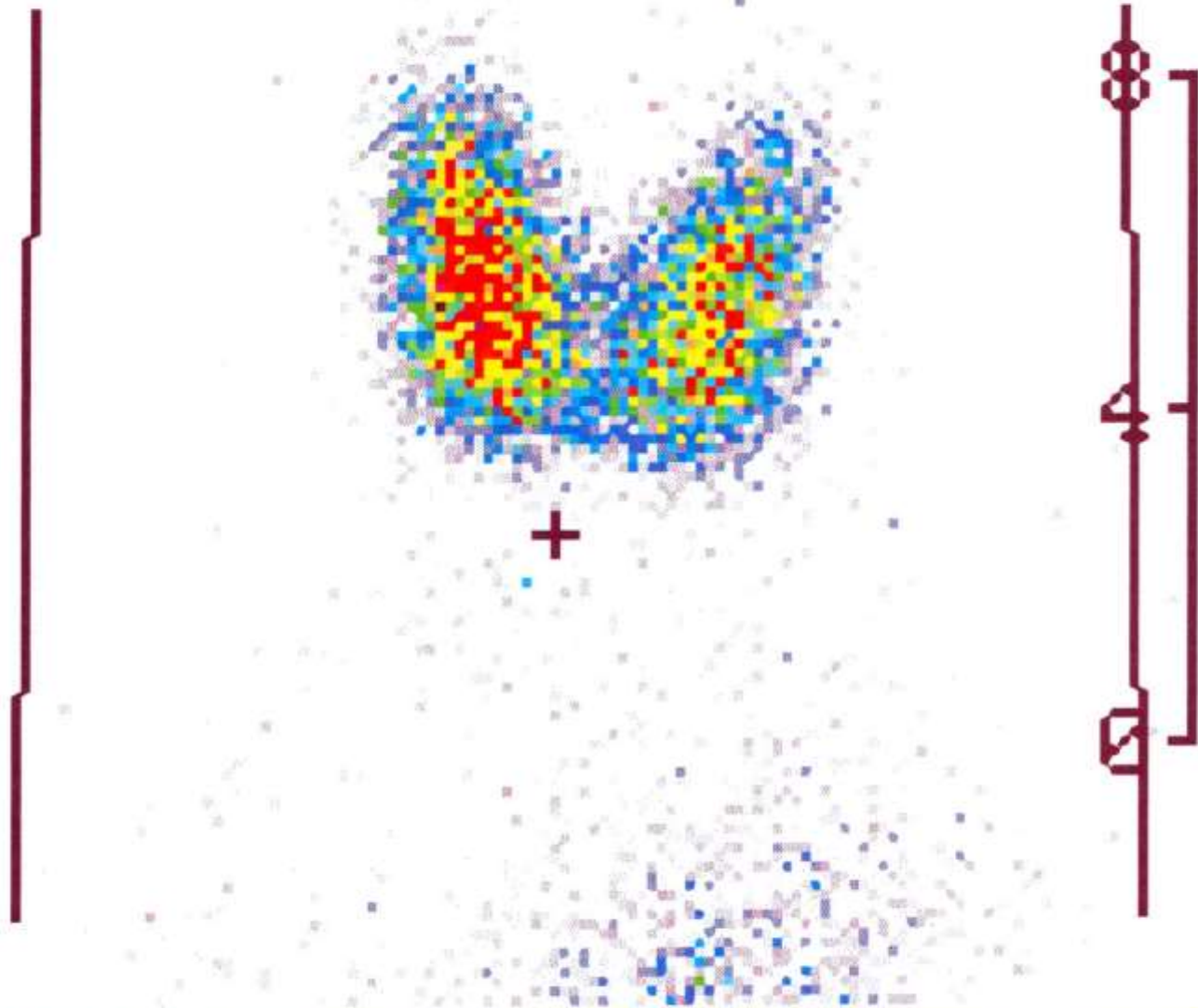
Thyroid tests

- In vitro:
 - *TSH, FT4, FT3, (T4, T3)*
 - *aTPO, TRAK*
 - *TG, aTG*
 - *TBG*
- In vivo:
 - X-ray
 - scintiscan, US, (CT, MR, PET)
 - I-uptake
 - FNAB

