

# 2023년 차의과학대학교 분당차병원 협력 의료기관 의사 및 개원의 온라인 연수강좌

- | 일시 | 2023년 11월 11일 (토) 13:30~18:20 (14:00부터 강좌 시작)  
온라인(webinar) 연수강좌
- | 평점 | 대한의사협회 4평점
- | 주최 | 차의과학대학교 분당차병원 진료협력센터



CHA 의과학대학교  
분당차병원

2023년 차의과학대학교 분당차병원

## 협력 의료기관 의사 및 개원의 온라인 연수강좌

### 모시는 글

안녕하십니까.

여전히 코로나19를 관리하며 국민의 생명과 안전을 위해 꾸준히 노력하시는 협력 병·의원 선생님들께 존경을 표하며 건강과 무궁한 발전을 기원합니다.

또한 분당차병원에 보내주신 아낌없는 성원에 감사드립니다.

분당차병원 진료협력센터에서는 효율적인 환자 의뢰 및 회송 시스템을 바탕으로 상호협력을 위해 노력하시는 협력 병·의원 선생님들의 선생님들께 보탬이 되고자 11월 연수 강좌를 준비했습니다. 알찬 프로그램으로 정성껏 준비한 이 행사에 여러 선생님들을 정중히 모시고자 합니다.

이번 연수강좌는 그 동안 협력 병·의원 선생님들께서 의뢰해 주신 질병중심으로 임상에서 조금이라도 실질적인 도움이 되실 수 있는 다양한 내용으로 준비하여 진행하게 됩니다.

토요일 오후, 협력 병·의원 선생님들의 귀한 시간을 허락하여 주신 것에 미리 감사드리며, 앞으로도 다양하고 유익한 주제의 연수강좌로 협력 병·의원 선생님들께 도움이 될 수 있도록 계속 노력하겠습니다.

2023년 11월

차의과학대학교 분당차병원  
진료협력센터장 장수진 拜上



# 2023년 차의과학대학교 분당차병원

## 협력 의료기관 의사 및 개원의 온라인 연수강좌



### PROGRAM

13:30-13:50	온라인 등록(입장)	
13:50-14:00	인사말	분당차병원 병원장
14:00-16:00	<b>Session I</b>	
14:00-14:30(30분)	<b>Precocious puberty</b>	최윤하 교수 (소아청소년과) ..... 4
14:30-15:00(30분)	<b>Benign neoplasm of thyroid gland</b>	박현주 교수 (내분비내과) ..... 11
15:20-15:50(30분)	<b>Bradycardia</b>	양필성 교수 (심장내과) ..... 17
15:50-16:00(30분)	<b>Eczema</b>	신정우 교수 (피부과) ..... 27
16:00-16:10(10분)	<b>Break time</b>	휴식시간
16:10-18:40	<b>Session II</b>	
16:10-16:40(30분)	<b>Abnormal uterine and vaginal bleeding</b>	나은덕 교수 (산부인과) ..... 42
16:40-17:10(30분)	<b>Chronic sinusitis</b>	길홍권 교수 (이비인후과-두경부외과) ..... 53
17:10-17:40(30분)	<b>Benign neoplasm of large intestine</b>	김지현 교수 (소화기내과) ..... 59
17:40-18:10(30분)	<b>Dysphagia</b>	김종문 교수 (재활의학과) ..... 73
18:10-18:20	<b>폐회</b>	장수진 교수 (진료협력센터소장)

2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

Session I

---

14:00-14:30

## Precocious puberty

차의과학대학교 분당차병원 소아청소년과

**최윤하** 교수



협력기관 의료진 대상  
'온라인 연수강좌'

# Precocious puberty 접근 및 관리 방법

분당차여성병원  
소아청소년과 소아내분비분과  
최윤하



## CONTENTS

- ✓ 정상 사춘기 발달
- ✓ 성조숙증이란?
- ✓ 성조숙증의 원인
- ✓ 성조숙증의 진단
- ✓ 성조숙증의 치료
- ✓ 치료 경과

2



### ▪ 사춘기 (Puberty)' 란?

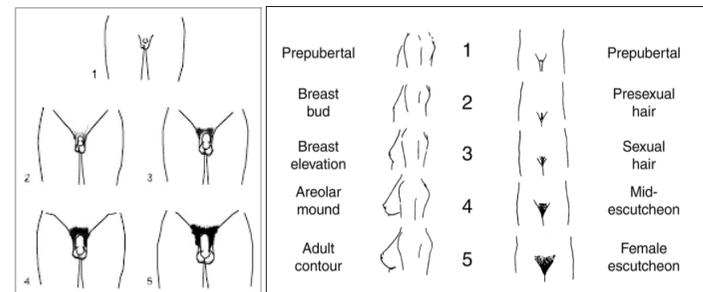


→ 시상하부-뇌하수체 호르몬 변화에 의해  
부신과 성선에서 성호르몬의 급격한 분비가 일어나,  
신체 급성장이 생기고 생식능력이 완성되며  
정신심리학적으로 소아에서 성인으로 이행하는  
연속선상의 시기



3

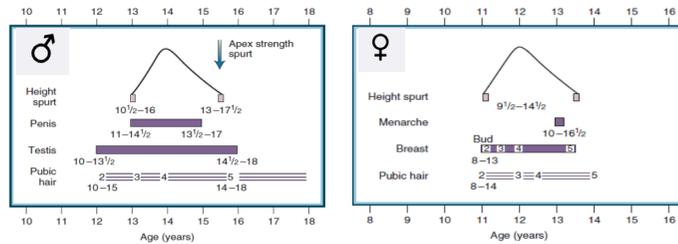
### ▪ 정상 사춘기 : Tanner / SMR (Sexual Maturity Rating)



Physiologic Growth and Development During Adolescence. *Pediatr Rev* (2004) 25 (6): 194-200. *Spering Pediatric Endocrinology 5th edition, Fig 16.30.*

4

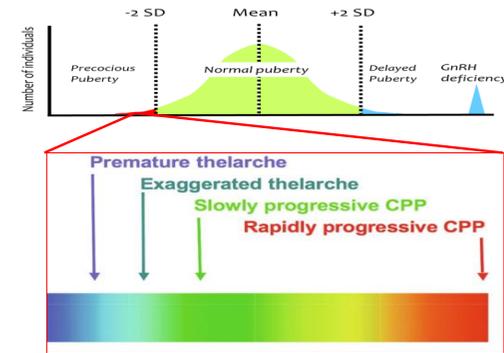
### ■ 정상 사춘기



- ✓ 만 11-12세 전후(범위, 만 9-15세)
  - ✓ 첫 증상 : 고환크기 증가 (≥ 4ml), 음낭 피부 얇아짐
  - ✓ 급성장 : 고환 증가 시작 약 2년 후 (SMR 4단계)
- ✓ 만 10-11세 전후(범위, 만 8-13세)
  - ✓ 첫 증상 : 유방발달 시작 (비대칭 발달 가능)
  - ✓ 급성장 : 유방발달 1년 후 (SMR 2-3단계)

5

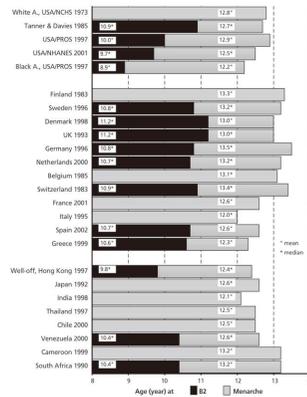
### ■ 성조숙증이란?



The spectrum of gonadotropin secretion in girls with normal and abnormal puberty. Sperling Pediatric Endocrinology 9th Edition. Fig 16.31.

6

### ■ 성조숙증이란?



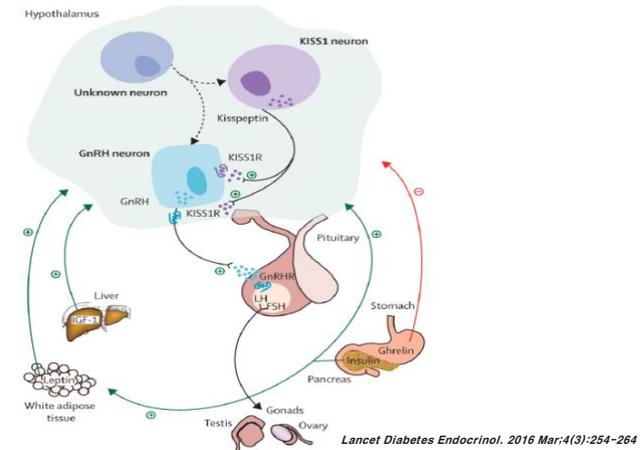
	Girls			References
	Thelarche	Pubarche	Menarche	
White	9.96 ± 1.82	10.51 ± 1.67	12.88 ± 1.12	Herman-Giddens 1997
African American	8.87 ± 1.93	8.78 ± 2.0	12.16 ± 1.21	
White British	8-13	11.69 ± 1.21	9.5-13.5	Marshall WA & Tanner JM. Arch Dis Child 1970;45:13-24
Caucasian (Traditional)	8		9.5	Rosenfield RL. Pediatrics 2000;106:623-3
White	7		9	LWPES, Kaplowitz PB. Pediatrics 1995;94:936-41
African American	6		9	
Europe	8		9.5	Mul D. Pediatr Res 2001;50:479-86

- ✓ 평균치의 2표준편차보다 빠른 나이에 이차성징이 발생하는 것
- ✓ 임상적으로 여아에서 만 8세 이전, 남아에서 만 9세 이전에 이차성징이 나타나는 것

Average (mean or median) ages at onset of breast development (B2) or menarche in different well-off populations around the world. Endocr Rev 2003;24:668-693

