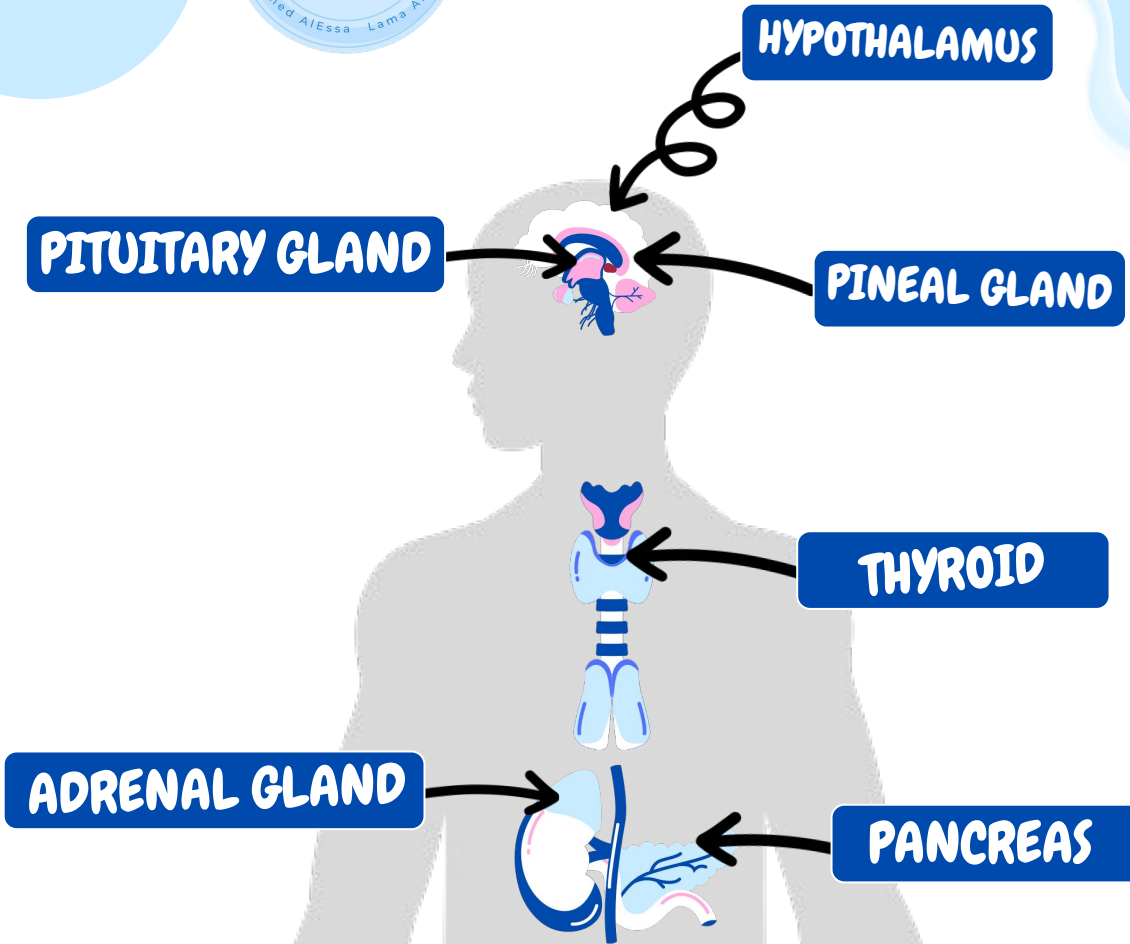


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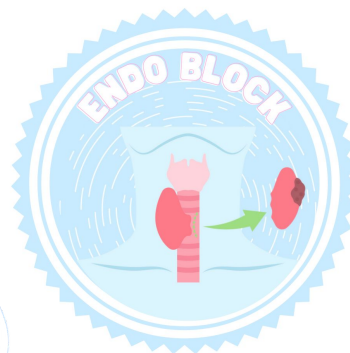
Hypo/Hyperthyroidism

Hashimoto's thyroiditis

Editing File

Color index :

- Main text (black)
- Female Slides (Pink)
- Male Slides (Blue)
- Important (Red)
- Dr's note (Green)
- Extra Info (Grey)



Objectives

- ★ To know the ways in which thyroid disorders present.
- ★ To understand the major causes and clinical manifestations of hypo,hyperthyroidism and thyroiditis.
- ★ To recognize the pathophysiology, gross and microscopic morphology and clinical manifestations of Graves disease and Hashimoto thyroiditis.
- ★ To list the causes of the thyroid goiter and its pathology.

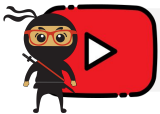
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أقرب للـ Physiology

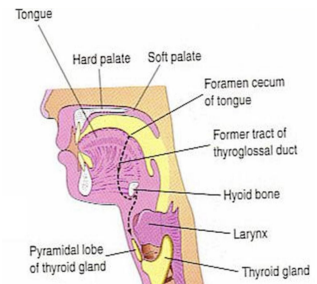
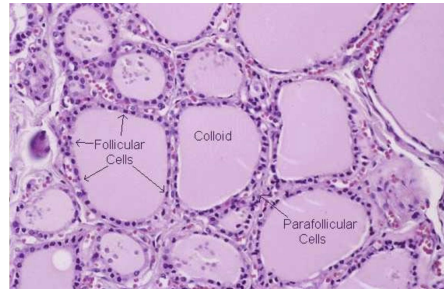
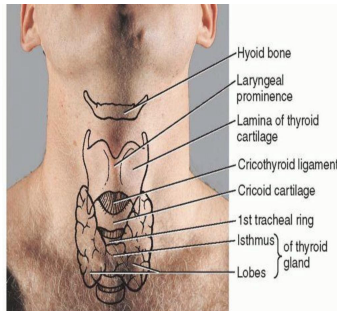
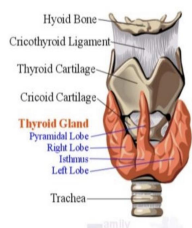
شاملين الـ لكتشر

Introduction

Thyroid Anatomy

- The thyroid gland consists of two bulky lateral lobes connected by a relatively thin isthmus, usually located below and anterior to the larynx.
- The thyroid gland develops embryologically from an invagination of the developing pharyngeal epithelium that descends from the foramen cecum at the base of the tongue to its normal position in the anterior neck.