TSH

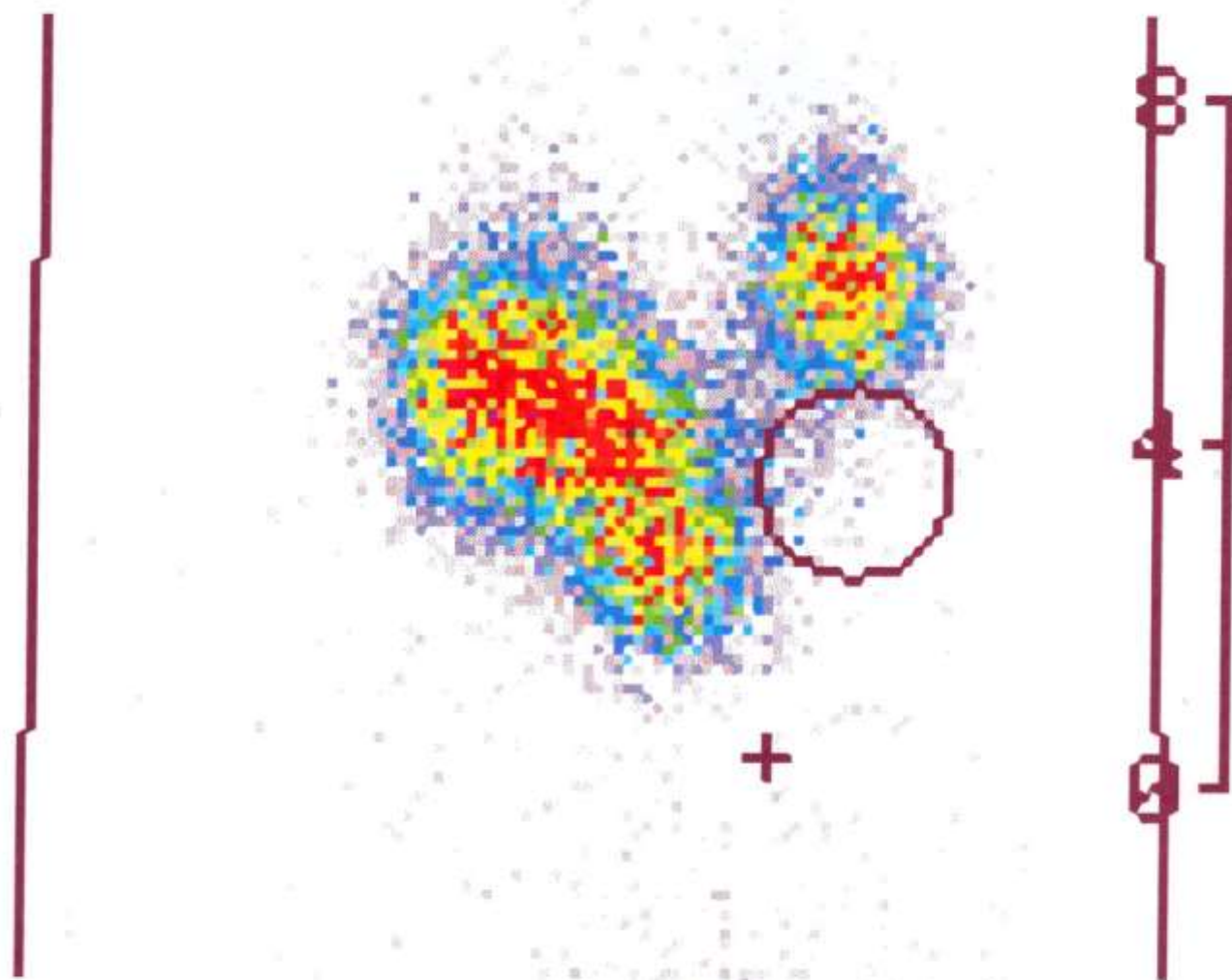


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Endemic Goiter

hypo-normo-hyper function

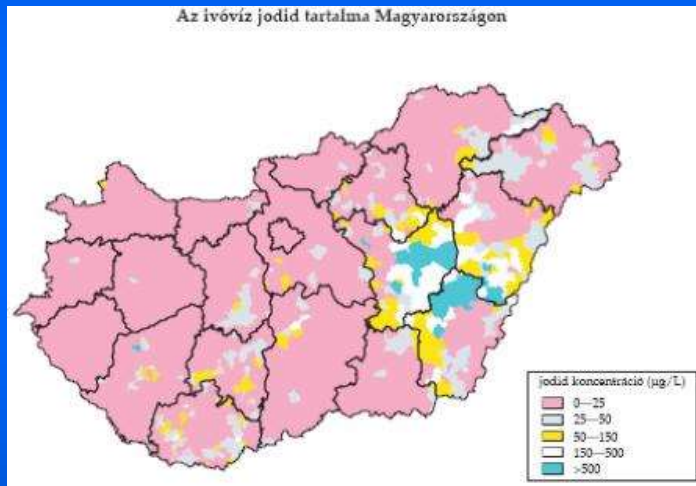
Inborn -acquired

Frequent (5-10 % Hungary)