7

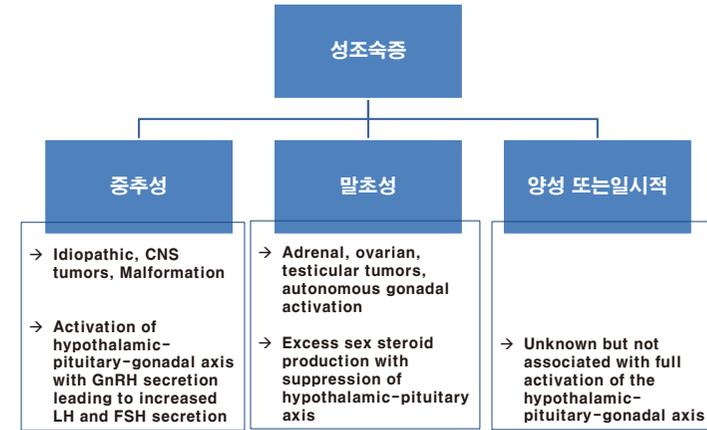
### ■ 시상하부-뇌하수체-생식샘 축



Lancet Diabetes Endocrinol. 2016 Mar;4(3):254-264

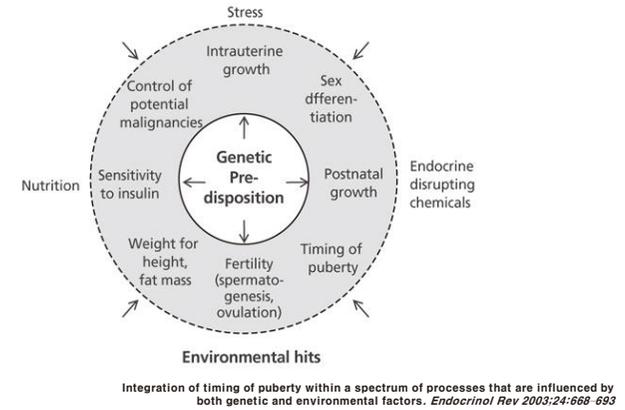
8

### 성조숙증의 분류



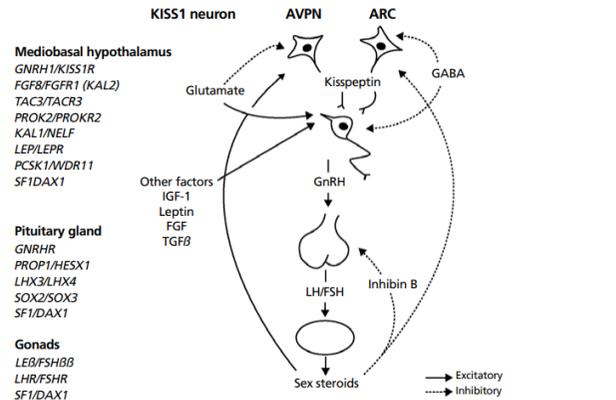
9

### 성조숙증의 원인



10

### 성조숙증의 원인 - 가계력, 유전자 이상



Mutations in several genes involved in each site have been shown to cause isolated GnRH deficiency in humans. *Curr Opin Endocrinol Diabetes Obes 2013;20:62-68*

11

### 성조숙증의 원인

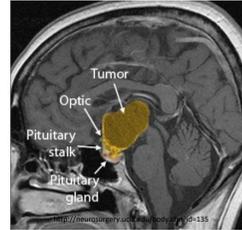
- 부당경량아 혹은 미숙아
  - 출생 전후의 좋지 않았던 건강상태에 따른 스트레스, 체지방의 급격한 증가, 영양과잉이나 영양결핍, 에너지 불균형 등
- 비만
  - 비만아에서 증가된 렙틴이 시상하부에 직접 작용하여 GnRH의 파동성 분비 자극 또는 뇌하수체 및 성선에서 성호르몬 분비를 촉진
- 스트레스와 가정환경
- 내분비 교란 물질
  - 살충제 dichlorodiphenyltrichloroethane, dichlorodiphenyldichloroethane, 코팅제로 흔히 사용되는 polybrominated biphenyls, 플라스틱의 성분인 bisphenol A와 phthalate 등
  - 여성호르몬(estrogen)이나 남성호르몬 (androgen)의 수용체에 작용하거나 성호르몬 수용체 에 경쟁적으로 결합하여 호르몬 작용을 방해
  - 호르몬의 운반, 대사, 조절을 교란

12

### 성조숙증의 원인 - 구조적 원인

#### 중추성 병변

- **Craniohypopharyngioma**
  - Papilledema or optic atrophy
- **Hypothalamic Hamartoma**
  - m/c brain lesion
  - Ectopic neural tissue of GnRH secretory neurons



#### 성선 종양

- m/c reproductive neoplasm in children
- < 5%, malignant
- Germ cell tumors, epithelial cell tumors, sex cord-stromal tumors
- Tumor markers :  $\alpha$ -fetoprotein, hCG, CEA

#### Ovarian cysts

13

### 성조숙증의 진단

#### Signs

- Rapid advancement through Tanner Stages
- Spurt growth velocity
- Bone age advanced

#### Hormonal criteria

- 기저 LH  $\geq 0.6$  mIU/mL, E2  $\geq 10$  pg/mL, T  $\geq 25$  ng/dL
- 성호르몬 혈청 농도는 초기 중추성 성조숙증일 때 일중 변동이 심할 수 있음
- 확진 검사 : 성선자극호르몬방출호르몬 자극 검사  
: peak LH  $\geq 5.0$  IU/L

#### 성선 종양이 의심되는 경우,

**human chorionic gonadotropin,  $\alpha$ -fetoprotein** 측정

#### Sella MRI ix.

- 중추성 성조숙증으로 진단된 모든 남아
- 6세 미만 중추성 성조숙증 진단받은 여아
- 유방 발달이 빨리 진행되는 여아 중, 혈중 E2  $\geq 30$ pg/mL

14

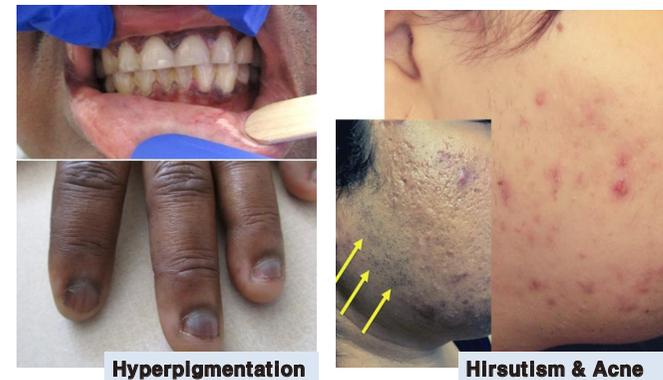
### 놓치면 안되는 가성 성조숙증 Signs



café-au-lait spots/ macules

15

### 놓치면 안되는 가성 성조숙증 Signs



Hyperpigmentation

Hirsutism & Acne

16

▪ 놓치면 안되는 가성 성조숙증 Signs



Mucocutaneous pigmentation

17

▪ 치료

- 적응증

- 나이 기준 보다 어린 소아 +
- 사춘기 진행단계 Tanner stage 3-6개월마다 다음 단계로 빠르게 진행하는 경우
- GnRH 자극검사에서 확진
- 골연령이 실제 연령보다 2 표준편차 이상 성숙
- 예측 성인 신장 유전적 목표성인신장보다 작은 경우
- 여아에서 초경 시작 나이 9세 이전인 경우
- 정신심리적으로 미숙한 상태에서 초경을 시작하게 되는 경우

- 국내 보험기준

- 이차성징성숙도가 Tanner stage 2 이상 + 골연령이 해당 연령보다 증가
- GnRH 자극검사에서 LH 혈중농도 기저치 2-3배 증가, 최고 농도 5 IU/L 이상
- 투여 시작 : 역연령 여아 만9세 미만/ 남아 만 10세 미만
- 투여 종료 : 역연령 여아 만 11세 364일/ 남아 12세 364일

18

▪ 치료 : GnRH agonist

	용량	간격	
<b>Leprolide acetate</b>			
Leuplin	3.75mg	4 weeks	Takeda
Leuplin	11.25mg	12 weeks	Takeda
Lorelin	3.75mg	4 weeks	Dongkuk
Luphere	3.75mg	4 weeks	Daewoong
<b>Triptorelin acetate</b>			
Decapeptyl	3.75mg	4 weeks	Ferring
Dipherelin	3.75mg	4 weeks	Ipsen
Dipherelin	11.25mg	12 weeks	Ipsen

19

▪ 치료 경과

• 임상소견

- 치료 시작 첫 한 해 동안, 3개월 간격으로 사춘기 진행 단계, 신장, 체중, 신체 비율 f/u
- 이차성징 징후 소실 여부 확인
- 성장 속도 감소 여부 확인 : 사춘기 전 성장 속도로 성장  
병적 성장 감속 있을 경우, 추가 성장호르몬 병합 투여 고려

• 영상소견

- 최소 1년 간격으로 골연령 평가
- 키 표준편차점수(Height SDS) 통한 예측성인신장 변화 추정
- 골연령 증가 추이 감소 또는 정지 확인 (BA/CA < 1)

• 내분비

- Single LH determination 1-2hrs after GnRH $\alpha$  injection : LH < 2 IU/L

20

### ■ 치료 종료 시점 및 종료 후 관리

- 여아에서 역연령 11.0세 전후, 골연령 12.0세 전후에 치료를 종료할 경우 가장 큰 최종키에 도달하는 것으로 보고됨
  - 일정 연령 이후에는 GnRHa 치료를 지속하더라도 의미 있는 최종키 증가가 관찰되지 않음
- 인구의 정상 연령에 가까운 시점에 초경이 시작하는 것을 목표로 하여 치료 종료를 결정하는 것이 타당
  - 치료 종료 후 수개월 내에 성호르몬이 다시 정상적으로 분비되어 사춘기 발달이 진행, 초경은 평균 16개월(12- 18개월) 이내에 나타남
- 치료 종료 후 초경까지의 성장속도는 치료종료 당시의 키, 골연령, 부모 키에 따라 다를 수 있음
  - 치료를 종료한 후에도 생식샘 기능, 체질량지수, 골밀도, 정신사회 발달, 최종키 등에 대한 지속적 인 평가가 필요
  - 통상적으로 최종키에 도달할 때까지, 그리고 완성된 생식 기능이 확인될 때까지(여아의 경우 생리가 시작하여 규칙적인 주기가 관찰될 때까지) 정기적인 추적 관찰을 시행

21

### ■ Take Home Message

- ✓ 성조숙증 치료 목적을 신중히 고려하여 GnRHa 요법 적응증에 합당한 환자를 선택해야 하며, 최종 성인예측 키와 정신심리적 유익한 효과가 예상되는 경우에 한하여 치료를 진행
- ✓ 중추성 성조숙증의 진단 및 관리를 위한 국내 가이드라인이 확립되어 있으나 최근 급증하고 있는 성조숙증 유병률을 고려하여 진단, 치료 및 모니터링 지침과 관련하여 추가적인 업데이트 필요

22



경청해 주셔서 감사합니다



2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

**Session I**

---

14:30-15:00

# Benign neoplasm of thyroid gland

차의과학대학교 분당차병원 내분비내과

**박현주** 교수



# Benign Neoplasm of Thyroid Gland

분당차병원  
 내분비내과 박현주

## References

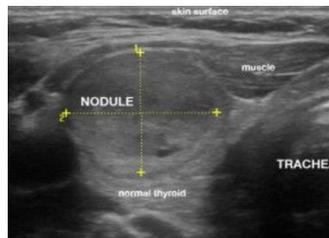
- 2021 K-TIRADS and Imaging-Based Management of Thyroid Nodules: KSThR Consensus Statement and Recommendations
- 2023 KTA Association Management Guidelines for Patients with Thyroid Nodules

2021 K-TIRADS and Imaging-Based Management of Thyroid Nodules: KSThR Consensus Statement and Recommendations, Korean J Radiol 2021;22(12):2094-2123