Anatomy of Thyroid gland



Ectopic thyroid tissue

Thyroid Disease

- Clinical recognition of diseases of the thyroid is important, because most are amenable to medical or surgical management.

Diseases include

Thyroid hormone deficiency
(hypothyroidism)

Excessive release of thyroid hormones
(hyperthyroidism)

Mass lesions



Hyperthyroidism

Overview

THYROTOXICOSIS

is a hypermetabolic state due to elevated circulating levels of **free T3 and T4**.
Whatever the cause

HYPERFUNCTION

Because it is caused most commonly by **hyperfunction of the thyroid gland**, thyrotoxicosis often is referred to as hyperthyroidism.

CONDITION

In certain conditions, however, the oversupply either is related to excessive release of preformed thyroid hormone (e.g., in thyroiditis) or comes from an extrathyroidal source, rather than a hyperfunctioning gland.

Thyrotoxicosis means increase in the circulating levels of thyroid hormones whatever the cause is, but hyperthyroidism is related to the thyroid gland. (problem is in the gland itself)

causes

Causes of thyrotoxicosis

Associated with hyperthyroidism	Not Associated with hyperthyroidism
<p>Primary : The three most common causes of thyrotoxicosis:</p> <ol style="list-style-type: none">1. Diffuse toxic hyperplasia (Graves disease) accounts for 85% of cases2. Hyperfunctioning ("toxic") multinodular goiter3. Hyperfunctioning ("toxic") adenoma of thyroid <p>Others:</p> <ol style="list-style-type: none">4. Iodine-induced hyperthyroidism5. Neonatal thyrotoxicosis associated with maternal Graves disease <p>Secondary:</p> <ol style="list-style-type: none">1. TSH-secreting pituitary adenoma (rare)	<ol style="list-style-type: none">1. Granulomatous (de Quervain) thyroiditis (painful)2. Subacute lymphocytic thyroiditis (painless)3. Struma ovarii (ovarian teratoma with ectopic thyroid)4. Factitious thyrotoxicosis (exogenous thyroxine intake)



Hyperthyroidism



Clinical manifestation

Hypermetabolic state induced by **excessive amounts of thyroid hormone, over activity of the sympathetic nervous system:**



Constitutional Symptom



Gastrointestinal (**diarrhea**)



Cardiac (**palpitations**)



Neuromuscular



Ocular



Thyroid storm (medical emergency)



Apathetic hyperthyroidism



weight loss

Diagnosis

1

The diagnosis of hyperthyroidism is based on clinical features and laboratory data.

3

Free thyroid hormone assays.

2

The measurement of serum TSH is the most useful single screening test for hyperthyroidism

4

Measurement of radioactive iodine uptake by the thyroid gland.

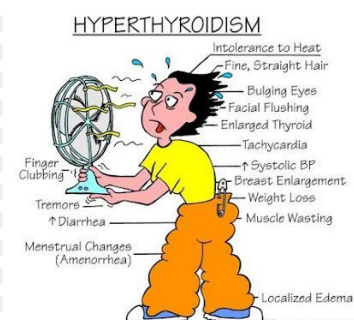
Deep Focus Question



Which symptom is not suggestive of hyperthyroidism?

- A. Weakness in the hips or shoulders
- B. Weight gain
- C. Palpitations
- D. Tremulousness

Answer: B



Graves Disease

Prevalence

- 1** Peak incidence between the ages of **20** and **40**.
- 2** **Women** being affected up to seven times more commonly than men.
- 3** **Most common** cause of endogenous hyperthyroidism.

Genetic factors

IMPORTANT

Genetic factors are important in the causation of Graves disease.

1

polymorphisms in genes whose products regulate T-cell responses

3

Graves disease is associated with the presence of certain human leukocyte antigen (HLA) haplotypes, specifically **HLA-DR3**

2

T-cell responses, including the inhibitory T- cell receptor **CTLA-4**.

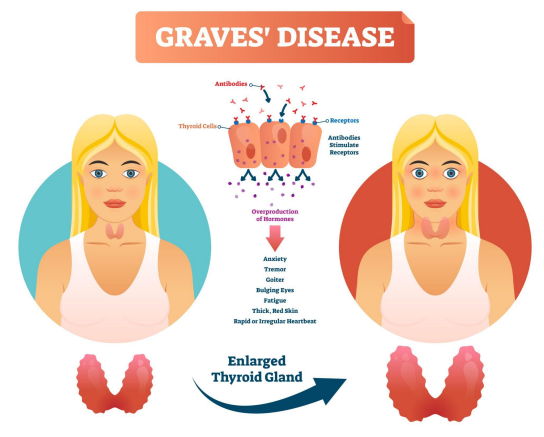
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Laboratory findings

IMPORTANT

Laboratory findings in Graves disease include **elevated serum free T4 and T3** and **depressed serum TSH**.

Because of ongoing stimulation of the thyroid follicles by TSIs, radioactive iodine uptake is increased, and radioiodine scans show a diffuse uptake of iodine.



Graves Disease



Pathogenesis

IMPORTANT

Graves disease is characterized by a breakdown in self-tolerance to thyroid autoantigens, of which the most important is the TSH receptor.

The result is the production of **multiple autoantibodies**, including:

01

Thyroid Stimulating Immunoglobulin

An IgG antibody that binds to the TSH receptor and mimics the action of TSH, relatively specific for Graves disease.

02

Thyroid Stimulating Growth Stimulating Immunoglobulin

Also directed against the TSH receptor.