Struma simplex diffusa

- Iodine supply less than 100-150 μg



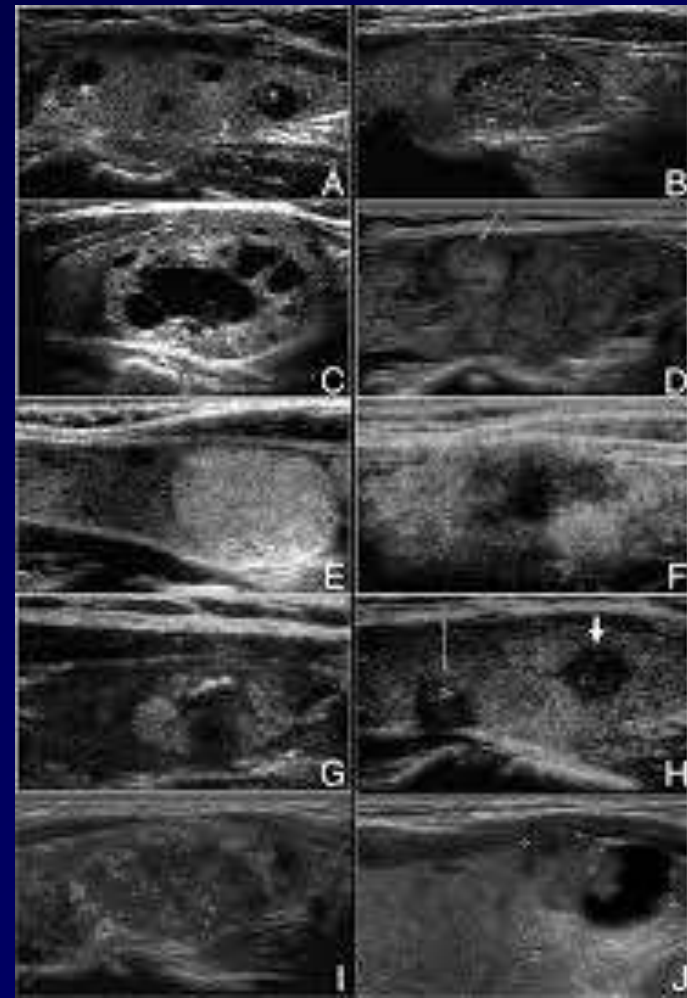
Treatment

- 1, Conservative: 200 μg iodine (l-thyroxin); 40 years 30%
- 2, Surgical
- 3, Iodine isotope: 20-40 %