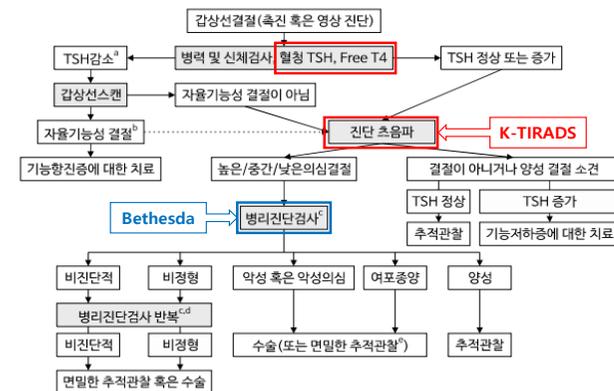
2023 KTA Association Management Guidelines for Patients with Thyroid Nodules, Int J Thyroidol 2023 May 16(1): 1-31

## 갑상선결절 (Thyroid nodule)

- 정의: 주변의 갑상선의 실질과 영상학적으로 구별 되어지는 갑상선 내의 병변
- 갑상선 결절의 발견: 만져지거나 보이는 경우 (4~7%) <<< 갑상선 초음파 (50% 이상)
- 전체 갑상선 종양의 약 5%가 갑상선암

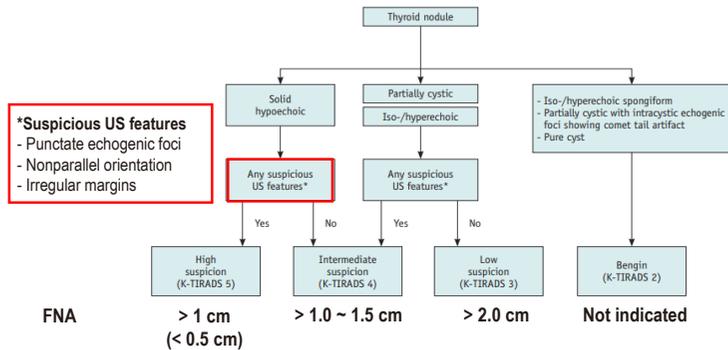


## 갑상선 결절의 검사 및 치료 알고리즘



2023 KTA Association Management Guidelines for Patients with Thyroid Nodules, Int J Thyroidol 2023 May 16(1): 1-31

### K-TIRADS (2021)



2021 K-TIRADS and Imaging-Based Management of Thyroid Nodules: KSThR Consensus Statement and Recommendations, Korean J Radiol 2021;22(12):2094-2123

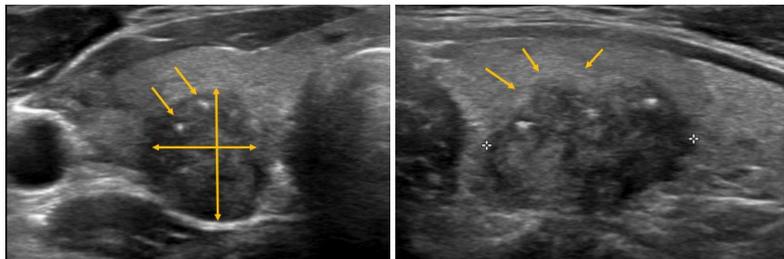
### K-TIRADS에 기초한 FNA 기준

카테고리	초음파 유형	암 위험도(%)	FNA/CNB
5	높은의심 암 의심 초음파 소견 <sup>a</sup> 이 있는 저에코 고형결절	>60	> 1 cm <b>A</b>
4	중간의심 <sup>b</sup> 1) 암 의심 초음파 소견이 없는 저에코 고형결절 혹은 2) 암 의심 초음파 소견이 있는 부분 양성 혹은 등/고에코 결절 3) 완전히 석회화된 형태를 보이는 결절 <sup>c</sup>	10-40	> 1-1.5 cm <sup>d</sup>
3	낮은의심 암 의심 초음파 소견이 없는 부분 양성 혹은 등/고에코 결절	3-10	> 2 cm
2	양성 <sup>e</sup> 1) 등/고에코의 해면모양 결절 2) 양성 부분 내에 혜성꼬리 인공음영(comet-tail artifact)을 보이는 고에코 병변(echogenic foci)을 동반한 부분 양성 결절 3) 순수 낭종	<3	해당하지 않음 <b>D</b>
1	무결절	-	-

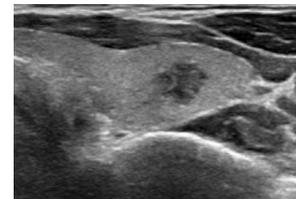
- A: 0.5-1cm high suspicion 에서 위치에 따라 FNA 권고, 고위험 특성이 동반되지 않은 경우 치료 계획 수립 위해 FNA 고려
- B: 명확히 구분되는 결절 없이 광범위한 parenchymal punctated echogenic foci 보여 DSV-PTC가 의심되는 경우
- C: 후방음향음영으로 결절의 특성을 확인하기 어려운 entirely calcified nodules
- D: 지속적으로 의미 있게 크기가 커지는 결절 또는 치료 계획에 따라 FNA 시행될 수 있음
- E: CNB는 FNA의 보완적 검사법으로 숙련된 시술자에 의해 선택적으로 시행될 수 있음

### Suspicious US features

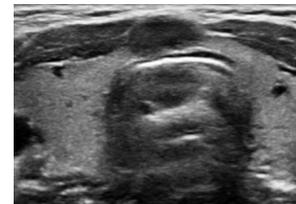
- Punctate echogenic foci (Microcalcification)
- Nonparallel orientation (Taller-than-wide)
- Irregular margins (Spiculated/microlobulated margin)



### Nodules with hypoechogenicity

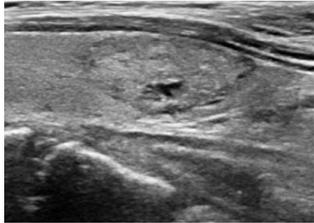


Solid nodule with marked hypoechogenicity. Irregular margins, Non-parallel orientation. K-TIRADS 5, High suspicion  
▶ FNA: Papillary carcinoma

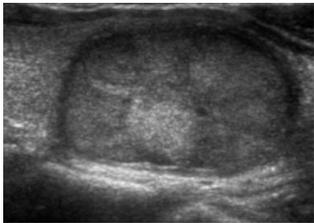


Solid nodule with marked hypoechogenicity. K-TIRADS 4, Intermediate suspicion  
▶ FNA: Papillary carcinoma

### Nodules with isoechogenicity



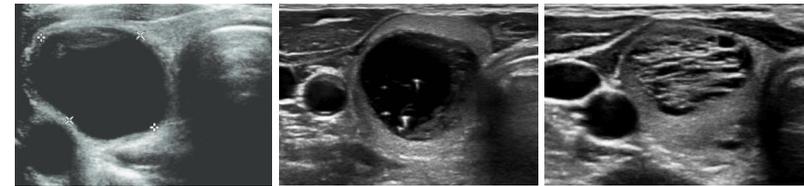
Predominantly solid and isoechoic nodule  
with focal minimal cystic changes  
K-TIRADS 3, Low suspicion  
▶ FNA: Benign follicular nodule



Solid and isoechoic nodule  
K-TIRADS 3, Low suspicion  
▶ CNB: Follicular carcinoma

### Benign nodules

- Pure cyst
- Partially cystic with comet tail artifact
- Spongiform



### Bethesda system 진단 범주와 악성도

진단 범주	Bethesda system의 예측 악성도* (% [범위])
I. 비진단적(nondiagnostic)	13 (5-20)
II. 양성(benign)	4 (2-7)
III. 비정형(atypia of undetermined significance)	22 (13-30)
IV. 여포종양(follicular neoplasm)	30 (23-34)
V. 악성의심(suspicious for malignancy)	74 (68-83)
VI. 악성(malignant)	97 (97-100)

### FNA 결과 & US pattern에 따른 추적

FNA Diagnosis	US Pattern (K-TIRADS)	Management
Nondiagnostic	High suspicion	Repeat FNA or CNB* within 6 months <sup>1</sup>
	Intermediate or low suspicion	Repeat FNA or CNB* within 12 months <sup>1</sup>
Benign	High suspicion	Repeat FNA within 12 months
	Intermediate or low suspicion	US follow-up at 24 months
AUS/FLUS	High suspicion	Repeat FNA or CNB* within 6 months <sup>1</sup>
	Intermediate or low suspicion	Repeat FNA or CNB* within 12 months <sup>1</sup> US surveillance <sup>1</sup> or molecular test
FN/SFN	All nodules	Diagnostic surgery (lobectomy) <sup>1</sup> US surveillance <sup>1</sup> or molecular test
	Suspicious for malignancy	High or intermediate suspicion: Surgery Low suspicion: Repeat FNA or surgery Active surveillance <sup>1</sup>
Malignant	All nodules	Surgery Active surveillance <sup>1</sup>

- Repeat FNA or CNB
  - Nodule size, presence of poor prognostic factors (such as suspected nodal metastasis or gross extrathyroidal extension), clinical factors, and US features
- AUS/FLUS: CNB (more conclusive results) > repeat FNA
- Molecular testing can be considered in select cases to stratify the malignancy risk

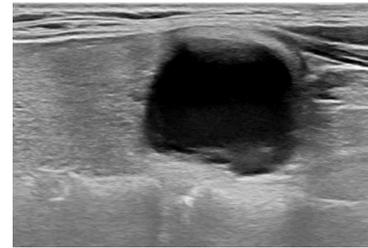
### 조직검사가 필요하지 않은 결절의 추적

- 초음파 소견에 따라 추적 검사

	KTA 2016	KStHR 2021
K-TIRADS 5 (High suspicion)	12개월 이내 초음파	6개월마다 초음파 1-2년, 이후 1년마다 초음파
K-TIRADS 4 (Intermediate suspicion) K-TIRADS 3 (Low suspicion)	12-24개월 이내 초음파	1, 3, 5년 초음파, 이후 3-5년마다 초음파
K-TIRADS 2 (Benign)	≥ 1cm 이면 24개월 이후 초음파 < 1cm 이면 불필요	2.5년 이후 초음파

### 증례1 : 41세 여자

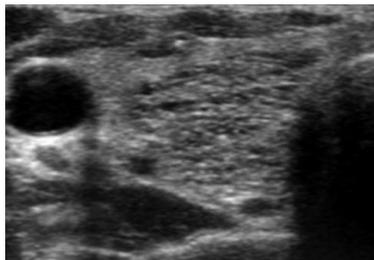
- 목 앞에 만져지는 것이 있어 내원



A 2cm pure cystic nodule in LEFT lower pole  
 K-TIRADS 2 (Benign)  
 → Observation

### 증례2: 58세 남자

- 외부 병원 초음파 검사 이상으로 내원, 외부 영상 미지참.

