

개원의가 알아야 할 갑상선 질환의 진단과 치료

김 용 현

Endocrinology, Bundang JS. Hosp

?

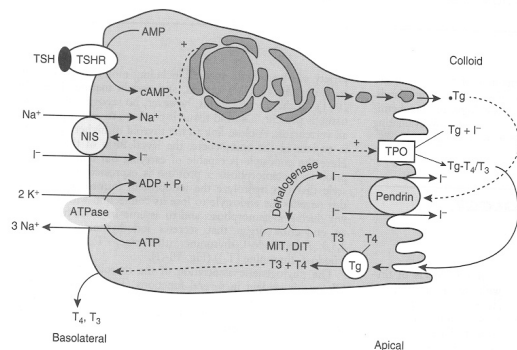
2 (lobe) (isthmus)

(Lobe): 4-5cm
1.5-2cm
: 2-3cm
: 15-20g

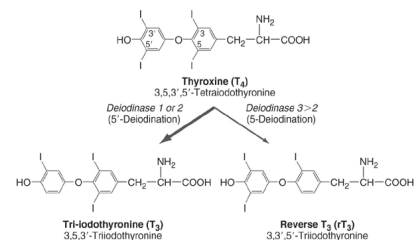
Physiology

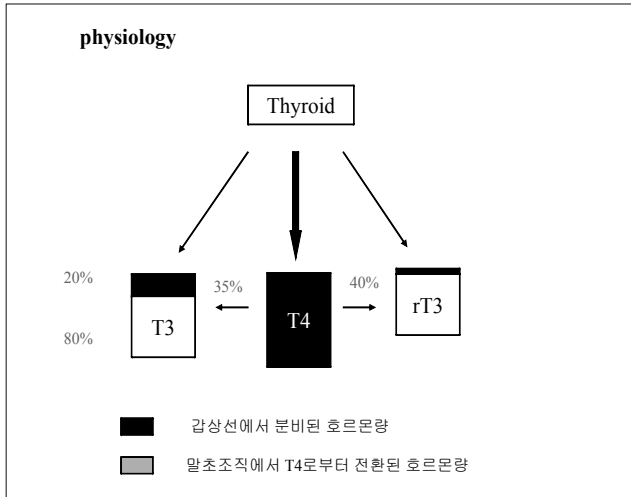
- 1) Oxidation
- 2) Organification
- 3) Coupling
- 4) Storage and Release

physiology



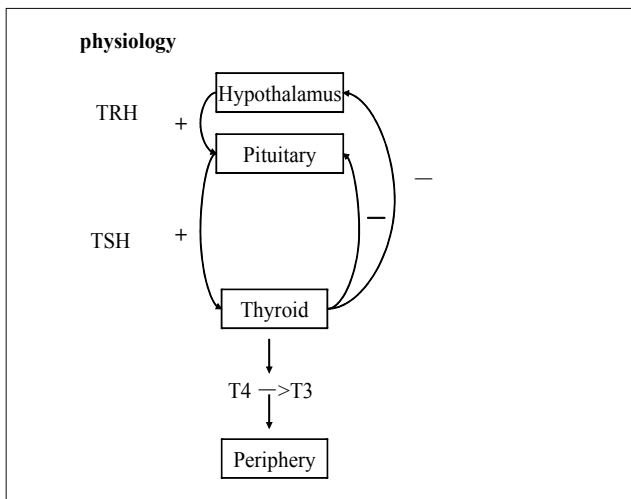
physiology





Euthyroid sick syndrome

- 71 가 ,
- lab : Hg 9.0 Na 131 K 3.4
TFT
FT4 0.95 (0.93-1.7) T3 0.65 (0.8-2.0) TSH 0.68 (0.27-4.2)



TSH

High	Primary hypothyroidism	?	TSH producing pituitary tumor or Thyroid Hormone Resistance
Normal	?	Normal Range	?
Low	Secondary hypothyroidism	?	Primary Hyperthyroidism
	Low	Normal	High

Free T4

(thyrotoxicosis)

갑상선중독증

(Graves' disease)

증상

1. , ,
- 2.
3. 가
4. ,
- 5.
- 6.
7. 가
- 8.

