

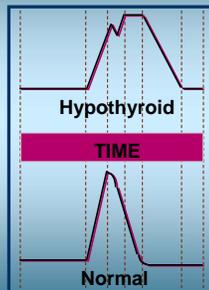
Frequency of Cutaneous Findings in Hypothyroidism*

Cutaneous Manifestations	Frequency (%)
Cold intolerance	50-95
Thickening & dryness of hair & skin	80-90
Edema of hands, face, and/or eyelids	70-85
Malar flush	55
Pitting-dependent edema	30
Alopecia (loss or thinning of hair)	30-40
Eyebrows	25
Scalp	20
Pallor	25-60
Yellow tint to skin	25-50
Decrease or loss of sweating	10-70

*modified from Freedberg and Vogel in Werner's and Ingbar's The Thyroid 6th ed.

Delayed Deep Tendon Reflex in Hypothyroidism

- Achilles' tendon reflex time most commonly sought but may also be effectively tested on brachioradialis or biceps
- Achilles' tendon reflex timing is best elicited with patient kneeling
- Intensity of hammer percussion should be the lightest possible stroke that evokes reflex



Graves' Disease

- ❖ Goiter
- ❖ Hyperthyroidism
- ❖ Exophthalmos
- ❖ Localized myxedema
- ❖ Thyroid acropachy
- ❖ Thyroid stimulating immunoglobulins



Clinical Characteristics of Goiter in Graves' Disease

- ❖ Diffuse increase in thyroid gland size
- ❖ Soft to slightly firm
- ❖ Non-nodular
- ❖ Bruit and/or thrill
- ❖ Mobile
- ❖ Non-tender
- ❖ Without prominent adenopathy



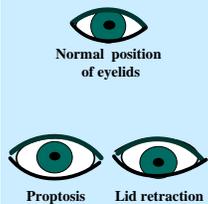
Clinical Characteristics of Exophthalmos

- ❖ Proptosis
- ❖ Corneal Damage
- ❖ Periorbital edema
- ❖ Chemosis
- ❖ Conjunctival injection
- ❖ Extraocular muscle impairment
- ❖ Optic neuropathy



Clinical Differentiation of Lid Retraction from Proptosis

- ❖ Measurement using prisms or special ruler (exophthalmometer)
OR with sclera seen above iris :
- ❖ Observing position of lower lid (sclera seen below iris = proptosis, lid intersects iris = lid retraction)



Lid Lag in Thyrotoxicosis

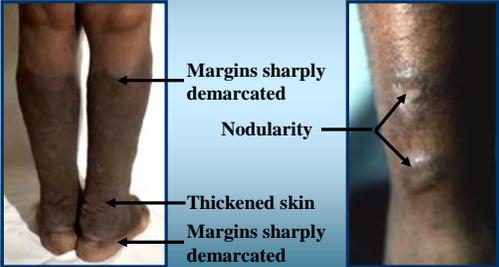
Normal	Lid Lag
	
	

Clinical Characteristics of Localized Myxedema

- ❖ Raised surface
- ❖ Thick, leathery consistency
- ❖ Nodularity, sometimes
- ❖ Sharply demarcated margins
- ❖ Prominent hair follicles
- ❖ Usually over pretibial area
- ❖ Non-tender



Graves' Disease - Localized Myxedema



Thyroid Acropachy

- ❖ Clubbing of fingers
- ❖ Painless
- ❖ Periosteal bone formation and periosteal proliferation
- ❖ Soft tissue swelling that is pigmented and hyperkeratotic



Periosteal bone formation and periosteal proliferation



Clubbing of fingers

Causes of Thyrotoxicosis Divided by Degree of Radioiodine Uptake

High I ¹²³ Uptake	Low I ¹²³ Uptake
Graves' disease	Subacute thyroiditis
Toxic nodular goiter	Hashitoxicosis
TSH-mediated thyrotoxicosis	Drug-induced
Pituitary tumor	Iodide
Pituitary resistance to thyroid hormone	Thyroid hormone
HCG-mediated thyrotoxicosis	Struma ovarii
Hydatidiform mole	Factitious
Choriocarcinoma	
Other HCG-secreting tumors	
Thyroid carcinoma (very rare)	