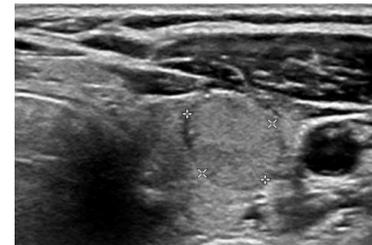


A 2.5cm spongiform\* nodule  
 K-TIRADS 2 (Benign)  
 → Observation

\* Spongiform appearance: the aggregation of multiple nodular or linear microcystic components greater than 50% of the solid component in the partially cystic nodule.

### 증례3: 61세 여자

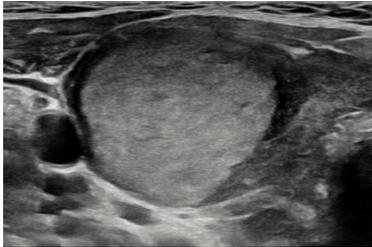
- 2017년 1.0cm, FNA proven benign nodule 로 추적 중
- 2022년 1.6cm 으로 크기 증가 ▶ FNA: AUS/FLUS
- 2023년 1.8cm 으로 크기 증가 ▶ CNB



A 1.8cm isoechoic nodule  
 K-TIRADS 3 (Low suspicion)  
 ▶ 2023년 CNB : Follicular neoplasm  
 → Diagnostic lobectomy

### 증례4: 36세 여자

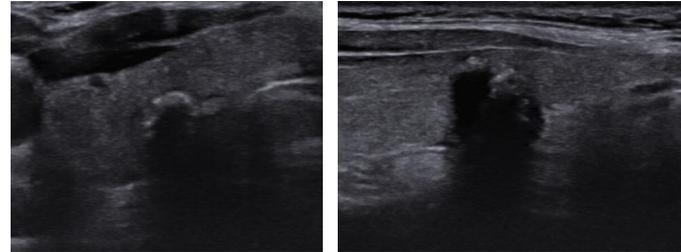
- Neck palpable mass 주소로 내원



A 2.5 x 2.2 x 3.6cm isoechoic nodule  
*K-TIRADS 3 (Benign)*  
▶ FNA: Benign follicular nodule  
→ Observation

### 증례5: 47세 여자

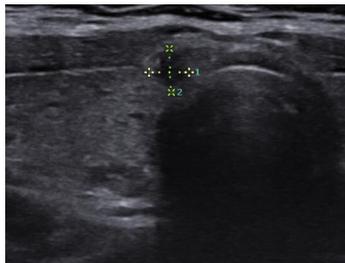
- 건진 이상 소견으로 내원



A 1.07cm entirely calcified nodule in RIGHT mid pole  
*K-TIRADS 4 (Intermediate suspicion)*  
▶ FNA: Papillary carcinoma  
→ Lobectomy

### 증례6: 36세 여자

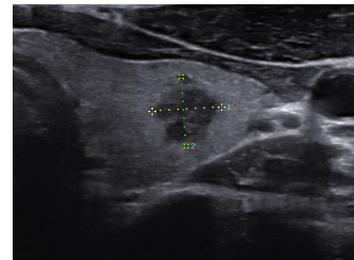
- 갑상선 기능 저하증으로 약제 복용 중 검사



A 0.35 x 0.4 x 0.59 cm non-parallel,  
solid hypoechoic nodule.  
*K-TIRADS 5 (High suspicion)*  
▶ FNA: Papillary carcinoma  
→ Total thyroidectomy d/t gross ETE

### 증례7: 39세 남자

- 외부 병원에서 FNA, AUS/FLUS 소견으로 내원



A 0.70 x 0.73 x 0.73cm non-parallel,  
irregular margin, solid hypoechoic nodule.  
*K-TIRADS 5 (High suspicion)*  
▶ re-FNA with BRAFV600E  
: Papillary carcinoma, BRAFV600E detected  
→ Lobectomy

2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

Session I

---

15:00-15:30

# Bradycardia

차의과학대학교 분당차병원 심장내과

**양필성** 교수



# 맥박이 느려요

양 필 성

Cardiology, CHA Bundang Medical Center, CHA University,  
Seongnam, Korea

## Overview

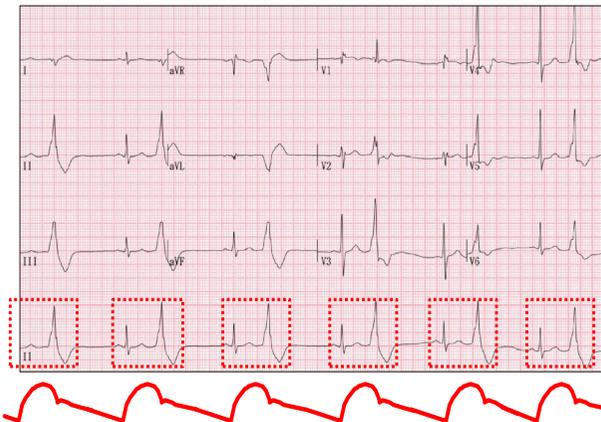
### 맥박이 느려요 / 서맥 / Bradycardia

- 정말 느린가?
- 서맥의 정의 및 기전은?
- 얼마나 느려야 문제가 될까? 위험한 서맥?
- 기타...

### 맥박이 느려요 / 서맥 / Bradycardia

- 정말 느린가?
- 서맥의 정의 및 기전은?
- 얼마나 느려야 문제가 될까? 위험한 서맥?
- 서맥의 교정 가능한 유발 원인 확인.
- 기타...

69세 여자. 혈압계로 혈압을 잴 때 맥박수가 30대~40대로 느리게 나올 때가 있다.

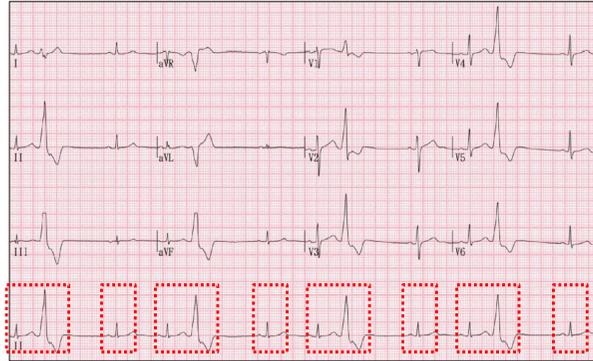


맥박수 (Pulse Rate)  
: 35 회/분

≠

심박수 (Heart Rate)  
: 70 회/분

58세 남자. 스마트시계에서 맥박수가 낮다고 계속 메시지가 뜬다.



PPG (Photoplethysmogram)

맥박수 (Pulse Rate)  
: 48 회/분

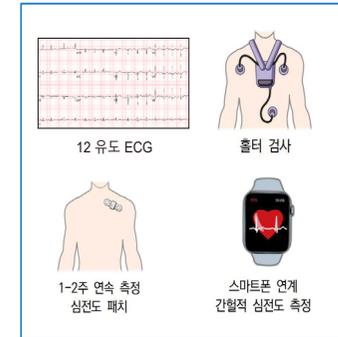
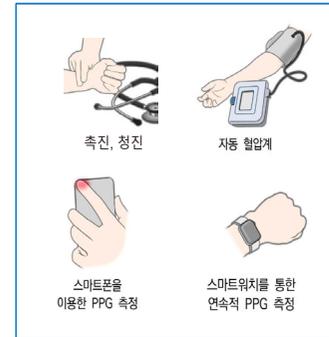
≠

심박수 (Heart Rate)  
: 70 회/분

맥박수 (Pulse Rate) 측정

≠

심박수 (Heart Rate) 측정



✓ 서맥 (서맥성 부정맥)의 진단은 ECG로.

## 맥박이 느려요 / 서맥 / Bradycardia

- 정말 느린가?
- 서맥의 정의 및 기전?
- 얼마나 느려야 문제가 될까? 위험한 서맥?
- 기타...

## 서맥 (Bradycardia)

- 서맥 (Bradycardia)의 정의
  - ✓ 교과서적인 정의: HR <60 beats/min.
  - ✓ 일반적인 임상상황에서 정의: resting HR <50 beats/min
- Impulse formation의 문제
  - ✓ Sinus bradycardia (동성 서맥)
  - ✓ Junctional bradycardia (방실접합부 서맥)
  - ✓ Sick sinus syndrome (동기능부전 증후군)

} P파의 개수 자체가 적다(혹은 없다).  
P파와 QRS 간의 1:1 관계 유지  
(Escape rhythm이 나올 때는 P파 개수보다 QRS 개수가 많을 수 있음)
- Conduction system의 문제
  - ✓ Atrioventricular block (방실차단)
    - 1<sup>st</sup> degree AV block (1도 방실차단): PR 간격 >0.2s
    - 2<sup>nd</sup> degree AV block (2도 방실차단)
    - 3<sup>rd</sup> degree (=complete) AV block (3도[완전] 방실차단)

} P파의 수보다 QRS의 수가 적다.

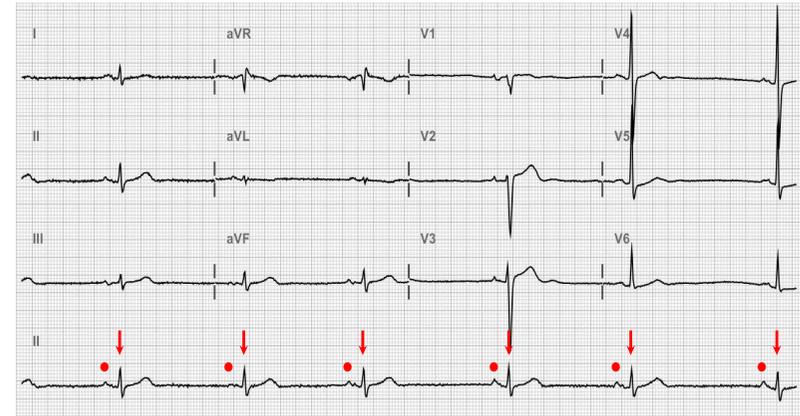
P파를 찾아라!