03

TSH- Binding Inhibitory Immunoglobulin

These anti-TSH receptor antibodies prevent TSH from binding to its receptor on thyroid epithelial cells and in so doing may actually inhibit thyroid cell function.

The coexistence of stimulating and inhibiting immunoglobulins in the serum of the same patient is not unusual, a finding that may explain why some patients with **Graves disease spontaneously develop episodes of hypothyroidism.**

Characterized by a triad of manifestations

Thyrotoxicosis

- Caused by a diffusely enlarged, **hyperfunctional thyroid**.
- Present in all cases.

Ophthalmopathy

An infiltrative **ophthalmopathy** with resultant exophthalmos is noted in as many as 40% of patients. In **Graves ophthalmopathy**, a result of several causes:

1. marked infiltration of the retro orbital space by mononuclear cells (mainly T cells).
2. inflammatory edema and swelling of extraocular muscles.
3. accumulation of extracellular matrix components (glycosaminoglycan).
4. increased numbers of adipocytes.

Graves' ophthalmopathy



Dermatology

A localized, infiltrative **dermopathy** (sometimes designated pretibial myxedema) is seen in a minority of cases.

- The dermopathy, if present, is characterized by thickening of the dermis, as a result of deposition of glycosaminoglycans and lymphocyte infiltration.

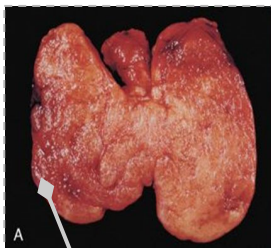


Graves Disease

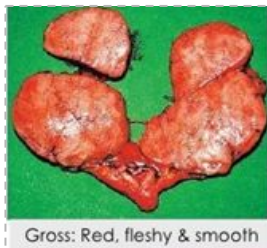
Morphology

Grossly

The thyroid gland is enlarged (usually symmetrically) due to **diffuse hypertrophy and hyperplasia** of thyroid follicular epithelial cells. The gland is usually smooth and soft, and its capsule is intact



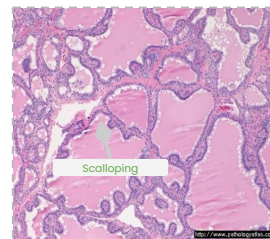
Capsule is intact



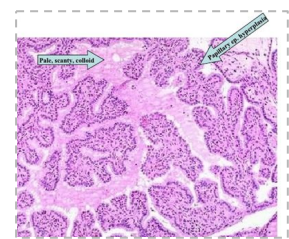
Gross: Red, fleshy & smooth

Microscopic

1- The follicular epithelial cells in untreated cases are tall, columnar, and more crowded than usual. This crowding often results in **the formation of small papillae**. Such papillae **lack fibrovascular cores**, in contrast with those of papillary carcinoma.
 2- The colloid within the follicular lumen is pale, with **scalloped margins**.
 3- Lymphoid infiltrates, are present throughout the interstitium: germinal centers are common.



Scalloping



Pale, scanty colloid

Formation of papillae

Scalloping : Happened because the hyperactive **follicular cells** use a lot of stored substances in the colloid to make more T4 and T3.



Colloid



Clinical Note

Patient with Graves' disease present with thyrotoxicosis and a diffuse goitre, In practice, aspiration is rarely performed in cases of active Graves' disease as the diagnosis is usually straightforward clinically. This is fortunate as the highly cellular aspirates can easily be mistaken for a neoplastic process by the unwary.



Hypothyroidism



- Hypothyroidism is caused by any structural or functional derangement that interferes with the production of adequate levels of thyroid hormone.
- **Worldwide**, the **most common** cause of hypothyroidism is dietary deficiency of iodine .
- Most **developed nations**, autoimmune causes **predominate**.

Laboratory Evaluation

IMPORTANT

01

Measurement of serum **TSH** is the **most sensitive** screening test for this disorder.

02

The serum **TSH is increased** in **primary hypothyroidism**.

03

Serum **T4 is decreased** in patients with hypothyroidism of any origin.

causes

Causes Of Hypothyroidism

Primary	Secondary
<ul style="list-style-type: none"> ● Postablative: Surgery, radioiodine therapy, or external irradiation. ● Autoimmune hypothyroidism: Hashimoto thyroiditis.* ● Iodine deficiency* ● Drugs (lithium, iodides, p-aminosalicylic acid)* ● Congenital biosynthetic defect (dyshormonogenetic goiter) (rare)* ● Genetic defects in thyroid development (rare) ● Thyroid hormone resistance syndrome (rare) 	<ul style="list-style-type: none"> ● Pituitary failure (rare) ● Hypothalamic failure (rare)

- *Associated with enlargement of thyroid ("goitrous hypothyroidism").
- Hashimoto thyroiditis and postablative hypothyroidism account for the majority of cases of hypothyroidism in developed countries.



IMPORTANT

Hypothyroidism

Clinical manifestations

Cretinism

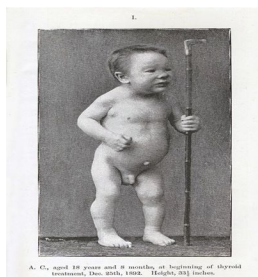
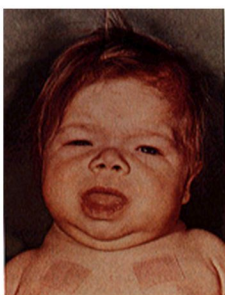
Cretinism refers to hypothyroidism developing in **infancy or early childhood**:

- Endemic cretinism
- Sporadic cretinism

Clinical features of cretinism include:

- Impaired development of the skeletal system, central nervous system
- Severe mental retardation
- Short stature
- **Coarse facial features**
- **Protruding tongue**
- **Umbilical hernia**

CRETINISM



Myxedema

Hypothyroidism developing in **older children and adults** results in a condition known as myxedema

Manifestations of myxedema include:

- **generalized apathy and mental sluggishness that in the early stages of disease**

may mimic depression

- Cold intolerance, Obesity
- The skin is cold and pale
- Shortness of breath
- Broadening and coarsening of facial features (matrix substance)
- Enlargement of the tongue
- Deepening of the voice
- Constipation
- Pericardial effusions are common
- In later stages, the heart is enlarged, and heart failure may supervene

Clinically Significant Types OF:

Dr. Amany :
Please be familiar with all names

Hashimoto thyroiditis (chronic lymphocytic thyroiditis).