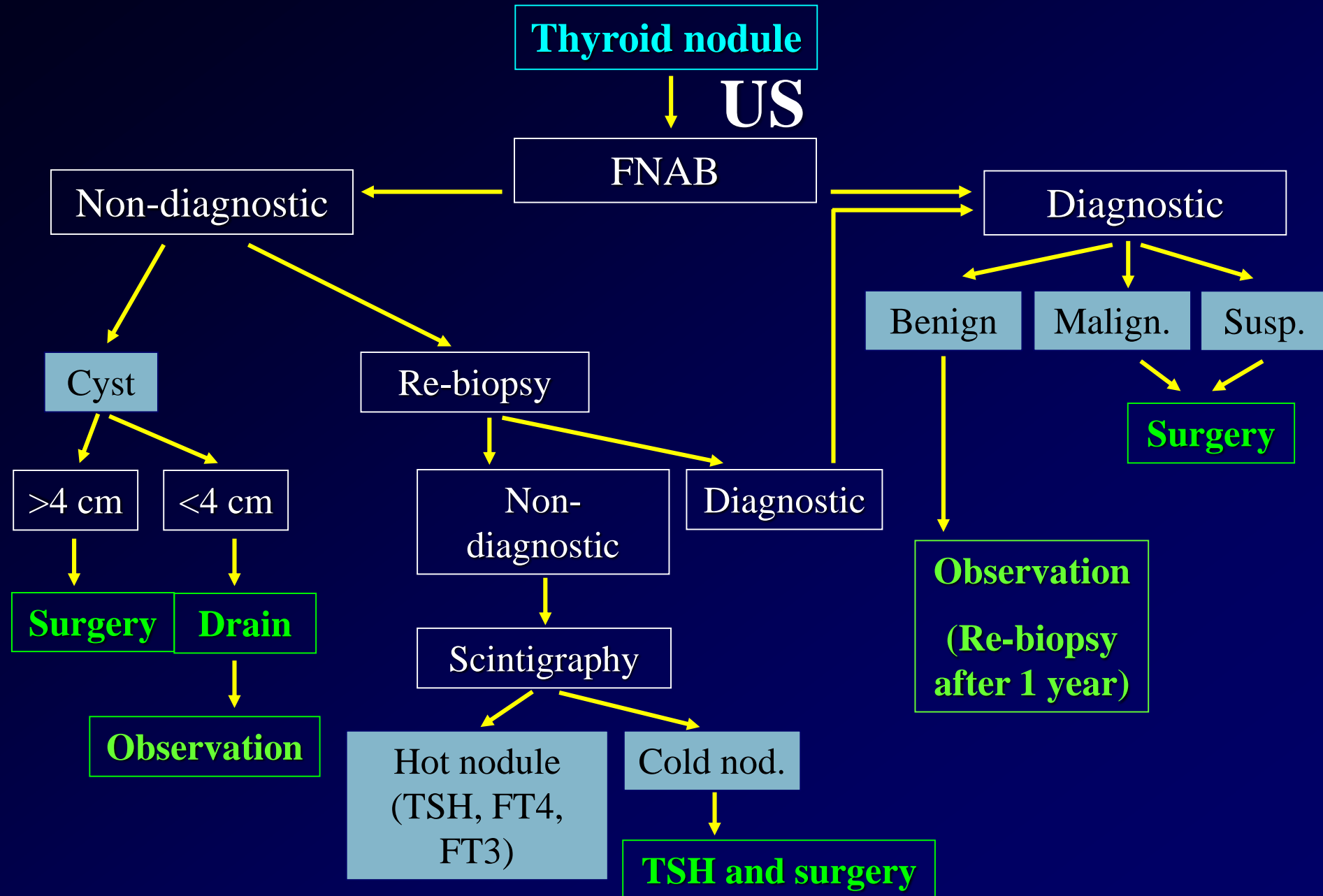
Thyroid nodules

20-30 (5-10%) !!!!

- **Origin: cyst, necrotized adenoma, focal thyroiditis, tumor**
- **Nodules on scintiscan: cold, warm, hot**
- **Examination: physical, scintiscan, US, FNAB**



Diagnostic procedure of thyroid nodules I.



Causes of Transient or Permanent Hyperthyroidism

Graves-Basedow disease

Toxic goiter (autonomous adenoma)

Toxic multinodular goiter

Iatrogen

Thyroiditis (subacute)

Differentiated thyroid tumors

Rare causes (*Struma ovarii*)