Impulse formation의 문제

- Sick sinus syndrome (동기능부전 증후군)  
 = ECG findings + symptoms (활동 시 숨참, 어지러움, 실신)
  - Persistent spontaneous sinus bradycardia → 활동 시 숨참
  - Sinus pause (sinus arrest / sinus exit block) } 어지러움 실신
  - Tachycardia-bradycardia syndrome

Impulse formation의 문제

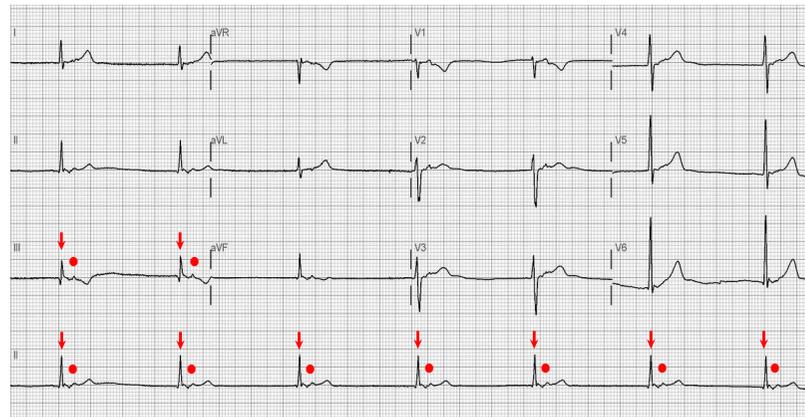
63세 남자. 활동 시 숨참으로 내원 ●: P 파 ↓: QRS HR: 36 bpm



Sinus bradycardia (동성 서맥)

Impulse formation의 문제

56세 여자. 활동 시 숨참으로 내원 ●: P 파 ↓: QRS HR: 41 bpm

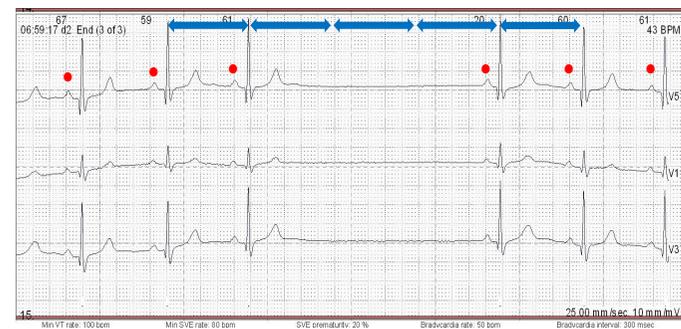


Junctional bradycardia with retrograde P wave (방실절합부 서맥)

Impulse formation의 문제

63세 여자. 실신으로 내원

- ✓ Pause 간격 = R-R 간격의 배수 → sinus exit block
- ✓ Pause 간격 ≠ R-R 간격의 배수 → sinus arrest



Sinus pause (>3 sec) due to sinus exit block

**Impulse formation의 문제**

67세 여자. 반복되는 어지러움과 쓰러질 것 같은 느낌으로 내원



Tachycardia-bradycardia syndrome (빈맥서맥 증후군)

**Conduction system의 문제**

• **Atrioventricular (AV) block (방실차단)**

– 1<sup>st</sup> degree AV block (1도 방실차단): PR 간격 >0.2s

**P파의 수 보다 QRS의 수가 적다.**

– 2<sup>nd</sup> degree AV block (2도 방실차단)

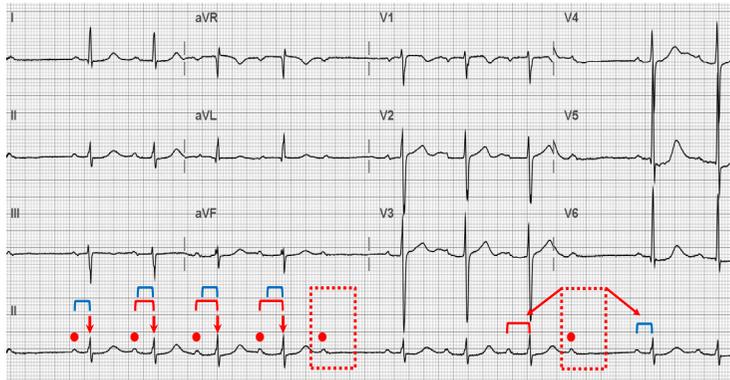
- Mobitz type 1: PR 간격이 점점 늘어나다가 block, His 상단의 block, Benign
- Mobitz type 2: PR 간격에 변화가 없다가 block, His 하단의 block, Pathologic

– 3<sup>rd</sup> degree AV block (3도 방실차단)

**: complete AV block → AV dissociation**

**Conduction system의 문제**

45세 남자. 간헐적인 두근거림으로 내원 ● : P III ↓ : QRS HR: 58 bpm



P파의 수 보다 QRS의 수가 적다. PR 간격이 점점 늘어나다가 block이 된다.  
= 2<sup>nd</sup> degree AV block, Mobitz type 1 (2도 방실차단, 모비츠 1형)

**Conduction system의 문제**

11-Jan-2021 16:58:17

50세 남자. DM foot으로 정형외과 입원 중 ECG ● : P III ↓ : QRS



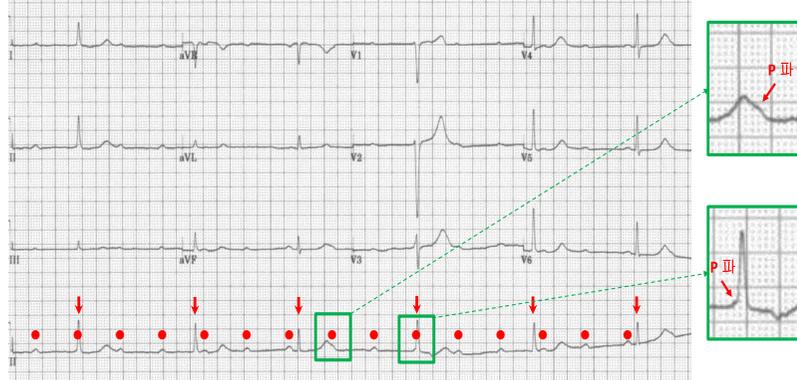
P파의 수 보다 QRS의 수가 적다. PR 간격에 변화가 없다가 block 된다.  
= 2<sup>nd</sup> degree AV block, Mobitz type 2 (2도 방실차단, 모비츠 2형)

Conduction system의 문제

50세 남자. 정형외과 입원 중 서맥 보여 시행한 ECG

2021/01/12  
11:00:31

●: P III ↓: QRS



P파의 수 보다 QRS의 수가 적다. P파와 QRS가 따로 온다.  
= 3<sup>rd</sup> degree AV block = complete AV block (3도 방실차단 = 완전 방실차단)

Conduction system의 문제

57세 남자. 가슴 답답함으로 내원

●: P III ↓: QRS HR: 36 bpm

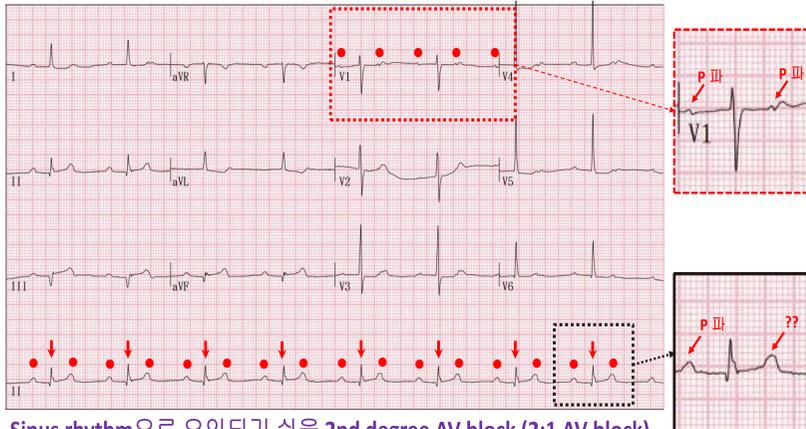


P파의 수 보다 QRS의 수가 적다. 2nd degree AV block (2:1 AV block) : 2도 (2:1) 방실차단

Conduction system의 문제

Interpretation  
Sinus bradycardia  
with 1st degree AV block  
Inferior infarct  
; age undetermined  
Abnormal ECG

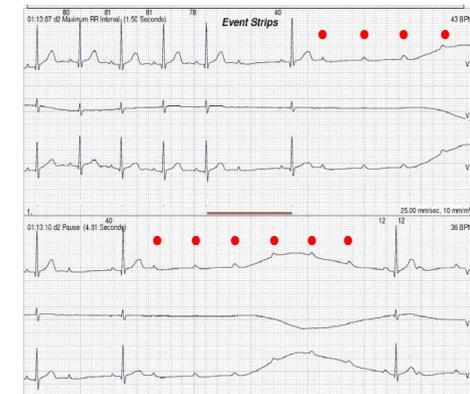
●: P III ↓: QRS HR: 51 bpm



Sinus rhythm으로 오인되기 쉬운 2nd degree AV block (2:1 AV block)

Conduction system의 문제

35세 여자. 반복되는 실신으로 내원, 24h Holter 시행

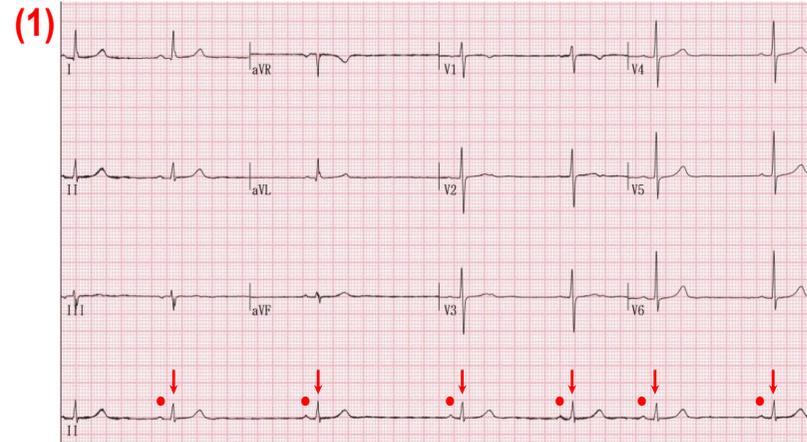


2nd degree AV block, high grade (연속된 2 beat 이상 block)

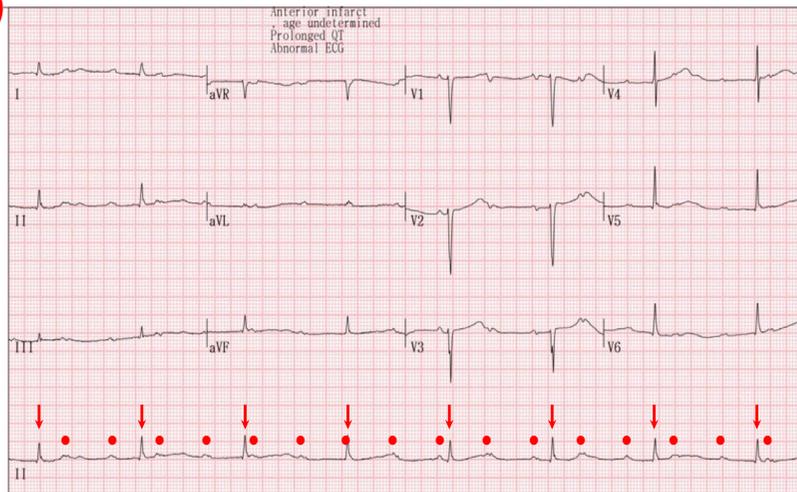
### 맥박이 느려요 / 서맥 / Bradycardia

- 정말 느린가?
- 서맥의 정의 및 기전?
- 얼마나 느려야 문제가 될까? 위험한 서맥?
- 기타...