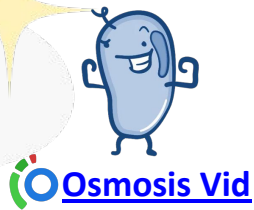
Subacute granulomatous (de Quervain) thyroiditis.

Subacute lymphocytic thyroiditis.



Hashimoto Thyroiditis

(Chronic Lymphocytic Thyroiditis)



Definition

Hashimoto thyroiditis is the **most common cause of hypothyroidism** in areas of the world where iodine levels are sufficient.

- It is characterized by gradual thyroid failure secondary to **autoimmune destruction** of the thyroid gland.
- It is most prevalent between the ages of 45 and 65 years and is more common in women than in men, with female predominance in a ratio of 10:1 to 20:1.

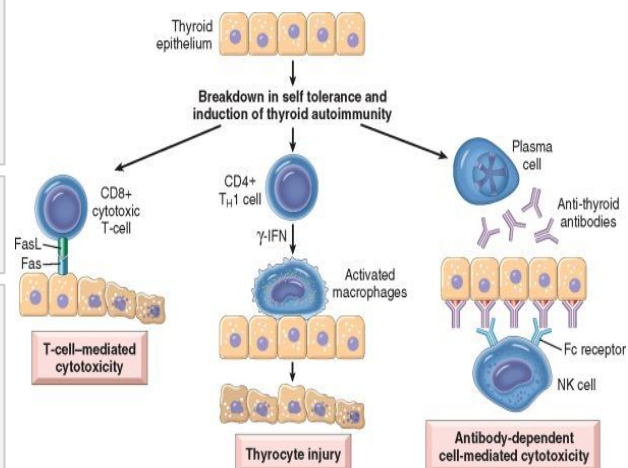
Pathogenesis

IMPORTANT

Hashimoto thyroiditis is caused by a **breakdown in self-tolerance to thyroid autoantigens**. Thus, **circulating autoantibodies** against thyroid antigens are present in the vast majority of patients.

A significant genetic component.

increased susceptibility to Hashimoto thyroiditis is associated with polymorphisms in multiple immune regulation-associated genes, the most significant of which is the linkage to **cytotoxic T lymphocyte-associated antigen-4 gene (CTLA4)**



Clinical Features

IMPORTANT

1

Painless enlargement of the thyroid, usually associated with some degree of hypothyroidism

2

It may be preceded by **transient thyrotoxicosis** caused by disruption of thyroid follicles, with secondary release of thyroid hormones (hashitoxicosis).

3

As hypothyroidism supervenes, T4 and T3 levels progressively fall, accompanied by a compensatory increase in TSH.

4

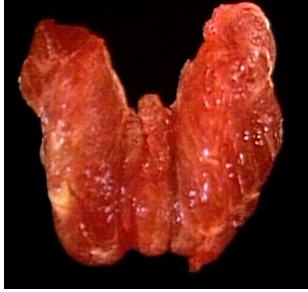
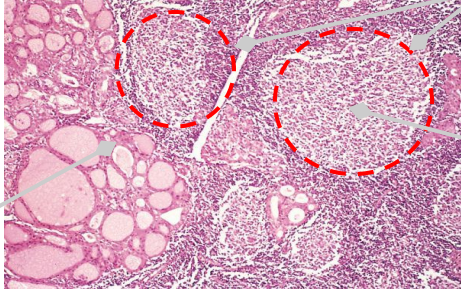
Patients with Hashimoto thyroiditis often have other autoimmune diseases and are at increased risk for the development of **B cell non-Hodgkin lymphomas**



Hashimoto Thyroiditis

(Chronic Lymphocytic Thyroiditis)

Morphology

Grossly	microscopically
<p>Diffuse and symmetrical enlargement (of both lobes), the cut surface is pale and gray-tan in appearance (normally it is a brown beef color), and the tissue is firm and somewhat friable Fine needle aspiration then thyroidectomy</p>	<p>1- Infiltration of the parenchyma by a mononuclear inflammatory infiltrate containing small lymphocytes, plasma cells, and well-developed germinal centers. 2-The thyroid follicles are atrophic and lined in many areas by epithelial cells distinguished by the presence of abundant eosinophilic, granular cytoplasm, termed Hürthle / oxyphil cells. 3-Interstitial connective tissue is increased and may be abundant. Less commonly, the thyroid is small and atrophic as a result of more extensive fibrosis (fibrosing variant) 4-Unlike in Riedel thyroiditis, the fibrosis does not extend beyond the capsule of the gland.</p>
	 <p>Hürthle Cells</p> <p>Lymphoid follicles</p> <p>Germinal Center</p>

What is the relationship between Hashimoto disease and thyroid epithelial cancers (papillary carcinoma)? The association of HT with papillary thyroid carcinoma (PTC) has been described. PTC is the most common form of malignancy associated with HT. When papillary carcinoma develops on top of Hashimoto thyroiditis, the disease tends to be less aggressive and lymph node and extrathyroidal invasion are infrequent.

Deep Focus Question



Which malignancy is associated with Hashimoto thyroiditis?

- A. Papillary carcinoma
- B. Lymphoma
- C. Anaplastic carcinoma
- D. Medullary carcinoma

Answer: B , Risk Of Lymphoma > Papillary

Deep Focus Question



What is NOT a typical FNA finding in Hashimoto's disease?

- A. Eosinophilia
- B. Hürthle cells
- C. Destruction of the follicle
- D. Lymphocytic infiltration

Answer: A



Subacute Granulomatous Thyroiditis (de Quervain)



Definition

Most common between 30 and 50 years of age.