Hypothalamus

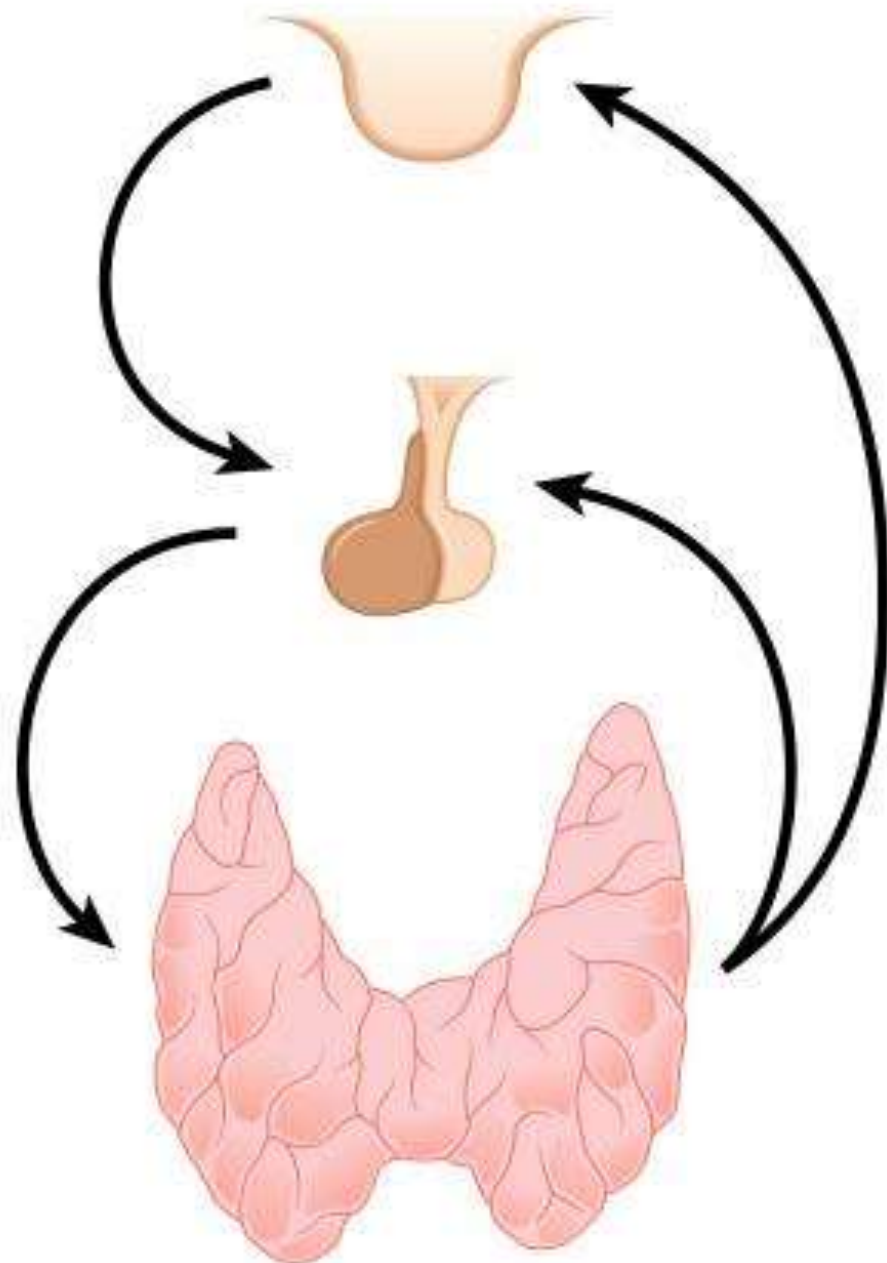
TRH

Pituitary

TSH

Thyroid

T4, T3



A

Normal physiology

Hypothalamus

TRH

Pituitary

TSH

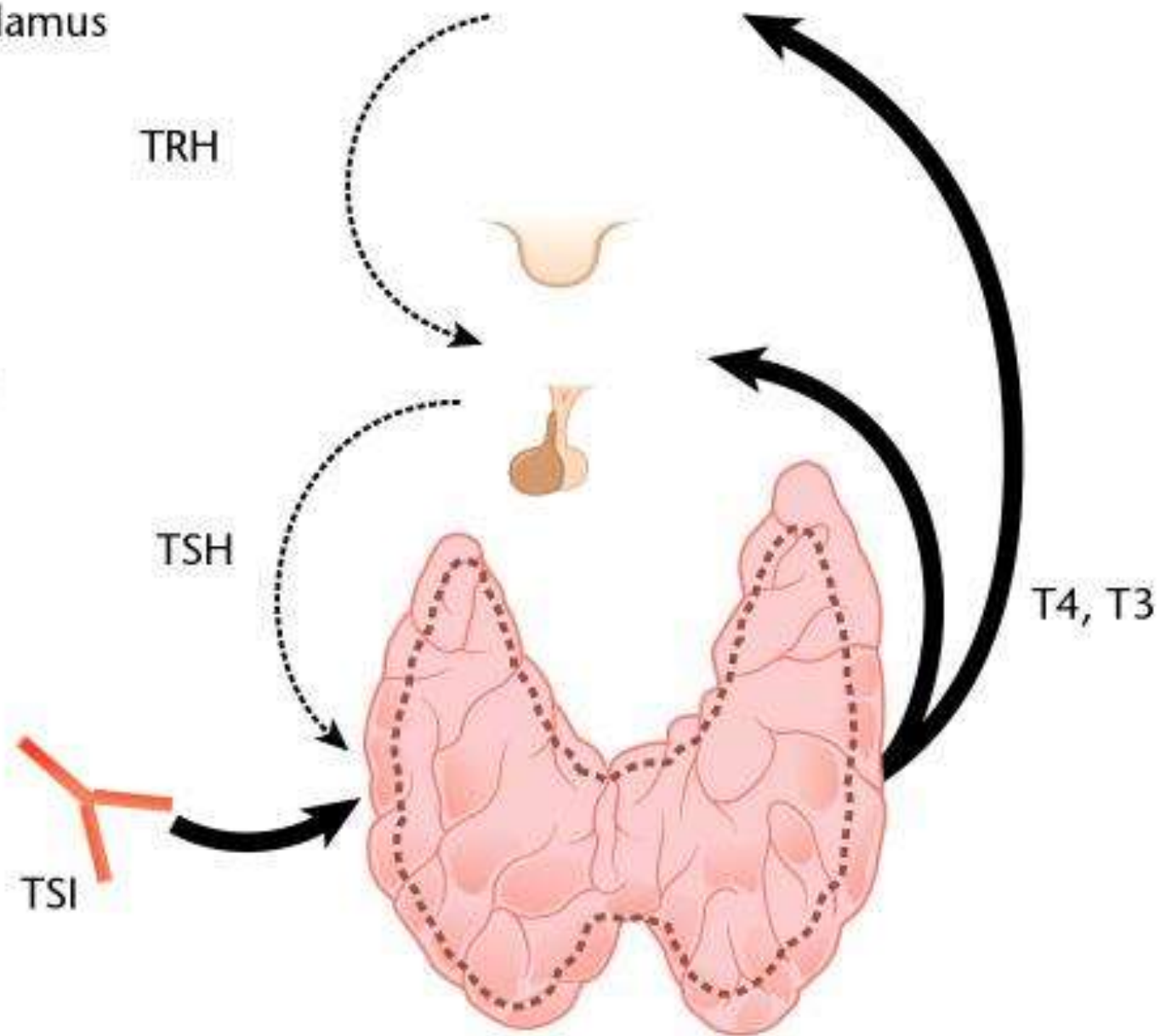
Thyroid

TSI

T4, T3

B

Graves' disease



Hypothalamus

TRH

Pituitary

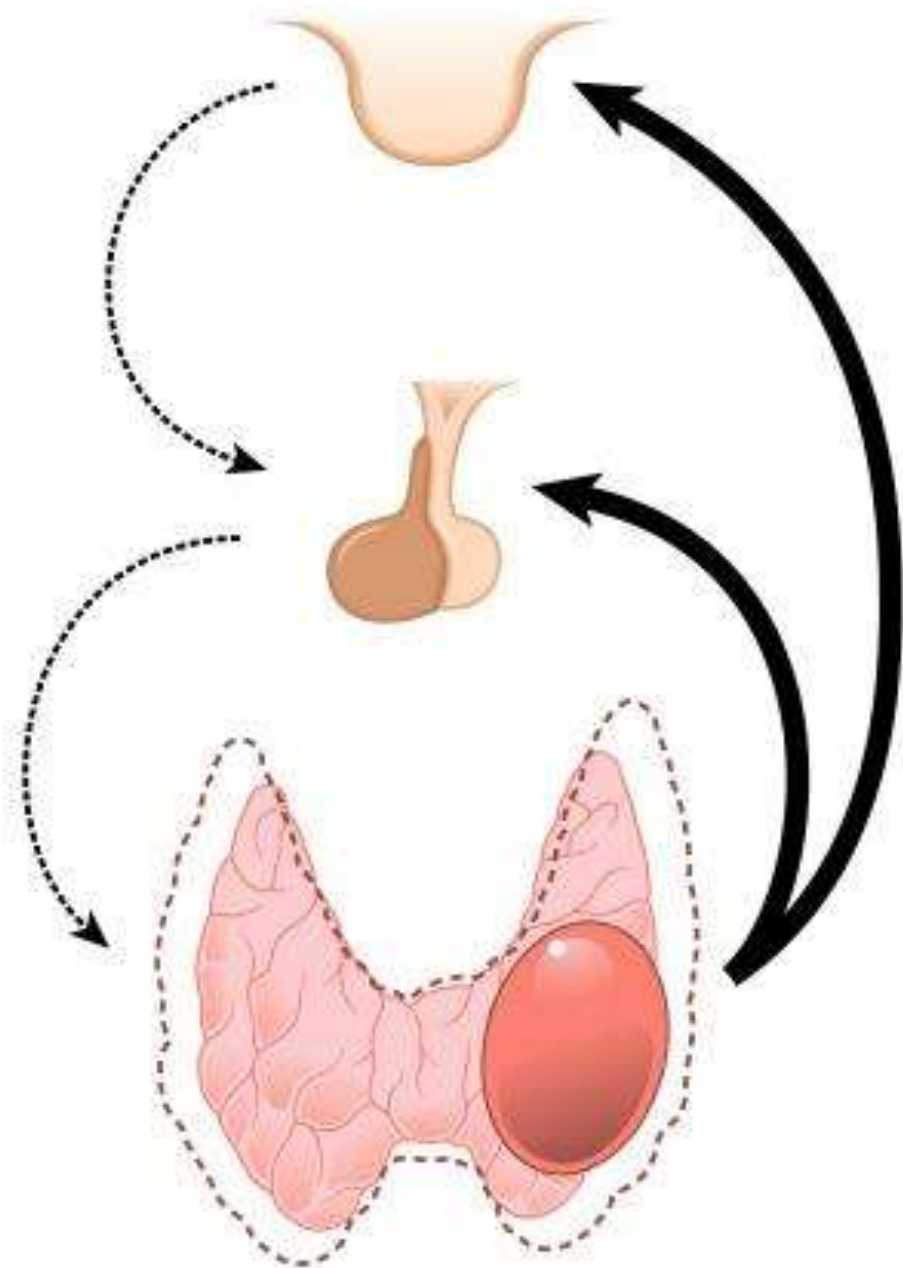
TSH

Thyroid

T4, T3

Toxic nodule

C



Common Symptoms of (Graves,) Thyrotoxicosis

Symptom	Frequency, %
Nervousness, jitteriness, irritability	99
Increased perspiration	91
Easy fatigability	88
Heat intolerance	89
Weight loss	85
Tachycardia	82
Muscle weakness	70
Insomnia	65
Increased appetite	65
Reduced job performance; marital discord	58
Eye complaints	54
Hyperdefecation	33
<i>Anorexia</i>	9*
<i>Constipation</i>	4*

**May be due to associated hypercalcemia.*

Treatment of hyperthyroidism

- Drugs
 - methimazole
 - carbimazole
 - propylthiouracil
 - lithium carbonate
 - iodine