진찰소견

1. 가,
- 2.
- 3.
4. ,
5. ()

검사 소견

TFT : fT₄, T₃
TSH ()
: AST/ALT
:

- (Graves' disease)
- 60-80%
- : = 10:1 (3-8:1)
- () : 2%

치료

- 1) 약물 요법
항갑상선 약제 (Thionamides)
(안티로이드, 메티마솔)
제발을 잘하는 특징 ->
처음에는 상승한 혈중 수치가 정상까지
떨어지도록 많은 양을 복용 (6-8T/day)
→ 혈중 수치가 정상으로 떨어지면 조금씩 줄여나감
→ 최저 용량까지 감량하여 정상 호르몬 수치까지
조절되면 약 중단할 시도
→ 총 1-2 년 정도 치료 기간 요함
부작용
외부 allergy
agmulocytosis -> 심한 열

- 2)
- 3)

• 급성 갑상선 중독증

심한 열, 구토, 의식저하, 경련, 혼수상태까지

→ 사망에 까지 : 심장기능저하,
심한 고열로 인해

, Hypothyroidism

1. , Primary Hypothyroidism (>95%)

가 : Hashimoto's T(>80%), atrophic T
(Iatrogenic) : Surgery, RAI
: Lithium, PTU, Amiodarone

(Iodine deficiency)
(Infiltrative disorder) : amyloidosis, sarcoidosis

2. (Transient)

Subacute thyroiditis :

- 1) painful(granulomatous)
- 2) painless(lymphocytic) - postpartum thyroiditis

3. (Secondary)

hypopituitarism
hypothalamic disease(tumors, trauma, infiltrative)

1.

1. Tiredness, weakness
2. Dry skin
3. Feeling cold
4. Constipation
5. Weight gain with poor appetite

2.

1. Dry, coarse skin
2. Puffy face, hands, feet

■

Levothyroxine (synthyroid 100ug, 50ug, 150ug)
1.6ug/kg
,
: 12.5-25ug start

■ L-thyroxine

-
-
-
- :
:cholestyramine, Al. hydroxide
:dilatol, RFP, phenobarbital

Thyroiditis

Causes of Thyroiditis

Acute

Infection(Bacterial, Fungal infection)

Radiation thyroiditis

Amiodarone

Subacute

Viral (granulomatous) thyroiditis

Silent thyroiditis

Chronic - autoimmune

아급성 갑상선 염 (subacute thyroiditis)

- 항진증의 10-20%

갑상선 중독증의 염증에 의한 갑상선의 파괴로

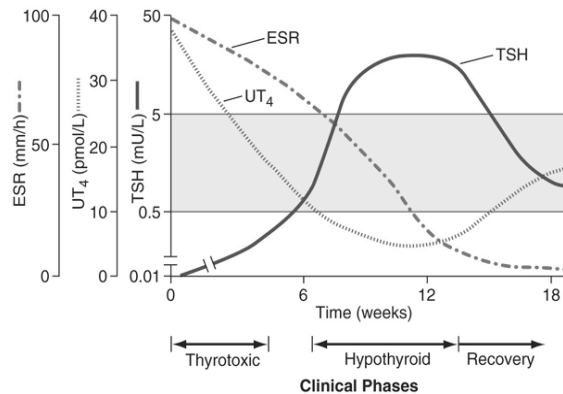
인해 갑상선에 저장되어 있던 갑상선호르몬이

갑자기 분비 → 항진증증상

- 그레이브병에 비해 홀몬 상승의 정도가 심하지 않다

- 치료 약도 면역 반응을 억제하는 약을 처방

- 대체로 3-4 개월 내에 호전되는 짧은 경과



Thyroid nodule

- Incidence of palpable thyroid nodule : About 5%
- In case of palpable nodule, most of size of nodule is above 1cm
- Increased detection rate by **thyroid sono**, especially in Korea
- Increased rate in iodine deficient area, female, increasing age
- Check TSH -> if suppressed -> thyroid scan -> if hot nodule -> no FNA

Incidental thyroid nodule

- By thyroid sono or other radiologic exam.
- **Same malignancy rate with palpable nodule**
- In case of above 1cm -> proceed FNA because of risk of malignancy, clinically