- Like other forms of thyroiditis, occurs more frequently in women than in men.
- It is believed to be caused by a **viral infection** or an inflammatory process triggered by viral infections. A majority of patients have a history of an **upper respiratory infection** just before the onset of thyroiditis.

Course Of Disease

1

The onset of this form of thyroiditis often is acute, characterized by **pain in the neck (particularly with swallowing)**, fever, malaise, and variable enlargement of the thyroid.

2

Transient hyperthyroidism may occur, as in other cases of thyroiditis, as a result of disruption of thyroid follicles. The leukocyte count and erythrocyte sedimentation rates (**ESR**) are **increased**.

3

With progression of disease and gland destruction, a transient hypothyroid phase may ensue.

4

The condition typically is **self-limited**, with most patients returning to a euthyroid state within 6 to 8 weeks. **If we were able to diagnose clinically then there is no need for a biopsy.**

Morphology

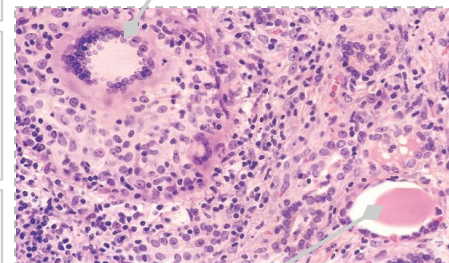
The gland is firm, with an intact capsule, and may be unilaterally or bilaterally enlarged.

Histologic examination reveals disruption of thyroid follicles, with extravasation of colloid leading to a polymorphonuclear infiltrate (**neutrophils**), which is replaced over time by lymphocytes, plasma cells, and macrophages.

The extravasated colloid provokes an exuberant granulomatous reaction with giant cells.

Healing occurs by resolution of inflammation and fibrosis.

Granuloma



Destruction of colloid follicles

Other Forms Of Thyroiditis



Subacute Lymphocytic Thyroiditis

01

In a subset of patients the onset of disease follows pregnancy (**postpartum thyroiditis**). This disease is most likely to be autoimmune in etiology.

02

Painless neck mass or features of thyroid hormone excess.

03

The histologic features consist of lymphocytic infiltration and hyperplastic germinal centers within the thyroid parenchyma.

Riedel Thyroiditis

1

Riedel thyroiditis, a rare disorder that is a manifestation of **IgG4-related disease**.

.Characterized by **extensive fibrosis** involving the thyroid and contiguous neck structures.

2

3

Clinical evaluation demonstrates a hard and fixed thyroid mass, simulating a thyroid neoplasm. **Mimic carcinoma**

4

It may be associated with idiopathic fibrosis in other sites in the body, such as the retroperitoneum

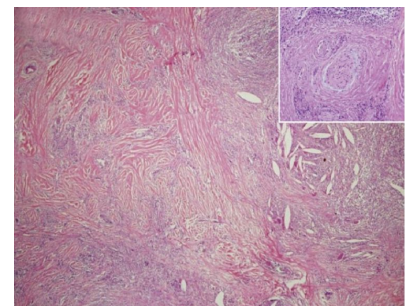
Deep Focus Question



What is the expected course of symptoms from subacute thyroiditis?

- A. 6–12 weeks of hypothyroid symptoms, followed by 2–6 weeks of thyrotoxic symptoms
- B. It depends on the viral etiology underlying the presentation.
- C. It depends on the use of NSAIDs or glucocorticoids.
- D. 2–6 weeks of thyrotoxic symptoms, followed by 6–12 weeks of hypothyroid symptoms

Answer: D





Diffuse and Multinodular Goiter

Goiter: Enlargement of the thyroid, is the most common manifestation of thyroid disease.

They reflect impaired synthesis of thyroid hormone, **most often caused by dietary iodine deficiency (endemic) or sporadic.**

Impairment of thyroid hormone synthesis leads to a compensatory rise in the serum TSH, causes hypertrophy and hyperplasia of thyroid follicular cells and, ultimately, gross enlargement of the thyroid gland.

The compensatory increase in functional mass of the gland is enough to overcome the hormone deficiency, ensuring a **euthyroid=normal** metabolic state in the vast majority of affected persons.

If the underlying disorder is sufficiently severe the compensatory responses may be inadequate to overcome the impairment in hormone synthesis, resulting in goitrous hypothyroidism.

Clinical Features

The dominant clinical features of goiter are those caused by the mass effects of the enlarged gland.

A hyperfunctioning (toxic) nodule may develop within a long-standing goiter, resulting in hyperthyroidism.

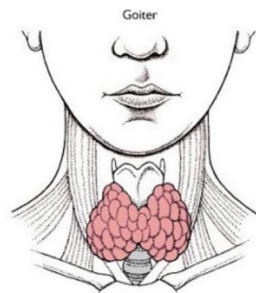
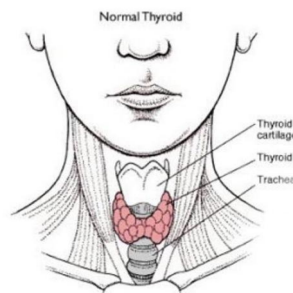
In addition to the obvious cosmetic problem of a large neck mass, goiters also may cause airway obstruction, dysphagia, and compression of large vessels in the neck

The incidence of malignancy in long-standing multinodular goiters is low (less than 5%) but not zero, and concern for malignancy arises with goiters that demonstrate sudden changes in size or associated symptoms (e.g., hoarseness).



Diffuse and Multinodular Goiter

TYPES OF GOITER can be endemic or sporadic	
DIFFUSE GOITER	<ul style="list-style-type: none">- Diffuse, symmetric enlargement of the gland.- The follicles are lined by crowded columnar cells, which may pile up and form projections.- All long-standing diffuse goiters convert into multinodular goiters.
COLLOID GOITER	<ul style="list-style-type: none">- Colloid rich gland.
MULTINODULAR GOITER	<ul style="list-style-type: none">- Typically are hormonally silent.- a minority (approximately 10% over 10 years) can manifest with thyrotoxicosis secondary to the development of autonomous nodules that produce thyroid hormone independent of TSH stimulation.- This condition, known as toxic multinodular goiter or Plummer syndrome.



