

Thyroiditis

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TUMS**

Agenda

- Subacute thyroiditis
- Silent or painless thyroiditis
- Post partum thyroiditis
- Drug induced thyroiditis
- Radiation induced thyroiditis
- Acute or infectious thyroiditis

Causes of thyroiditis according to the presence or absence of pain and tenderness

Disorder	Synonyms or causes
Thyroid pain and tenderness	
Subacute thyroiditis	Subacute granulomatous thyroiditis Subacute nonsuppurative thyroiditis de Quervain's thyroiditis
Infectious thyroiditis	Acute or chronic thyroiditis
Radiation-induced thyroiditis	
Palpation- or trauma-induced thyroiditis	
No thyroid pain and tenderness	
Painless thyroiditis	Silent thyroiditis Lymphocytic thyroiditis with spontaneously resolving hyperthyroidism Subacute lymphocytic thyroiditis
- Occurring postpartum	Postpartum thyroiditis
- Associated with drugs	Interferon-alpha Interleukin-2 Lithium Tyrosine kinase inhibitors Checkpoint inhibitor immunotherapy
Chronic lymphocytic thyroiditis	Hashimoto's thyroiditis
- Postpartum exacerbation	Postpartum thyroiditis
Amiodarone-associated thyroiditis	
Fibrous thyroiditis	Riedel's thyroiditis Invasive thyroiditis

TABLE 405-9 CAUSES OF THYROIDITIS

Acute

Bacterial infection: especially *Staphylococcus*, *Streptococcus*, and *Enterobacter*
 Fungal infection: *Aspergillus*, *Candida*, *Coccidioides*, *Histoplasma*, and *Pneumocystis*
 Radiation thyroiditis after ^{131}I treatment
 Amiodarone (may also be subacute or chronic)

Subacute

Viral (or granulomatous) thyroiditis
 Silent thyroiditis (including postpartum thyroiditis)
 Mycobacterial infection
 Drug induced (interferon, amiodarone)

Chronic

Autoimmunity: focal thyroiditis, Hashimoto's thyroiditis, atrophic thyroiditis
 Riedel's thyroiditis
 Parasitic thyroiditis: echinococcosis, strongyloidiasis, cysticercosis
 Traumatic: after palpation

Differentiate diagnosis

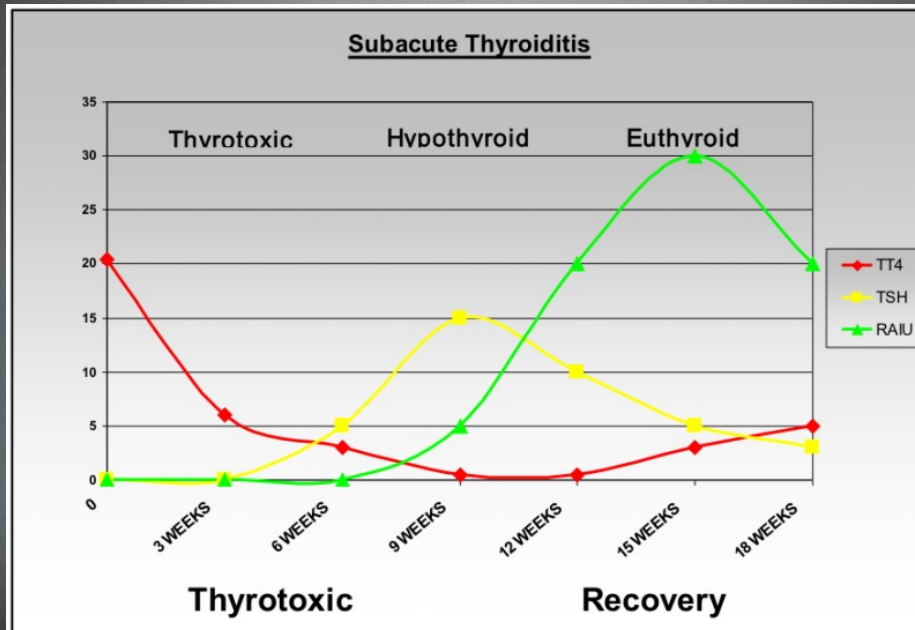
	PFSAT	PLSAT	PPT	Graves'
Neck Pain	Yes	No	No	No
Recent URI	Yes	No	No	No
Systemic symptoms	Yes	No	No	No
Recent Pregnancy	No	No	Yes	No
Thyroid symptoms	Yes	Yes	Yes	Yes