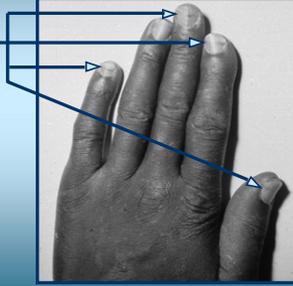
Integumentary System in Thyrotoxicosis

	% from Literature	Gordon*
❖ Excessive sweating	48-91	78
❖ Warm &/or moist skin	31-83	77
❖ Heat intolerance	44-89	64
❖ Accelerated hair loss	20-40	63
❖ Thin skin		56
❖ Palmar erythema	8	34
❖ Cold intolerance	1-12	5
❖ Cool &/or dry skin	1-7	2
❖ Onycholysis	5-13	

* Prospective study - Unpublished

Onycholysis of Thyrotoxicosis

Distal separation of the nail plate from nail bed (Plummer's nails)



Cardiorespiratory System in Thyrotoxicosis

	% from Literature	Gordon*
❖ Pulse >79 beats/minute	94-100	
❖ Palpitations	66-89	61
❖ Dyspnea on exertion (without CHF)		45
❖ Peripheral edema	9-35	
❖ Atrial fibrillation	9-22	
❖ Cardiomegaly &/or congestive failure (CHF)	9-15	18
❖ Peripheral edema (without CHF)		13

* Prospective study - Unpublished

Gastrointestinal System in Thyrotoxicosis

	% from Literature	Gordon*
❖ Weight loss (>10 lbs)	52-84	67
❖ Increased appetite	20-65	52
❖ Hyperdefecation &/or diarrhea	19-56	36
❖ Decreased appetite	9-27	18
❖ Constipation	1-17	13
❖ Hepatomegaly		11
❖ Weight gain (>10 lbs)	2-23	7
❖ Splenomegaly	2-10	1.5

* Prospective study - Unpublished

Gynecomastia and Thyrotoxicosis

- ⊙ Presenting manifestation (unusual)
- ⊙ Occurs in 0-83% of patients*
- ⊙ Onset during thyrotoxicosis
- ⊙ Disappearance after euthyroidism occurs

* wide range probably indicates differences in examining technique

Neuromuscular System in Thyrotoxicosis 1

	% from Literature	Gordon*
❖ Tremor	66-97	88
❖ Nervousness	59-99	85
❖ Fatigue or tiredness	74-88	79
❖ Hyperkinesia, restless, &/or rapid movements	26-75	63
❖ Weakness	69-70	60
❖ Headache		52
❖ Hyperactive reflexes		50

* Prospective study - Unpublished

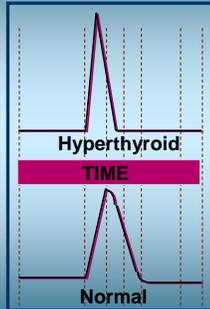
Neuromuscular System in Thyrotoxicosis 2

	% from Literature	Gordon*
❖ Insomnia	49	47
❖ Proximal muscle weakness		32-43
❖ Myalgias or stiffness		31
❖ Decreased muscle mass		30
❖ Paresthesias		24
❖ Joint pain	2-27	23
❖ Distal muscle weakness		15
❖ Frank psychiatric disorder	10-20	

* Prospective study - Unpublished

The Deep Tendon Reflex in Hypothyroidism

- The more commonly appreciated reflex amplitude is increased in hyperthyroidism
- However, the deep tendon reflex time is also shortened in hyperthyroidism
- The intensity of hammer percussion should be the lightest possible stroke that evokes the reflex
- Time and amplitude are interfered with if there are problems with relaxation of the patient, inertia because of interfering surfaces or gravity