Deep Focus Question



On fine-needle aspiration, a patient was found to have multinucleated giant cell granulomas. What is the most likely diagnosis?

- A. Amiodarone-induced thyroiditis
- B. de Quervain thyroiditis
- C. Silent thyroiditis
- D. Suppurative thyroiditis
- E. Riedel thyroiditis

Answer: B

Deep Focus Question




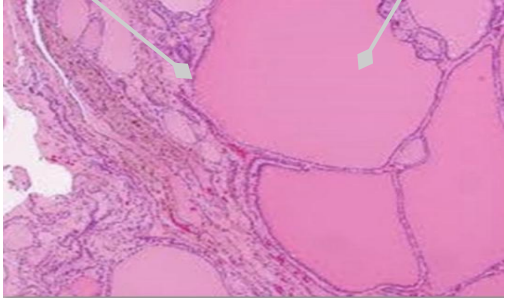
What is NOT associated with multinodular goiters?

- A. Diffuse enlargement of the anterior neck
- B. Cystic nodules filled with excessive colloid
- C. Older patients
- D. Fibrosis and eosinophilia
- E. Hemorrhage into cysts

Answer: D



Diffuse and Multinodular Goiter

Grossly	microscopically
<ul style="list-style-type: none">• Multilobulated, asymmetrically enlarged glands, which may attain massive size.• On cut surface, irregular nodules containing variable amounts of brown, gelatinous colloid.• Older lesions show fibrosis, hemorrhage, calcification, and cystic change.	<ul style="list-style-type: none">• Colloid-rich follicles lined by flattened, inactive epithelium.• Areas of follicular epithelial hypertrophy and hyperplasia.
	

Summary

- Clinical recognition of diseases of the thyroid is important, because most are amenable to medical or surgical management. Diseases include hyperthyroidism, hypothyroidism) and mass lesions.
- Chronic lymphocytic (Hashimoto) thyroiditis is the most common cause.
- Graves' disease, the most common cause of endogenous hyperthyroidism, is an autoimmune disorder. Enlargement of the thyroid, or goiter, is the most common manifestation of thyroid disease

Deep Focus Question



What is NOT true about the autoimmune etiology of Graves' disease?

- A. There is an association with diffuse toxic goiter due to autoimmune production of TSI.
- B. There is an association with HLA-DR3/
- C. It is iodine-dependent
- D. Autoimmune antibody production occurs/
- E. Exophthalmos can occur.

Answer: C

Summary

Functional classification		
	Hyperfunction (hyperthyroidism)	Hypofunction (hypothyroidism)
Overview	Hypermetabolic state induced by excessive amounts of thyroid hormone and over activity of the sympathetic nervous system	thyroid gland can't make enough thyroid hormone to keep the body running normally
Causes	<ul style="list-style-type: none"> - Graves' disease - Thyroid neoplasm - Excess TSH Secretion - Exogenous T3 And T4 	<p>Primary :</p> <ul style="list-style-type: none"> - Postablative: Surgery, radioiodine therapy - Autoimmune: Hashimoto thyroiditis - iodine Deficiency - Drugs: lithium <p>Secondary:</p> <ul style="list-style-type: none"> - pituitary insufficiency
Symptoms	<ul style="list-style-type: none"> - CVS : Palpitations - CNS : Nervousness, tremor, irritability - GIT : hyper mortality , weight loss despite increased appetite , diarrhea - Ocular : Wide, staring gaze and lid lag - Skin : Soft, warm, and flushed skin 	<p>In early life, infancy and childhood:</p> <p>Cretinism:</p> <ul style="list-style-type: none"> - Severe mental retardation - Short stature - Protruding tongue <p>In adulthood: Myxedema:</p> <ul style="list-style-type: none"> - Mental sluggishness - Shortness of breath - Broadening and coarsening of facial features - Enlargement of the tongue, deepening of voice - Cold and pale skin - Constipation and obesity - In later stages: heart is enlarged and heart failure may supervene
Diagnosis	<ul style="list-style-type: none"> - low TSH - high T3 and T4 	<ul style="list-style-type: none"> - high TSH - low T3, T4

Keywords

Hyperthyroidism	<ul style="list-style-type: none"> • elevated circulating levels of free T3 and T4. • excessive amounts of thyroid hormone • Thyroid storm 		
	<table border="1"> <tr> <td>Graves disease</td> <td> <ul style="list-style-type: none"> • HLA-DR3 • Polymorphisms in genes whose products regulate T-cell responses, including the inhibitory T-cell receptor CTLA-4. • Elevated serum free T4 and T3 and depressed serum TSH. • Thyroid-stimulating immunoglobulin • Thyroid-stimulating growth-stimulating immunoglobulin • TSH-binding inhibitory immunoglobulins • ophthalmopathy : accumulation of (glycosaminoglycan). • dermatopathy • diffuse hypertrophy and hyperplasia of thyroid follicular epithelial • formation of small papillae that lack fibrovascular cores • follicular lumen is pale, with scalloped margins. </td> </tr> </table>	Graves disease	<ul style="list-style-type: none"> • HLA-DR3 • Polymorphisms in genes whose products regulate T-cell responses, including the inhibitory T-cell receptor CTLA-4. • Elevated serum free T4 and T3 and depressed serum TSH. • Thyroid-stimulating immunoglobulin • Thyroid-stimulating growth-stimulating immunoglobulin • TSH-binding inhibitory immunoglobulins • ophthalmopathy : accumulation of (glycosaminoglycan). • dermatopathy • diffuse hypertrophy and hyperplasia of thyroid follicular epithelial • formation of small papillae that lack fibrovascular cores • follicular lumen is pale, with scalloped margins.
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Hypothyroidism	<ul style="list-style-type: none"> • The serum TSH is increased in primary hypothyroidism. • Serum T4 is decreased • Cretinism • Myxedema • Lithium treatment 		
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Keywords