Continued

	PFSAT	PLSAT	PPT	Graves'
ESR	Elevated	Normal	Normal	Normal
CRP	Elevated	Normal	Normal	Normal
TSH	↑/ ↓/ NI	↑/ ↓/ NI	↑/ ↓/ NI	Suppressed
FT4	↑/ ↓/ NI	↑/ ↓/ NI	↑/ ↓/ NI	NI/↑
TT3	↑/ ↓/ NI	↑/ ↓/ NI	↑/ ↓/ NI	NI/↑
T3/T4	< 20	< 20	< 20	> 20
Thyroglobulin	Elevated	Elevated	Elevated	Elevated
TPO-ab	Negative	+/-, Pos	+/-, Pos	+/-, Pos
Tg-ab	Negative	+/-, Pos	+/-, Pos	+/-, Pos
TSHR-ab	Negative	Neg	Neg	Pos
RAIU/Scan	Low/ Not visible	Low/ Not visible	Low/ Not visible	High/ diffuse
US Echo-genicity	Hypo-echoic	Hypo-echoic	Hypo-echoic	Hypo-echoic
Vascularity	Decreased	Decreased	Decreased	Increased

Subacute thyroiditis

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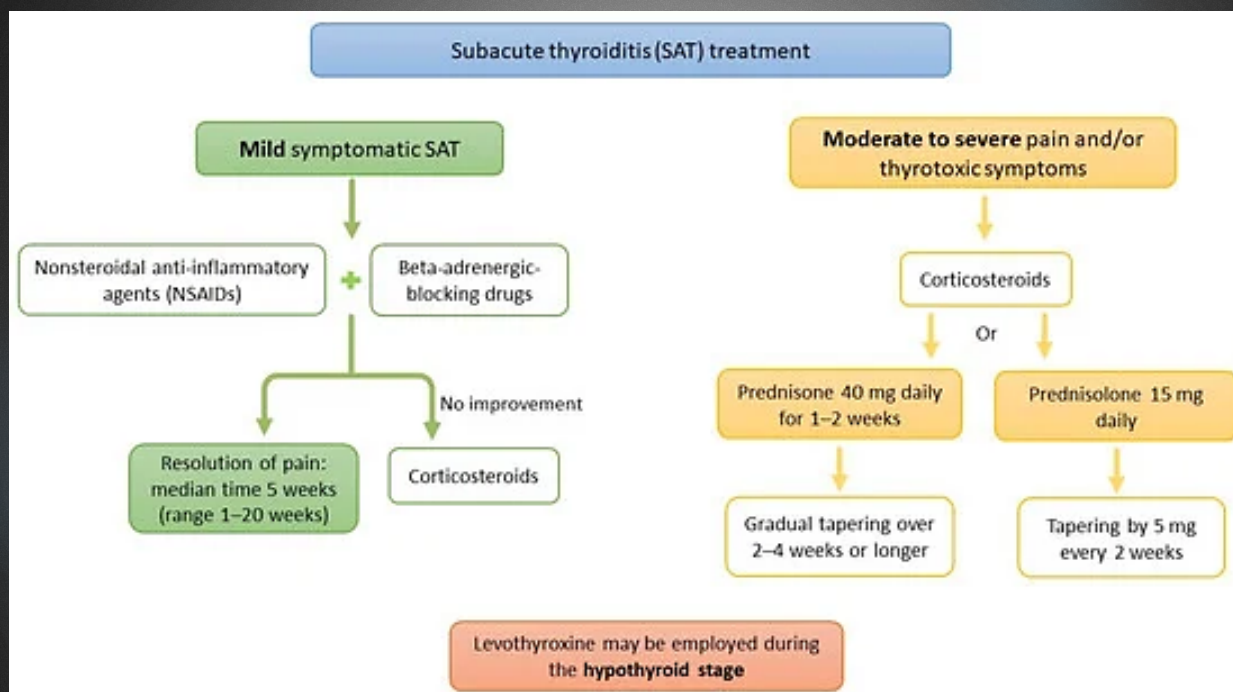
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Painful thyroiditis (DeQuervain's; Granulomatous)