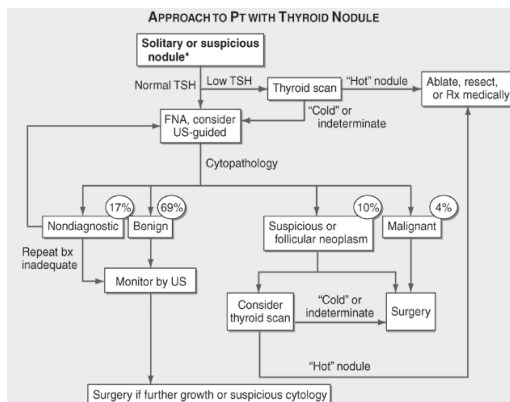
- But, in case of
 - 1) Sono finding of represent malignancy :
 - taller than wide,
 - speculated, irregular margin
 - marked hypoechogenicity (increased vascularity)
 - micro- or macro-calcification in nodule
 - 2) History of head and neck radiation
 - 3) Family history of thyroid cancer
 - * need FNA in spite of below 1 cm

FNAC

- Most accurate and cost efficient
- Results :
 - 1) non-diagnostic -> Repeated non-diagnostic and combined cystic change -> close f/u or consider surgery
 - 2) malignancy -> surgery
 - 3) **indeterminate**(Suspicious, follicular lesion, follicular neoplasm) : 15% -> consider surgery for confirmation
 - 4) benign
- About 5% of false negative -> f/u is necessary -> if increase in size -> indication of repeated FNA

TSH suppression therapy

- Considered in iodine deficiency area
- Not recommended generally



Thyroid cancer

- Most common endocrine malignancy
- Increasing with aging -> peak after 50 yrs
- More than 2 times in female

Thyroid neoplasm

Benign	
Follicular epithelial cell adenomas	
Macrofollicular (colloid)	
Normofollicular (simple)	
Microfollicular (fetal)	
Trabecular (embryonal)	
Hürtle cell variant (oncocytic)	
Malignant	
Follicular epithelial cell	
Well-differentiated carcinomas	
Papillary carcinomas	
Pure papillary	
Follicular variant	
Diffuse sclerosing variant	
Tall cell, columnar cell variants	
Follicular carcinomas	
Minimally invasive	
Widely invasive	
Hürtle cell carcinoma (oncocytic)	
Insular carcinoma	
Undifferentiated (anaplastic) carcinomas	
C cell (calcitonin-producing)	
Medullary thyroid cancer	
Sporadic	
Familial	
MEN 2	
Other malignancies	
Lymphomas	
Sarcomas	
Metastases	
Others	

Unique features of thyroid ca.

→ good prognosis

- Easy diagnosis by FNAC
- Remnant ablation by ¹³¹Iodine -> easy diagnosis of remnant thyroid tissue and distant mets. during fu.
- Serum markers
 - thyroglobulin(Tg) for PTC and FTC
 - calcitonin for MTC

Staging of Thyroid cancer

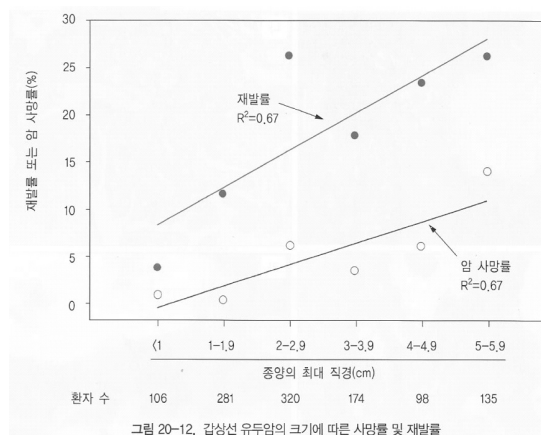
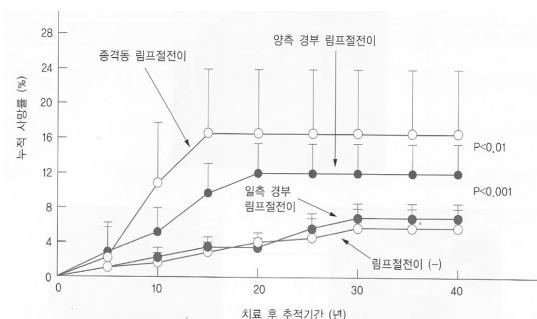
Papillary or follicular thyroid cancers	
Stage I	<45 years Any T, any N, M0
Stage II	>45 years T1, N0, M0
Stage III	T2 or T3, N0, M0
Stage IV	T4, N0, M0
Stage V	Any T, N1, M0
Stage VI	Any T, any N, M1
Anaplastic thyroid cancer	
Stage IV	All cases are stage IV
Medullary thyroid cancer	
Stage I	T1, N0, M0
Stage II	T2-T4, N0, M0
Stage III	Any T, N1, M0
Stage IV	Any T, any N, M1

Criteria include: T, the size and extent of the primary tumor (T1 ≤ 1 cm; 1 cm < T2 ≤ 4 cm; T3 > 4 cm; T4 direct invasion through the thyroid capsule); N, the absence (N0) or presence (N1) of regional node involvement; M, the absence (M0) or presence (M1) of metastases.