 - dexamethasone
- Radioiodine therapy
- Surgery

Causes of Transient or Permanent Hypothyroidism

Destructive

Postoperative

Radioactive iodine

External radiation to neck

Infiltrative disease (eg, sarcoidosis, amyloidosis, lymphoma, metastatic carcinoma)

Autoimmune

Hashimoto's disease

Following Graves' disease

Thyroiditis (subacute, silent, postpartum)

Drug-induced (iodides, lithium, thionamides)

Hereditary or congenital

Enzyme deficiency affecting thyroid hormone biosynthesis

Agenesis

Hormone resistance

Endemic cretinism

Hypothalamic-pituitary disorders

Thyrotropin-releasing hormone deficiency

Thyroid-stimulating hormone deficiency

Idiopathic

Goitrous and nongoitr. primary hypothyroidism with negative anti-thyroid antibodies

Clinical Presentation of Thyroid Hormone Deficiency

Symptoms

General

Cold intolerance
Fatigue
Mild weight gain

Nervous system

Lethargy
Memory defects
Poor attention span
Personality change

Weakness
Muscle cramps
Joint pain

Gastrointestinal system

Nausea
Constipation

Cardiorespiratory system

Decreased exercise tolerance

Reproductive system

Decreased libido
Decreased fertility
Menstrual disorders

Skin and appendages

Dry, rough skin
Puffy facies
Hair loss
Brittle nails

Signs

Hypothermia
Mild obesity
Hoarse voice

Somnolence
Slow speech
Myxedema wit
Psychopathology: myxedema madness
Diminished hearing and taste
Cerebellar ataxia
Delayed relaxation of deep tendon refl.
Carpal tunnel syndrome Musculoskeletal
Normal strength
Normal joint examination

Large tongue
Ascites

Bradycardia
Mild hypertension
Pericardial effusion
Pleural effusion

Normal secondary sex characteristics

Nonpitting edema of hands, face, ankles

Periorbital swelling
Pallor
Yellowish skin (due to carotenemia)
Coarse hair
Dry axillae