Diffuse and multinodular goiter		<ul style="list-style-type: none">• Enlargement of the thyroid• dietary iodine deficiency.• euthyroid metabolic state• asymmetrically enlarged glands• irregular nodules• Older lesions show fibrosis, hemorrhage, calcification, cystic change.• Colloid-rich follicles lined by flattened, inactive epithelium.
	Diffuse goiter	<ul style="list-style-type: none">• symmetric enlargement of the gland.• follicles are lined by rowded columnar cells, which may pile up and form projections.
	Colloid goiter	<ul style="list-style-type: none">• Colloid rich
	Multinodular goiters	<ul style="list-style-type: none">• hormonally silent.• Plummer syndrome : Thyrotoxicosis secondary to the development of autonomous nodules• Low incidence of malignancy.



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MCQs

Question 1

Graves disease is associated with the presence of which human leukocyte antigen (HLA) haplotype?

A

HLA-DR3

B

HLA-DR4

C

HLA-B27

D

HLA-DQ3

Question 2

Which of the following antibodies is relatively specific for Graves disease.

A

Thyroid-stimulating immunoglobulin

B

Thyroid-stimulating growth-stimulating immunoglobulin

C

TSH-binding inhibitory immunoglobulins

D

Thyroid storm

Question 3

Riedel thyroiditis is characterized by:

A

Diffuse toxic hyperplasia

B

Painful enlargement of the thyroid gland

C

Painless enlargement of the thyroid gland

D

Fibrosis and hardening of the thyroid gland

Question 4

Which of the following is NOT a cause of thyrotoxicosis associated with hyperthyroidism?

A

Diffuse toxic hyperplasia

B

Toxic multinodular goiter

C

Thyroid adenoma

D

Struma ovarii



MCQs

Question 5

Which of the following diseases is associated with cytotoxic T lymphocyte-associated antigen-4 gene?

A

Graves disease

B

De Quervain

C

Hashimoto thyroiditis

D

A&C

Question 6

A patient came to the clinic and has a history of lithium addiction which of the following may be present in this case?

A

scalloped margins in follicular lumen

B

B cell non-Hodgkin lymphomas

C

granulomatous reaction with giant cells.

D

Pericardial effusion

Question 7

What is the underlying mechanism of ophthalmopathy in graves disease?

A

↓ in fat

B

Accumulation of glycosaminoglycans

C

Weak eye muscles

D

Nerve damage

Question 8

Which ONE of the following is a feature of Cretinism?

A

Polyuria

B

Mental retardation

C

Palpation

D

Exophthalmos





Cases

1. A 46-year-old woman complains of increasing fatigue and muscle weakness over the past 6 months. She reports an inability to concentrate at work and speaks with a husky voice. The patient denies drug or alcohol abuse. Physical examination reveals cold and clammy skin, coarse and brittle hair, boggy face with puffy eyelids, and peripheral edema. There is no evidence of goiter or exophthalmos. Laboratory studies show reduced serum levels of T3 and T4. Which of the following is the most likely underlying cause of these signs and symptoms?

A. Amyloidosis of the thyroid

B. Autoimmune thyroiditis

C. Thyroid follicular adenoma

D. Multinodular goiter

2. A 65-year-old woman with a history of multinodular goiter complains of increasing nervousness, insomnia, and heart palpitations. She has lost 9 kg (20 lb) over the past 6 months. Physical examination reveals a diffusely enlarged thyroid. There is no evidence of exophthalmos. Laboratory studies show elevated serum levels of T3 and T4. Serologic tests for antithyroid antibodies are negative. Which of the following is an important complication of this patient's endocrinopathy?

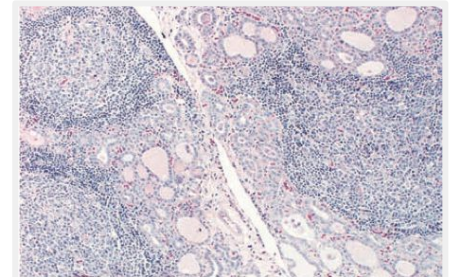
A. Autoimmune hepatitis

B. Cardiac arrhythmia

C. Follicular carcinoma of the thyroid

D. Medullary carcinoma of the thyroid

3. A 40-year-old woman complains of chronic constipation and anovulatory cycles for the last 8 months. Her vital signs are normal. Physical examination reveals peripheral edema and a firm, diffusely enlarged thyroid gland. Serum levels of T3 and T4 are abnormally low. A thyroid biopsy is shown in the image. What is the appropriate diagnosis?



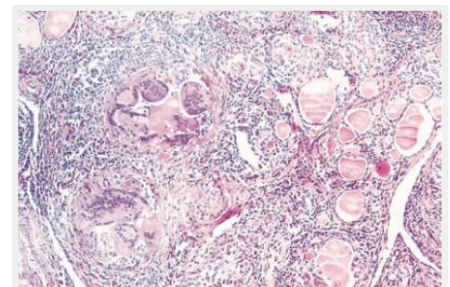
A. Acute necrotizing thyroiditis

B. Autoimmune thyroiditis

C. Multinodular goiter

D. Riedel thyroiditis

4. A 43-year-old woman complains of low-grade fever and has a 3-day history of pain in her neck. Physical examination reveals a slightly enlarged thyroid. A CBC is normal. A biopsy of the thyroid reveals granulomatous inflammation and the presence of giant cells (shown in the image). What is the appropriate diagnosis?