Source: American Joint Committee on Cancer staging system for thyroid cancers using the TNM classification.

Papillary thyroid ca.

- 70-90% of thyroid ca.
- Microscopic PTC in 25% of autopsy
- psammoma body (large nucleoli "orphan-Annie" appearance 가 cleaved nuclei)
- papillary structure
- Tends to multifocal, invade to thyroid capsule and adjacent structure
- Propensity to lymphatic spread, but can to lung and bone via hematogenously



Follicular thyroid ca.

- More common in iodine deficient area
- Difficult in D/D between benign and malignant : invasion to vessel, nerve and adjacent structure
- Tends to hematogenous spread : bone, lung, CNS
- Less favorable in mortality than PTC
- Poor Px. : distant metastasis, age over 50, tumor size >4cm, marked vascular invasion

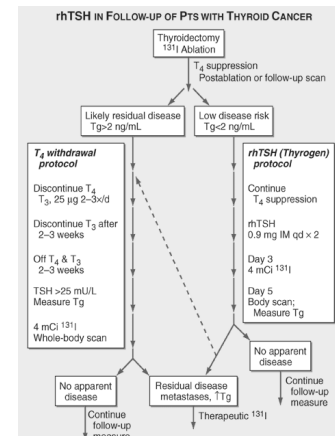
Treatment : Op

- Surgical excision : accurate histologic dx. and staging, find multicentric disease in contralateral lobe, LN assessment and removal
- For stage I : lobectomy v/s near-total thyroidectomy
- Completion thyroidectomy : in 20% of follicular neoplasm -> malignant at final pathologic dx.
- S/E : hypoparathyroidism, recurrent laryngeal nerve palsy

Treatment : radioiodine

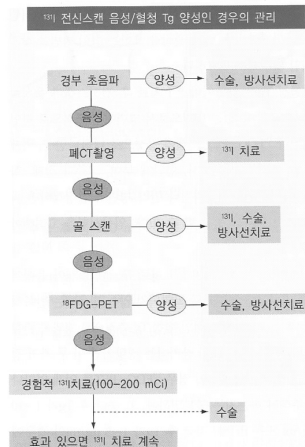
- Aim : eliminate remaining normal thyroid tissue and treat residual tumor cells
- Controversy in low risk group such as stage 1 PTC with size <1-2 cm
- Generally indicated in larger PTC, spread to the LN, FTC, evidence of metastasis
- : , , xerostomia,

f/u
whole body
scanning &
Tg



Scan-negative , Tg-positive

- 가 131I
- Tg
- TSH 131I
- 131I



Neck sono

6-12 months after iodine ablation
-> every year up to 5 years

TSH suppression

TSH receptor on cell membrane of PTC & FTC
-> TSH is most powerful growth factor of differentiated thyroid ca.

표 20-29. 갑상선 분획암의 일차 치료 후 TSH 억제 정도의 기준

환자 군	혈청 TSH (uU/ml) 기준		
	미국갑상선학회	유럽갑상선학회	영국갑상선학회
암이 지속되는 경우 (Tg 측정되는 예 포함)	<0.1	<0.1	<0.1
질환 없는 고위험군	5~10년간 0.1~0.5	3~5년간 <0.1	<0.1
질환 없는 저위험군	0.3~2.0	0.5~1.0	0.1~0.5

MTC

- Sporadic or familial(more aggressive)
- 3 familial forms
 - 1.MEN 2A
 - 2.MEN 2B : more aggressive than 2A
 - 3.Familial MTC without other features of MEN
- Calcitonin : marker of residual or recurrent dz.
- Test RET mutation
- treatment : primarily surgical
 - don't take up radioiodine
 - RT or CT for palliation in advanced dz.