Primary hypothyroidism

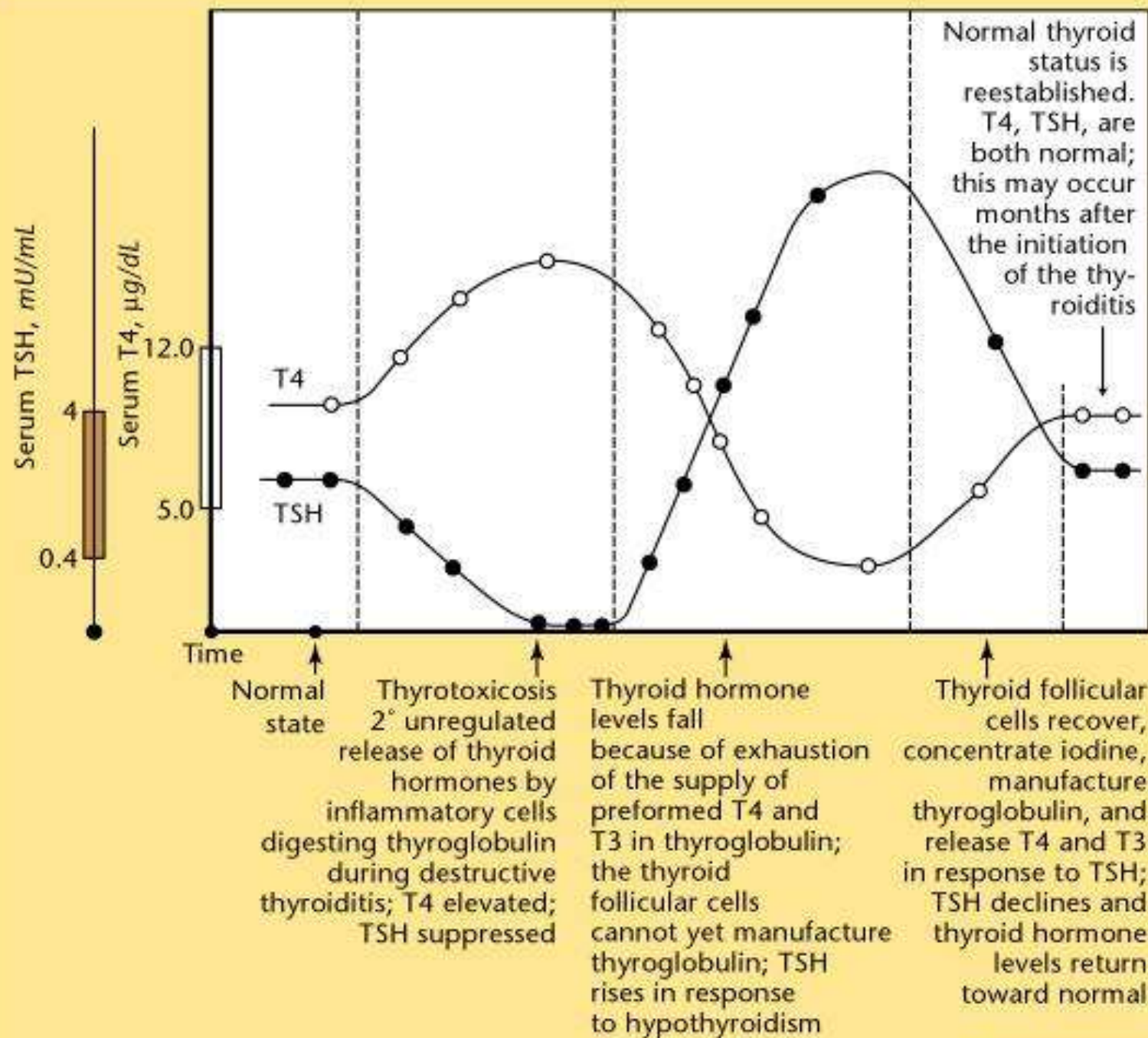
- Lab tests
 - TSH elevated
 - FT₃ and FT₄ decreased
 - (aTPO positive in case of Hashimoto thyroiditis in the background)

Treatment of hypothyroidism

- Replacement therapy with L-thyroxine
 - dosage
 - administration (how to take in)
 - monitoring

Types of thyroiditis

- **Acute**
- **Subacute**
 - **De Quervain (granulomatous or giant cell)**
 - **Post-partum**
 - **Silent**
 - **Drug-induced (alfa-interferon, interleukin-2, amiodaron)**
 - **Irradiation-induced**
- **Chronic lymphocytic (Hashimoto)**
- **Riedel**



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Thyroid tumors

- **Benign**
 - Follicular adenoma
 - Other (Hürthle cell adenoma)
- **Malignant**
 - Papillary cc. (Hürthle cell tumor)
 - Follicular cc.
 - Medullary cc.
 - Anaplastic cc.
- **Rare malignant tumors**
 - Fibrosarcoma
 - Carcinosarcoma
- **Haemangioendothelioma, lymphoma, teratoma, mets.**

Treatment of thyroid tumors

- **Surgery**
- **Radioiodine**
- **L-thyroxine suppression**

Non-thyroidal illness (NTI)

Acute

Chronic

TSH	norm., [↑↑]	↓, norm.
TT4	norm., [↑↑]	↓, norm.
fT4	norm., [↑↑]	↓, norm.
TT3	↓	↓ ↓
fT3	↓	↓ ↓
rT3	↑↑	↑↑ ↑↑

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close to each other neighbor

higher operation risk

radiating pain

macroglossia

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bone metastasis

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