### 3명 환자의 EKG 중 가장 위험해 보이는 bradycardia는? 이중 1명은 cardiac arrest 가 발생했습니다. HR: 39 bpm



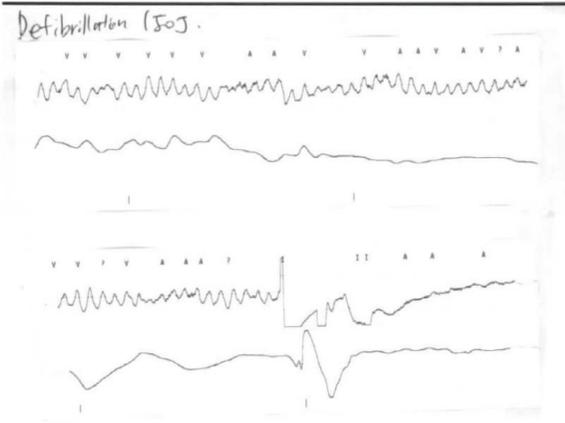
### (2) HR: 48 bpm



### (3) HR: 55 bpm



(3)

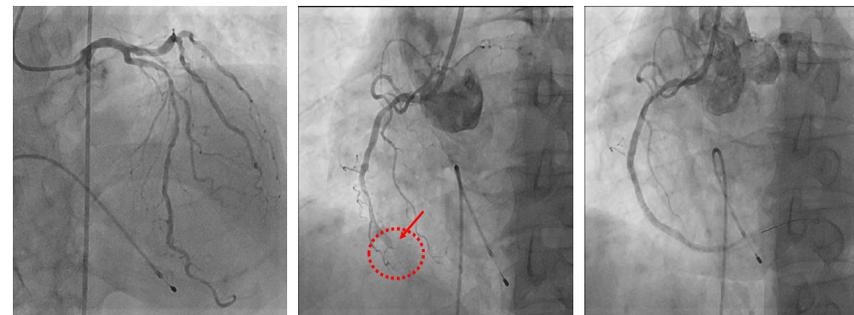
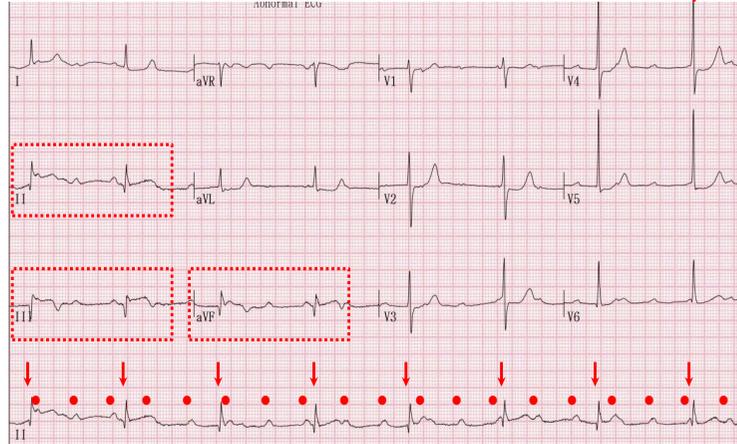


## 얼마나 느려야 문제가 될까? 위험한 서맥?

- 서맥의 위험도를 판단할 때 맥박수는 중요하지 않다.
  - 서맥의 기전과 **pacemaker** 역할을 해주는 곳의 **level**이 중요.
  - **Impulse formation**의 문제
    - ✓ Sinus bradycardia → **pacemaker: Sinus node**
    - ✓ Junctional bradycardia → **pacemaker: AV node**
  - **Conduction system**의 문제
    - ✓ **Atrioventricular block** (방실차단)
      - 2<sup>nd</sup> degree AV block (2도 방실차단)
      - 3<sup>rd</sup> degree (=complete) AV block (3도[완전] 방실차단)
        - Complete AV block 시 pacemaker 역할을 해주는 **conduction system**의 level은 escape beat QRS가 narrow 인지 wide인지로 판단 가능
        - Escape beat QRS가 wide 하면 위험
        - Escape beat QRS 모양에 계속 바뀌어도 위험 (PVC가 동반되어 있으면 위험)
- Dizziness, DOE 등 증상을 유발할 수는 있으나 mortality와 관련될 가능성은 매우 낮음.

## 정말 정말 위험한 서맥?

69세 남자. 가슴 답답함과 어지러움으로 내원. HR: 48 bpm



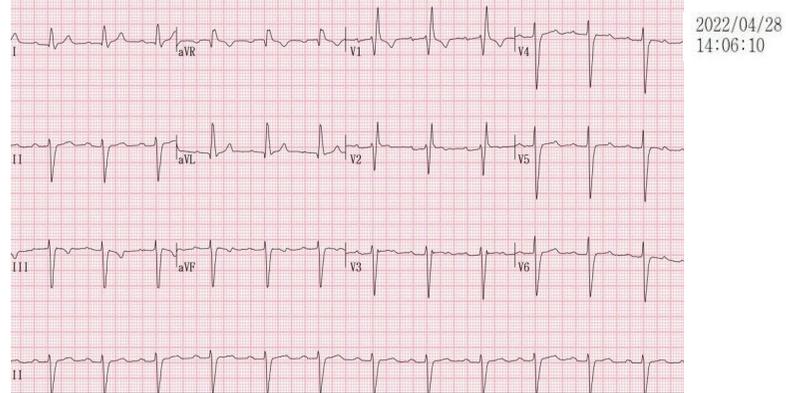
## 맥박이 느려요 / 서맥 / Bradycardia

- 정말 느린가?
- 서맥의 정의 및 기전?
- 얼마나 느려야 문제가 될까? 위험한 서맥?
- 기타...

## 1. Trifascicular block

Heart Rate	75 bpm	Interpretation	Normal ECG
PR Interval	238 ms	with 1st degree AV block	
QRS duration	209 ms	Right bundle branch block	
QT/QTc	410/457 ms	Left anterior fascicular block	
P-R-T axes	47/-71/-8 °	*** Bifascicular block ***	
P duration		Abnormal voltage criteria for LHL, may be normal variant	
		Abnormal ECG	

62세 남자. 두근거림 가슴 답답함으로 내원.

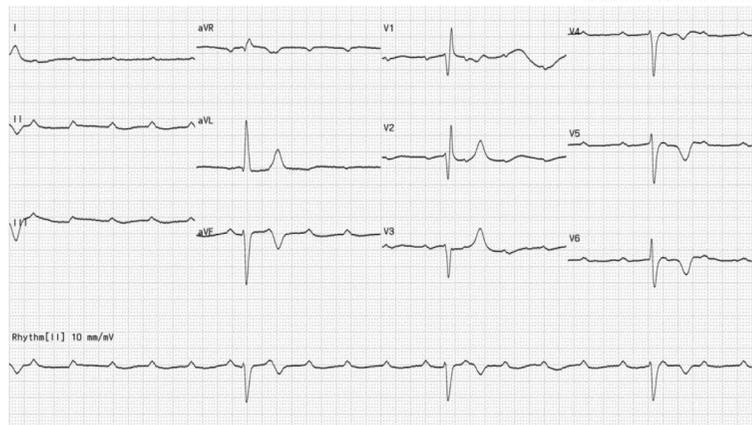


2022/04/28  
14:06:10

RBBB + left anterior fascicular block + 1<sup>st</sup> degree AVB = Tri-fascicular block

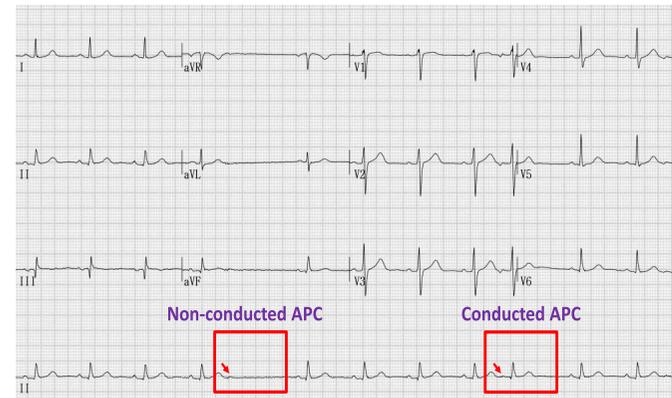
10일 후 응급실로 내원

2022-05-08 08:48:20



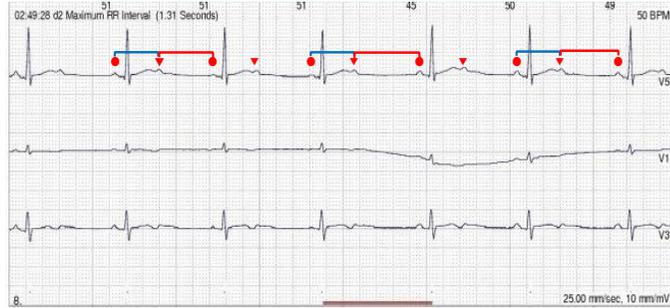
Rhythm [11] 10 mm/mV

## 2. non-conducted APC (=blocked APC)



unexpected pause의 가장 흔한 원인 : non-conducted APC

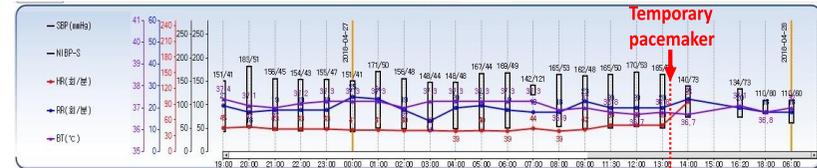
42세 여자, Holter 에서 2:1 AV block 보인다고 하여 외래 내원



non-conducted APCs with bigeminy pattern

새벽 2시48분, 수면 중  
HR 50 bpm

### 3. Uncontrolled BP의 원인 중 하나 : Complete AV block



시간	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	
HR	51	51	45	43	47	41	50	48	44	44	44	49	121	53	48	50	53	51	73	134	110	110	75	80	60	
SBP	151/44	155/45	154/43	151/40	151/41	151/50	155/49	145/44	145/45	161/44	168/49	142/21	165/53	142/48	155/50	170/50	165/44	140/75	140/75	134/73	115/50	115/50	95/68	94/60	94/60	

3개월 전부터 혈압 조절이 잘 안되었다.