- Subacute thyroiditis (SAT) is an **inflammatory** condition of the thyroid
- Painful swelling of the thyroid
- The pain begins and may be confined to the one lobe, but usually spreads rapidly to involve the rest of the gland
- Transient vocal cord paresis
- Pain may radiate to the **jaw or the ears**
- Malaise, fatigue, myalgia and arthralgia
- Fever
- Follow upper respiratory tract infections or sore throats
- Thyroid gland is typically enlarged, smooth, firm and **tender to palpation**

THERAPY

- In some patients, no treatment is required.
- non-steroidal anti-inflammatory agents
- Prednisone 20-40 mg daily, taper over a period of 6 weeks
- The recurrence rate is 20%
- Beta blocking agents
- Up to 10% of the patients may become hypothyroid and require permanent replacement with levothyroxine



Painless (silent, autoimmune) subacute thyroiditis (PLSAT)

- Spontaneously or following pregnancy
- Following 3.9-10% of pregnancies
- Thyroid enlargement
- Positive anti-thyroid antibodies
- Thyroid function test abnormalities
- Painless thyroiditis accounts for approximately 0.5 to 5 percent of cases of hyperthyroidism
- Painless thyroiditis is considered a variant form of chronic autoimmune thyroiditis
- HLA-DR3
- About 20 to 30 percent of patients develop chronic autoimmune thyroiditis with permanent hypothyroidism
- THERAPY: **Beta blocker** and when indicated levothyroxin

Causes of Drug Associated Thyrotoxicosis

Drug	Mechanism	Timing	Therapy
Amiodarone	Iodine (AIT 1)	months to years	Supportive, ATDs, Perchlorate, Surgery
Amiodarone	Thyroiditis (AIT 2)	Often > 1 year	Supportive care, Surgery, Prednisone
Lithium	Thyroiditis	Often > 1 year	ATDs, Supportive
Interferon-α	Thyroiditis or Graves'	Months	Supportive, ATDs, and /or ^{131}I (Graves' only)
Interleukin-2	Thyroiditis or Graves'	Months	Supportive, ATDs, and /or ^{131}I (Graves' only)
Contrast (I)	Thyroid autonomy	Weeks to months	ATDs
^{131}I Ablation	Destructive thyroiditis	1-4 weeks	Supportive, prednisone

Acute or infectious thyroiditis

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- Invasion of the thyroid by bacteria, mycobacteria, fungi, protozoa, or flatworms
- A rare condition
- **Predisposing Factors** for Acute Thyroiditis:

Pyriform sinus fistula
Third and fourth arch abnormalities
Immunocompromised states
Rarely: endocarditis, tooth abscess, fine needle aspiration

Acute or infectious thyroiditis

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Symptoms may include:

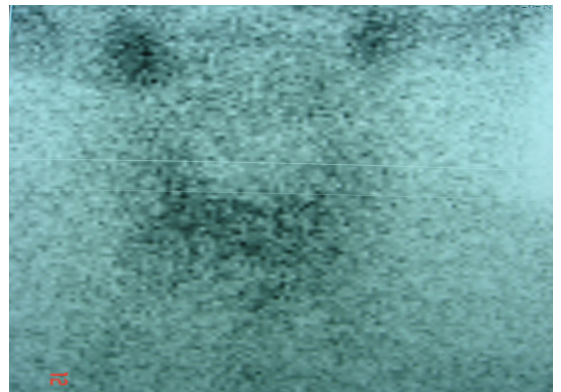
- Thyroidal pain
- Systemic illness
- Painful or Painless enlargement of the thyroid
- Euthyroid, 12% thyrotoxic, 17% Hypothyroidism
- Normal radioiodine uptake or local low uptake at initial presentation
- Ultrasonography
- FNA and culture
- The symptoms usually resolve once the infection

Thyroid Disease With Immunologic Aspects

- Autoimmune thyrotoxicosis (Graves' disease)
- Autoimmune thyroiditis
 - Hashimoto's thyroiditis
 - Lymphocytic thyroiditis of childhood and adolescence
 - Postpartum thyroiditis
 - Atrophic thyroiditis
 - Some cases of silent thyroiditis

Various Clinical Presentations of Thyroiditis Syndromes

- Goiter
- Hypothyroidism
- Thyrotoxicosis
- Pain in the neck
- Thyroid nodule
- Suppuration of the thyroid



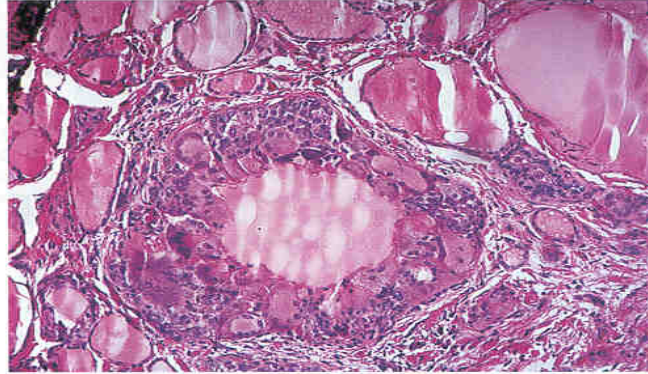
RAIU ↓

TSH ↓

ESR=100

Characteristic	Painful Subacute Thyroiditis
Age at onset (yr)	20–60
Sex ratio (F:M)	5:1
Cause	Unknown
Pathological findings	Giant cells, granulomas
Thyroid function	Thyrotoxicosis, hypothyroidism, or both
TPO antibodies	Low titer, or absent, transient
ESR	High
24-Hour ¹²³ I uptake	<5%

Histopathology of Subacute Thyroiditis

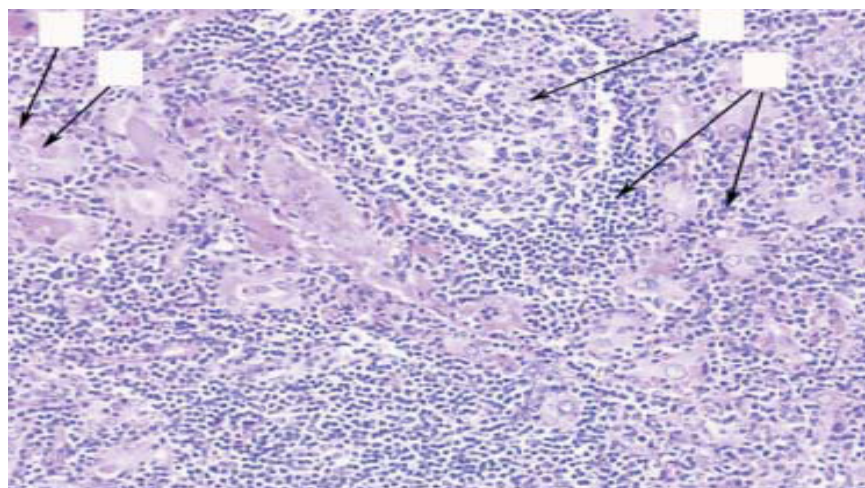


Characteristics of Hashimoto's Thyroiditis

- Thyroid gland moderately enlarged, firm, bosselated
- Circulating antithyroid autoantibodies
- Increased serum TSH
- More common in iodine sufficient areas