A. Hashimoto thyroiditis

B. Lymphadenoid thyroiditis

C. Nontoxic multinodular goiter

D. Subacute (de Quervain) thyroiditis



1-B \ 2-B \ 3-B \ 4-D

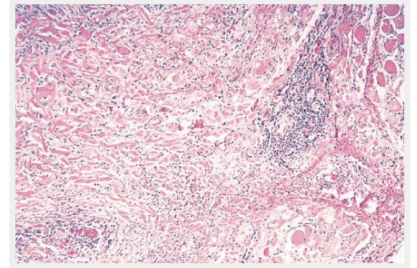


NEED EXPLANATION ? [CLICK HERE](#)



Cases

5. A 33-year-old woman complains of swelling in the anterior portion of her neck, which she first noticed 8 months ago. Except for some discomfort during swallowing and hoarseness, the patient does not report any symptoms. Physical examination reveals a stony, hard thyroid gland that is adherent to other neck structures. A thyroid biopsy is shown in the image. The pathologist reports that the thyroid parenchyma is replaced by dense, hyalinized fibrous tissue and a chronic inflammatory infiltrate. What is the appropriate diagnosis?

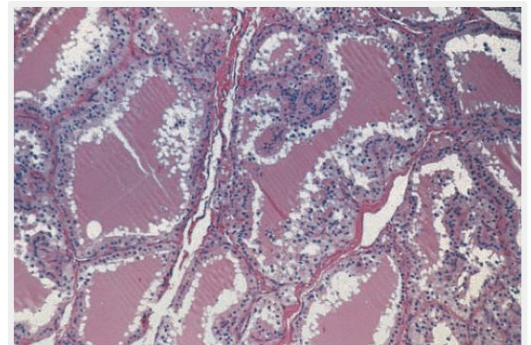


- | | | | |
|-----------------------|------------------------|--------------------------------|-----------------------|
| A. Follicular adenoma | B. Multinodular goiter | C. Papillary thyroid carcinoma | D. Riedel thyroiditis |
|-----------------------|------------------------|--------------------------------|-----------------------|

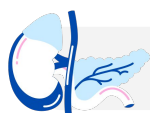
6. A 29-year-old woman complains of nervousness and muscle weakness of 6 months in duration. She is intolerant of heat and sweats excessively. She has lost 9 kg (20 lb) pounds over the past 6 months, despite increased caloric intake. She frequently finds her heart racing and can feel it pounding in her chest. She also states that she has missed several menstrual periods over the past few months. Physical examination reveals warm and moist skin and bulging eyes (exophthalmos). Laboratory studies will likely reveal which of the following endocrine abnormalities in this patient?

- | | | | |
|---------------------------------|--|------------------------|-----------------|
| A. Anti-TSH receptor antibodies | B. Decreased uptake of radioactive iodine in the thyroid | C. Increased serum TSH | D. Low serum T3 |
|---------------------------------|--|------------------------|-----------------|

7. A thyroid biopsy obtained from the patient described in Question 6 is shown in the image. Which of the following best describes the pathologic findings?



- | | | | |
|--|--|---------------------------------------|---|
| A. Dense lymphoid infiltrate with germinal centers | B. Follicular hyperplasia with scalloping of colloid | C. Necrotizing parenchymal granulomas | D. Papillary hyperplasia with psammoma bodies |
|--|--|---------------------------------------|---|





Cases

EXTRA CASES MAY REQUIRE EXTRA INFO

1. A 41-year-old woman comes to the physician complaining of excessive fatigue for the last 2 weeks. She states that 1 month ago, she had experienced episodes of palpitations and diarrhea, but those symptoms have now resolved. Past medical history is significant for type I diabetes mellitus, which is treated with insulin. She also has been taking a laxative several times a week to help with new-onset constipation, which started 3 weeks ago. Temperature is 36.5°C (97.7°F), pulse is 48/min, blood pressure is 124/88 mm Hg, and BMI is 22 kg/m². Physical examination shows cold, dry skin and thinning hair on the scalp. There is 1+ non-pitting edema on both lower extremities. Which of the following additional findings is likely present in this patient?

A. Positive antimicrosomal antibodies

B. Diffuse uptake of radioactive iodine on thyroid scintigraphy

C. Decreased thyroid stimulating hormone levels

D. Human leukocyte antigen DQ8 positivity

2. A 34-year-old woman comes to the physician due to irregular menses for the past 3 months. She states that previously her menses occurred every 28–30 days and lasted 4–5 days. She also notes excessive fatigue and recent weight gain of 9-lb in 2 months. She uses topical betamethasone for treatment of vitiligo, and she recently started taking laxatives several times a week to help with bowel movements. Temperature is 36.5°C (97.7°F), pulse is 52/min, blood pressure is 122/82 mm Hg, and BMI is 27 kg/m². Physical examination shows dry skin and a slightly distended abdomen. She has delayed tendon reflex relaxation in the lower extremities. There is 2+ non-pitting edema in the bilateral lower extremities. Which of the following is the most likely cause of this patient's edema?

A. Decreased serum protein content

B. Incompetence of venous valves

C. Impaired right-sided cardiac function

D. Hormonal stimulation of fibroblasts

3. A 40-year-old man comes to the clinic due to anxiety. Over the past few months, the patient has felt more stressed and has had an occasional feeling that his heart was racing, which he attributed to work stress. Temperature is 37.2°C (98.9°F), pulse is 111/min, and blood pressure is 135/85 mmHg. On physical examination, a diffusely enlarged thyroid gland is noted. Examination of the patient's lower extremities reveals the following finding: Which of the following will most likely be seen on histological examination of the patient's thyroid gland if a biopsy is performed?



A. Empty-appearing nuclei with central clearing and occasional calcifications

B. Granulomatous inflammation, giant cells, and extravasation of colloid

C. Fibrosis and extracellular amyloid deposit

D. Tall, crowded follicular epithelial cells forming small papillae and scalloped colloid



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ليان الرويلي



رغد المصلح



ريماس المحمود



عروب المحمود



محمد العرفج



يزيد آل طلحه



ألين الكلية



عائشة إبراهيم



شوق الخليفة



إيلاف معتيبي



ريما المطيري



لؤي الحديثي



عبدالمحسن الدايل



دينا المهوس



ساره العجايي



رند اباالخير



أفنان الأحمري



معاذ الحضيف



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