Hyperactive Deep Tendon Reflexes in Thyrotoxicosis



Frequency of Neuromuscular Disorders Associated with Thyrotoxicosis

Myopathic Disorder	%
❖ Myopathy due to thyrotoxicosis usually proximal and mild to moderate	>50
❖ Hypokalemic periodic paralysis	<1*
❖ Myasthenia gravis	<1

* Reported as high as 13% of Asian (Oriental) men with thyrotoxicosis and 2% of all Asian (Orientals) with thyrotoxicosis. Also, 90% of patients with thyrotoxic hypokalemic periodic paralysis occurs in Asian (Orientals). This is most common cause of hypokalemic periodic paralysis.

Thyrotoxic Periodic Paralysis

- ❖ Most common cause of hypokalemic periodic paralysis
- ❖ Flaccid paralysis
- ❖ Lower extremities affected most often
- ❖ Ocular and bulbar muscles uninvolved, respiratory muscles rarely involved
- ❖ Most often starts during sleep
- ❖ Precipitated following exercise, high salt intake or high carbohydrate diet
- ❖ Hypokalemia during the paralysis

Embryology of the Thyroid Gland

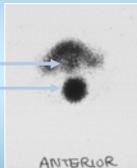
- ❖ **Medial portion of thyroid gland**
 - ❖ Arises at the base of the tongue posteriorly, the foramen cecum - lack of migration results in a retrolingual mass
 - ❖ Attached to tongue by the thyroglossal duct - lack of atrophy after thyroid descent results in midline cyst formation (thyroglossal duct cyst)
 - ❖ Descent occurs about fifth week of fetal life - remnants may persist along track of descent
- ❖ **Lateral lobes of thyroid gland**
 - ❖ Derived from a portion of ultimobranchial body, part of the fifth branchial pouch from which C cells are also derived (calcitonin secreting cells)

Lingual Thyroid (failure of descent)

Verification that lingual mass is thyroid by its ability to trap I¹²³



Lingual thyroid
Chin marker

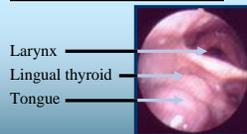


Significance: May be only thyroid tissue in body (~70% of time), removal resulting in hypothyroidism; treatment consists of TSH suppression to shrink size

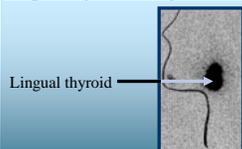
Lingual Thyroid (failure of descent)

Most lingual thyroids are found in children. Here is a case in an adult. This 31 year old man was seen by an otolaryngologist for recurrent sore throats. Upon examination a mass was discovered behind the tongue.

Lingual thyroid from above



Lingual thyroid on thyroid scan



Disorders In Patients Who Received Head and/or Neck Radiation

- ❖ Benign tumor or goiter of thyroid - most common
- ❖ Papillary and follicular carcinoma of thyroid
- ❖ Primary hyperparathyroidism
- ❖ Salivary gland tumors
- ❖ Neurogenic tumors
- ❖ Basal cell and squamous cell carcinoma of skin
- ❖ Mucosal carcinoma of oropharynx and larynx
- ❖ Glioblastoma
- ❖ Soft tissue tumors

Differential Diagnosis of a Painful Thyroid

Disorder	Frequency
Subacute granulomatous thyroiditis	Most common
Hemorrhage into a goiter, tumor or cyst with or without demonstrable trauma	Less common
Acute suppurative thyroiditis	<1%
Anaplastic (inflammatory) thyroid carcinoma	<1%
Hashimoto's thyroiditis	<1%
TB, atypical TB, amyloidosis	<1%
Metastatic carcinoma	<1%

**I hope you have enjoyed this course.
Please do not copy any of these slides as
they contain sensitive material and
individual approval may not have been
understood, when the photographs were
taken, especially in this era of computers.
Donald L. Gordon, MD.**