Characteristic	Hashimoto's Thyroiditis
Age at onset (yr)	All ages, peak 30–50
Sex ratio (F:M)	8–9:1
Cause	Autoimmune
Pathological findings	Lymphocytic infiltration, germinal centers, fibrosis
Thyroid function	Hypothyroidism
TPO antibodies	High titer, persistent
ESR	Normal
24-Hour ^{123}I uptake	Variable

The specimen in Panel A shows typical changes of **Hashimoto's thyroiditis**, including lymphoid follicles with germinal centers (G), small lymphocytes and plasma cells (P), thyroid follicles with Hürthle-cell metaplasia (H), and minimal colloid material (C).



Silent Thyroiditis

- Clinical course similar to subacute thyroiditis
- There is little or no thyroid tenderness
- A brief phase of thyrotoxicosis followed by hypothyroidism and then resolution

Silent Thyroiditis

- A proportion of patients develop permanent hypothyroidism
- RAIU suppressed, normal ESR, presence of anti-TPO antibodies

Characteristic	Painless Sporadic Thyroiditis
Age at onset (yr)	All ages, peak 30–40
Sex ratio (F:M)	2:1
Cause	Autoimmune
Pathological findings	Lymphocytic infiltration
Thyroid function	Thyrotoxicosis, hypothyroidism, or both
TPO antibodies	High titer, persistent
ESR	Normal
24-Hour ¹²³ I uptake	<5%

Differential Diagnosis Between Silent Thyroiditis and Graves' Disease

	Silent Thyroiditis	Graves' Disease
Duration	<3 months	>3 months
Eye signs	No	30%
RAIU	Low	High
Anti-TSH receptor abs	Negative	Positive
T3/T4 ng/ug	<20	80%>20
Thyrotoxicosis	Transient	Persistent

Thyrotoxicosis **Not Associated** With Hyperthyroidism

Inflammatory Disease	Pathogenic Mechanism
Subacute thyroiditis	Release of preformed hormone
Silent thyroiditis	Release of preformed hormone

Postpartum Thyroiditis

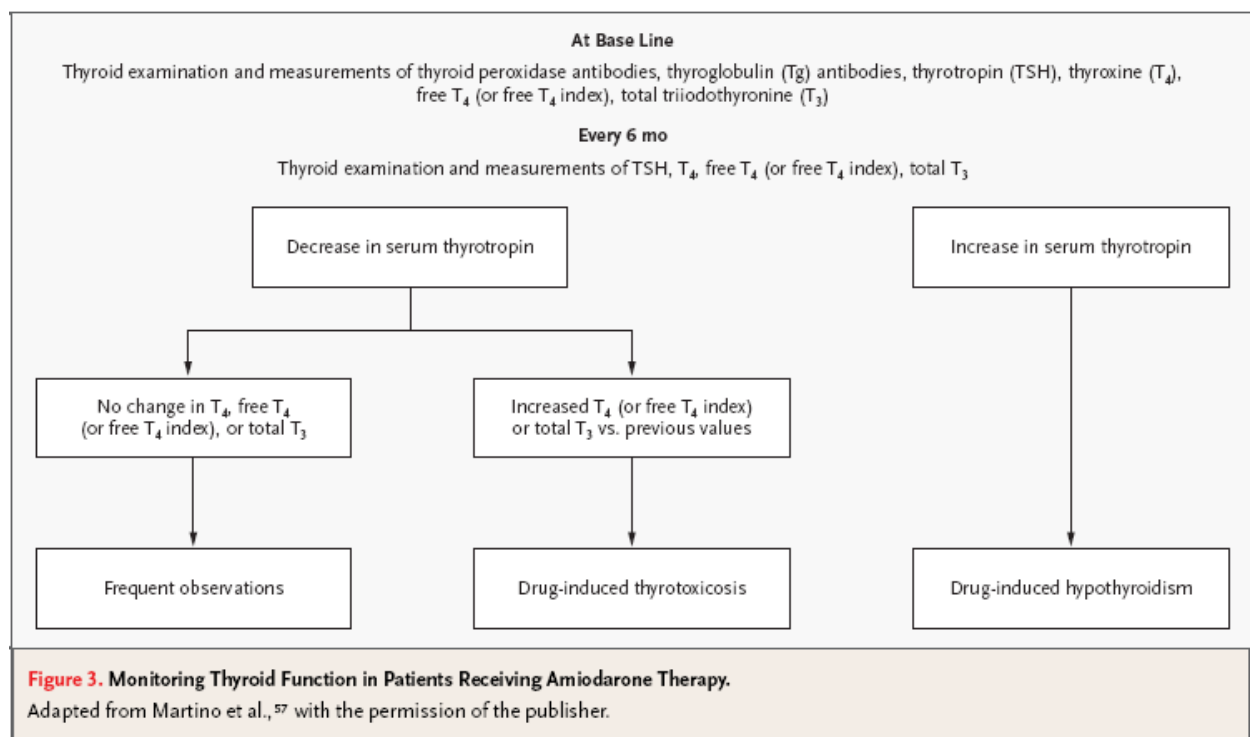
- May present as hypothyroidism or thyrotoxicosis
- Evolves into euthyroidism in most cases
- Usually painless
- Most patients have positive antithyroglobulin or antimicrosomal antibodies