## Summary

- 정말 느린가?
  - ✓ 맥박수 (Pulse Rate) ≠ 심박수 (Heart Rate)
- 서맥의 정의 및 기전은?
  - ✓ Resting HR < 50 beats/min
  - ✓ Impulse formation의 문제: Sinus bradycardia, Sick sinus SD
  - ✓ Conduction system의 문제: 2<sup>nd</sup> degree AV block, 3<sup>rd</sup> degree AV block
- 얼마나 느려야 문제가 될까? 위험한 서맥?
  - ✓ 서맥의 위험도를 판단할 때 맥박수는 중요하지 않다. 서맥의 기전과 pacemaker 역할을 해주는 곳의 level이 중요.
- 기타...
  - ✓ Trifascicular block / non-conducted APC / Uncontrolled BP의 원인

● 경청해 주셔서 감사합니다.

2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

**Session I**

---

15:30-16:00

**Eczema**

차의과학대학교 분당차병원 피부과

**신정우** 교수



## 습진

분당차병원 피부과  
 신정우

1. Contact dermatitis
2. Atopic dermatitis
3. Seborrheic dermatitis

# Contact dermatitis

### Contact Dermatitis

- among the most common inflammatory dermatological conditions
- exposure to exogenous substances → immune response → inflammation in the skin and/or mucous membranes

Type of contact dermatitis	Primary immunological mechanisms	Examples of culprits	Evaluation technique examples
Allergic <sup>1</sup>	Type IV hypersensitivity reaction	Metals, fragrances, preservatives, dyes, adhesives, topical medications (for example, antibiotics), rubber accelerators and antioxidants	Patch testing, repeat open application test/use test
Photoallergic	Type IV hypersensitivity reaction; requires light exposure (primarily on the ultraviolet A spectrum)	Chemical sunscreens, NSAIDs, fragrances	Photopatch testing
Irritant	Direct cellular damage	Soaps and detergents, water, acids, alkalis, adhesives, solvents, oils	No routine testing available; it is a diagnosis of exclusion
Photoirritant (also called phototoxic)	Direct cellular damage; requires light exposure (primarily on the ultraviolet A spectrum)	Plants and fruits, medications	No routine testing available
Protein	Type I and type IV hypersensitivity reactions	High-molecular-weight proteins, especially food proteins such as in vegetables <sup>21</sup> , spices <sup>22</sup> , animal protein <sup>23,24</sup> , wheat <sup>25</sup> and milk <sup>26,27</sup> ; other substances include enzymes <sup>28</sup> and latex <sup>29</sup> and cross-reactivity has been described between several protein sources <sup>30</sup>	Short-term occluded patch testing (may be done on finger or palm), prick-prick testing, skin-prick testing

+) Occupational CD encompasses all types of CD

*Nature Reviews Disease Primers* volume 7, Article number: 38 (2021)

**Contact dermatitis**

➤ **Irritant contact dermatitis**

- ✓ 직접 세포 독성
- ✓ 선천면역

➤ **Allergic contact dermatitis**

- ✓ 제 4형 과민반응
- ✓ 선천면역 반응 + 적응면역

➤ **Photoirritant CD and photoallergic CD**

- ✓ UVA 등 광노출이 필요함.
- ✓ ICD, ACD 기전과 동일

➤ **Protein contact dermatitis**

- ✓ 제1형 + 제4형 과민반응
- ✓ 밀, 우유, 라텍스 등 단백질에 대한 과민반응

Type of contact dermatitis	Primary immunological mechanisms	Examples of culprits	Evaluation technique examples
Allergic <sup>a</sup>	Type IV hypersensitivity reaction	Metals, fragrances, preservatives, dyes, adhesives, topical medications (for example, antibiotics), rubber accelerators and antioxidants	Patch testing, repeat open application test/use test
Photoallergic	Type IV hypersensitivity reaction; requires light exposure (primarily on the ultraviolet A spectrum)	Chemical sunscreens, NSAIDs, fragrances	Photopatch testing
Irritant	Direct cellular damage	Soaps and detergents, water, acids, alkalis, adhesives, solvents, oils	No routine testing available; it is a diagnosis of exclusion
Photoirritant (also called phototoxic)	Direct cellular damage; requires light exposure (primarily on the ultraviolet A spectrum)	Plants and fruits, medications	No routine testing available
Protein	Type I and type IV hypersensitivity reactions	High-molecular-weight proteins, especially food proteins such as in vegetables <sup>11</sup> , spices <sup>12</sup> , animal protein <sup>13,14</sup> , wheat <sup>15</sup> and milk <sup>16,17</sup> ; other substances include enzymes <sup>18</sup> and latex <sup>19</sup> and cross-reactivity has been described between several protein sources <sup>20</sup>	Short-term occluded patch testing (may be done on finger or palm), prick-prick testing, skin-prick testing

Nature Reviews Disease Primers volume 7, Article number: 38 (2021)

**Allergic contact dermatitis**

이전에 감작된 물질에 노출되었을 때 유발되는 제4형 지연과민반응

➤ **Sensitization**

- ✓ permeation of the allergen into the skin
- ✓ formation of **hapten-self- protein complexes**
- ✓ local inflammatory milieu
- ✓ **efficient T cell priming by migratory skin dendritic cells (DCs)**

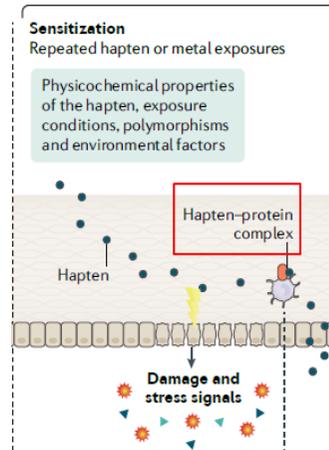
➤ **Elicitation**

- ✓ Subsequent exposure to the chemical
- ✓ **localization to the skin and reactivation of hapten- specific effector and memory T cells**
- ✓ **kill haptenized keratinocytes**
- ✓ local erythema and epidermal spongiosis

Nature Reviews Disease Primers volume 7, Article number: 38 (2021)

**Allergic contact dermatitis**

1> Initial sensitization: the formation of **hapten-self- protein complexes**



Nature Reviews Disease Primers volume 7, Article number: 38 (2021)

**Trends in allergens**

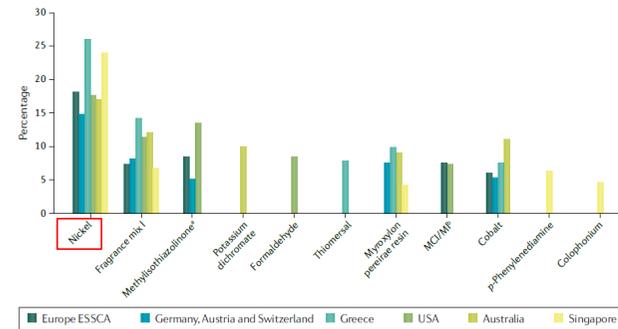


Fig. 1 | **Top sensitizers in various regions worldwide** Prevalence of the most common allergens among various locations. Nickel is the most commonly identified contact allergen worldwide, followed by methylisothiazolinone or fragrance mix I, depending on the region. The presented data is based on studies from Europe (12 countries, time period 2013–2014)<sup>14</sup>, Germany, Austria and Switzerland (2007–2018)<sup>15</sup>, Greece (2010–2016)<sup>16</sup>, North America (2015–2016)<sup>17</sup>, Australia (2001–2010)<sup>18</sup> and Singapore (2009–2013)<sup>19</sup>. <sup>a</sup>Combined average of percentage of patients sensitized to methylchloroisothiazolinone/methylisothiazolinone (MCI/MI) 0.01% or 0.02%. ESSCA, European Surveillance System on Contact Allergies.

Nature Reviews Disease Primers volume 7, Article number: 38 (2021)

## Nickel Allergy

- 1. Choose jewelry carefully.** It's common for a nickel allergy to develop from wearing jewelry containing nickel. Earrings, earring backs and watches are some of the biggest culprits; however necklaces, rings and bracelets containing nickel can also trigger symptoms. To avoid exposure, only wear jewelry that is nickel-free, hypoallergenic, or made from metals such as surgical-grade stainless steel, 18-, 22-, or 24-karat yellow gold, pure sterling silver, or platinum. In addition, wear watchbands made of leather, cloth or plastic.
- 2. Check your clothing.** It's also common for belt buckles, bra hooks, and metal buttons, zippers and snaps to contain nickel. If your clothing has these, replace them with ones that are plastic or plastic-coated. You can also create a barrier between these items and your skin by coating the items with clear nail polish. However, the nail polish will need to be re-applied often.
- 3. Cover electronics.** Recent reports suggest that some electronic devices, including cell phones, laptops, and tablets, may contain nickel. To avoid exposure, always use a protective cover on your electronic devices.
- 4. Substitute household objects containing nickel with objects made of other materials.** Examples include brass keys, titanium-coated or stainless-steel razors, pots and pans with silicone handles, and titanium or plastic eyeglass frames.
- 5. Avoid foods containing nickel if you are extremely sensitive to nickel.** Some foods that contain high amounts of nickel include soy products—such as soybeans, soy sauce, and tofu—licorice, buckwheat, cocoa powder, clams, cashews, and figs.

**SmartPractice**  
DERMATOLOGY | ALLERGY

Search part # qty Add to Cart 0 Items \$0.00

Products Resources Practice Marketing Reimbursement E-mail Sign Up

PATCH TEST TRAINING CONTACT DERMATITIS INSTITUTE BLOG PHYSICIAN LOCATOR

Prescribing Information Reference Manual Data Collection Sheet Reading Guide Shipping & Delivery Kids Patch Testing Guide FAQ

### T.R.U.E. TEST Allergen Information

Each T.R.U.E. TEST patch test unit contains Panel 1.3, 2.3 and 3.3, and includes 35 common allergens and a negative control.

Panel 1.3	Panel 2.3	Panel 3.3
Nickel Sulfate	p-tert-Butylphenol Formaldehyde Resin	Diazolidimyl Urea
Wool Alcohols	Epoxy Resin	Quinolone Mix
Neomycin Sulfate	Carba Mix	Toxicolol-21-Pivalate
Potassium Dichromate	Black Rubber Mix	Gold Sodium Thiosulfate
Caine Mix	Cl+ Me- Isothiazolinone (MCI/MI)	Imidazolidinyl Urea
Fragrance Mix	Quaternium-15	Budesonide
Colophony	Methylolbromo Glutaronitrile	Hydrocortizone-17-Butyrate
Paraben Mix	p-Phenylenediamine	Mercaptobenzthiazole
Negative Control	Formaldehyde	Bacitracin
Balsam of Peru	Mercapto Mix	Parthenolide
Ethylene diamine Dihydrochloride	Thimerosal	Disperse Blue 106
Cobalt-Dichloride	Thiuram Mix	Bronopol

Hablas Español? Información de Alergenos disponible en español. [Click Aquí.](#)

**T.R.U.E. TEST**  
THIN-LAYER RAPID USE  
EPICUTANEOUS PATCH TEST

## FRAGRANCE MIX

Your T.R.U.E. TEST results indicate that you have a contact allergy to fragrance mix. This contact allergy may cause your skin to react when it is exposed to the substance, although it may take several days for the symptoms to appear. Typical symptoms include redness, swelling, itching and fluid-filled blisters.