Characteristic	Painless Postpartum Thyroiditis
Age at onset (yr)	Childbearing age
Sex ratio (F:M)	—
Cause	Autoimmune
Pathological findings	Lymphocytic infiltration
Thyroid function	Thyrotoxicosis, hypothyroidism, or both
TPO antibodies	High titer, persistent
ESR	Normal
24-Hour ^{123}I uptake	<5%

Drug induced Thyroiditis

Table 3. Features of Amiodarone-Induced Thyroid Dysfunction.

Feature	Type I Thyrotoxicosis	Type II Thyrotoxicosis	Hypothyroidism
Mechanism	Excess iodine (common in iodine-deficient areas)	Destructive inflammatory thyroiditis	Excess iodine (common in iodine-sufficient areas)
Thyroid antibodies	Often present	Usually absent	Often present
Thyroid function	Thyrotoxicosis	Thyrotoxicosis	Hypothyroidism
24-Hour ¹²³ I uptake*	Low in iodine-sufficient regions but may be normal or increased in iodine-deficient areas	<5%	Usually low in iodine-sufficient regions
Findings on color Doppler ultrasonography	Hypervascularity	Reduced blood flow	Variable
Therapy	High-doses of antithyroid drugs — possibly potassium perchlorate, or iopanoic acid before thyroidectomy	High doses of corticosteroids, iopanoic acid	Levothyroxine sodium



Characteristic	Suppurative Thyroiditis
Age at onset (yr)	Children, 20–40
Sex ratio (F:M)	1:1
Cause	Infectious
Pathological findings	Abscess formation
Thyroid function	Usually euthyroidism
TPO antibodies	Absent
ESR	High
24-Hour ^{123}I uptake	Normal

Riedel's Thyroiditis

- Rare disorder usually affecting middle-aged women
- Likely autoimmune etiology
- Fibrous tissue replaces thyroid gland
- Patients present with a rapidly enlarging hard neck mass

Characteristic	Riedel's Thyroiditis
Age at onset (yr)	30–60
Sex ratio (F:M)	3–4:1
Cause	Unknown
Pathological findings	Dense fibrosis
Thyroid function	Usually euthyroidism
TPO antibodies	Usually present
ESR	Normal
24-Hour ^{123}I uptake	Low or normal

Histopathology of Riedel's Thyroiditis