Fragrance mix contains the following eight substances:

- Geraniol
- Hydroxyacetone
- p-Amylcinnamaldehyde
- Eugenol
- Cinnamylaldehyde
- Cinnamal alcohol
- Isoeugenol
- Oak moss

Fragrances can be found in most products. They are used to add flavor or scent to a product or may mask a product's unpleasant smell. They may come from natural (animal or plant) or synthetic sources. Contact allergy to fragrances is common.

**WHERE IS FRAGRANCE MIX OR ONE OF ITS COMPONENTS FOUND?**

At work, you may find fragrance mix or one of its components in the manufacture or use of:

- Herbal and botanical products
- Metal-working fluids
- Pesticides and insect repellents
- Cleaning and degreasing products
- Scented candles and incense
- Scented tobaccos
- Some foods, beverages and oils that contain citrus, clove and cinnamon
- Dental medications and cements
- Essential oils and aromatherapy
- Fishes and sea water
- Perfumes and colognes
- Paper products
- Air fresheners and deodorizers

At home, you may find fragrance mix or one of its components in:

- Perfumes and colognes
- Scented candles
- Facial tissue and toilet paper
- Pet care and grooming products
- Household cleaners, waxes and polishes
- Car care products, cleaners, waxes and polishes
- Soap, cleansers, deodorants, toothpastes and hygiene products
- Cosmetics such as foundations and powders, blush, mascaras, eye shadows, eyeliners and pencils
- Some foods, beverages and oils that contain citrus, clove and cinnamon
- Air fresheners and deodorizers
- Pesticides and insect repellents
- Aromatherapy products, incense
- Lipsticks and lip balms
- Nail care products such as polish and remover
- Detergents, fabric softeners and stain removers
- Shampoo, conditioners, hair coloring and haircare products
- Skin ointments, creams, lotions, moisturizers, medications and tanning products
- Straining products

**HOW CAN YOU AVOID FRAGRANCE MIX OR ONE OF ITS COMPONENTS?\***

- Fragrances are found in most personal care and household products and many industrial products. Only use "fragrance-free" products. Avoid products labeled "unscented" because they may still contain a masking fragrance.
- Look for products that do not list "fragrance" or one of the fragrance mix components on the label, ingredient list or Material Safety Data Sheet (MSDS). If no information is available, contact the product manufacturer.
- Avoid balms, propolis and tea-tree oil.
- Tell your physician, pharmacist, dentist, veterinarian, beautician and hairdresser that you are allergic to fragrance mix. Ask for preparations that do not contain fragrances.
- If you must use products that contain fragrances on pets or children, wear protective gloves. Utility or disposable gloves made of natural or synthetic rubber or vinyl are good for working with most products that contain fragrance mix or one of its components.
- If you are severely allergic, a diet free of cinnamon, cloves, vanilla and citrus should be considered. Avoid peel from citrus fruits.
- If you think that you contact fragrance mix or one of its components at work, ask your employer for MSDS or manufacturer information on the products. Talk to your employer about using a different product or about wearing protective gloves and clothing.

**WHAT SHOULD YOU LOOK FOR AND AVOID?\***

Avoid products with the following names in the list of ingredients, MSDS, or package insert:

- Geraniol or geranyl alcohol or geranyl alcohol
- Cinnamylaldehyde or cinnamic aldehyde, cinnamal, cassia aldehyde, 3-phenylacetic acid
- Hydroxyacetone or chloral hydrate, 101 aldehyde, muguet
- Synthetic, oxydihydrobenzofuran
- Cinnamyl alcohol or cinnamic alcohol, 3-phenylalcohol
- Eugenol or allyl-eugenol, 2-methoxy-4-allylphenol, 4-hydroxy-3-methylphenylbenzene
- Isoeugenol or 4-propenylphenol, 2-methoxy-4-(1-propenyl)phenol, 4-hydroxy-3-methylpropenylbenzene
- Amylcinnamaldehyde or amylicinnamyl, isamyl aldehyde, -amyl-phenyl acetone, 2-benzylidene hexanone
- Oak moss or oakmoss, oakmoss oil or extract, oakmoss absolute resin, oakmoss concrete

Other names for fragrances:

- Aroma chemicals
- Essential oils of plants and animals
- Perfumes
- Colognes
- Masking or unscented perfumes
- Toilet water

You also may react to fragrance mix related substances such as:

**ACDS**  
ALLERGIC CONTACT DERMATITIS SOCIETY

Join Find a Provider Member Login Contact Us Home

About ACDS Education Patient Support Events Resources Members Support

## Allergen Information

[Black Rubber](#)

[Cobalt](#)

[Colophony](#)

[Epoxy](#)

[Formaldehyde](#)

[Paratertiary Butylphenol Formaldehyde Resin](#)

[Paraphenylenediamine](#)

[Fragrance](#)

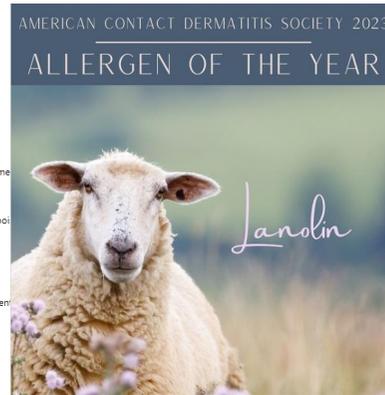
[Lanolin](#)

<https://www.contactderm.org/patient-support/allergen-information>

### Allergen of the Year by American Contact Dermatitis Society

Awards [ edit ]

- 2023 - Lanolin
- 2022 - Aluminum
- 2021 - Acetophenone azine
- 2020 - Isobornyl acrylate [2][3]
- 2019 - Parabens (Non) Allergen[4]
- 2018 - Propylene Glycol[5]
- 2017 - Alkyl Glucoside[6]
- 2016 - Cobalt[7]
- 2015 - Formaldehyde[8]
- 2014 - Benzophenones[9][10]
- 2013 - Methylisothiazolinone[11] - This chemical is used as a preservative in many cosme breakouts, redness or itchiness, and moderate to severe swelling in the eye area.
- 2012 - Acrylate[12][13]
- 2011 - Dimethyl fumarate[14][15] - Dimethyl fumarate is the chemical associated with poi
- 2010 - Neomycin (antibiotic)[16][17]
- 2009 - Mixed dialkyl thiourea[18][19] - Neoprene rubber is a common source.
- 2008 - Nickel[20][21]
- 2007 - Fragrance[22]
- 2006 - p-Phenylenediamine[23][24] - PPD is the hair dye chemical that is used to augmen topical use is banned in some countries.
- 2005 - Corticosteroids[25]
- 2004 - Cocamidopropyl betaine[26][27]
- 2003 - Bacitracin[28][29]
- 2002 - Thimerosal[30]
- 2001 - Gold[7][31]
- 2000 - Disperse Blue Dyes[32]



### Management of Allergic contact dermatitis (ACD)

• **First-line treatments of ACD**

- **avoidance of allergens**, skin care education, personal protective equipment, emollients and soap substitutes, protective cream, **topical corticosteroids**, topical tacrolimus/pimeлимus, local and systematic application of antibiotics, oral prednisone, and alitretinoin.

• **Second-line treatments**

- ultraviolet therapy (PUVA, UVB), azathioprine, methotrexate, acitretin, and low-nickel diet

### Corticosteroid Classification & Cross-reactivity

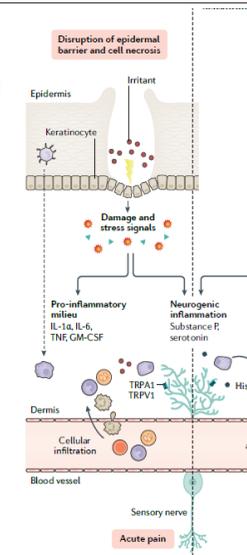
GROUP	1	2	3
<b>Typical members</b>	<p><b>Budesonide</b></p> <p>Cloprednol</p> <p>Corticone acetate</p> <p>Dichlorisone acetate</p> <p>Difluprednate</p> <p>Fludrocortisone acetate</p> <p>Fluonmetholone</p> <p>Fluprednisolone acetate</p> <p>Hydrocortisone</p> <p>Hydrocortisone aceponate</p> <p>Hydrocortisone acetate</p> <p>Hydrocortisone-17-butyrate</p> <p>Hydrocortisone-21-butyrate</p> <p>Hydrocortisone hemisuccinate</p> <p>Isofluprednone acetate</p> <p>Mazzapredone</p> <p>Medrysone</p> <p>Methylprednisolone aceponate</p> <p>Methylprednisolone acetate</p> <p>Methylprednisolone hemisuccinate</p> <p>Prednicarbate</p> <p>Prednisolone</p> <p>Prednisolone caproate</p> <p>Prednisolone pivalate</p> <p>Prednisolone sodium metasulphobenzate</p> <p>Prednisolone succinate</p> <p>Prednisone</p> <p>Tixocortol pivalate</p> <p>Triamcinolone</p>	<p>Amezinonide</p> <p><b>Budesonide (R-isomer)*</b></p> <p><b>Desonide*</b></p> <p>Fluchloronide</p> <p>Flumoxonide</p> <p>Flunisolide</p> <p>Fluocinolone acetonide</p> <p>Fluocinonide</p> <p>Halcinonide*</p> <p>Triamcinolone acetoneide</p> <p>Triamcinolone benetonide</p> <p>Triamcinolone diacetate</p> <p>Triamcinolone hexacetoneide</p>	<p>Alclomethasone dipropionate</p> <p>Baclomethasone dipropionate</p> <p>Betamethasone</p> <p>Betamethasone 17-valerate</p> <p>Flumoxonide</p> <p>Betamethasone dipropionate</p> <p>Betamethasone sodium phosphate</p> <p>Clobetasol propionate</p> <p>Clobetasone butyrate</p> <p>Cortivazol*</p> <p>Desoxymethasone</p> <p>Dexamethasone</p> <p>Dexamethasone acetate</p> <p>Dexamethasone sodium phosphate</p> <p>Diflucortolone valerate</p> <p>Diflorasone diacetate</p> <p>Flumethasone pivalate</p> <p>Fluocortin butyl</p> <p>Fluocortolone</p> <p>Fluocortolone caprylate</p> <p>Fluocortolone pivalate</p> <p>Fluprednidene acetate</p> <p>Halomethasone</p> <p>Meprednisone*</p> <p>Fluticasone propionate</p> <p>Monmetasone furoate</p>
		<p>^ may exceptionally only cross react with the acetonides</p>	

Allergy. 2011 Oct;66(10):1367-74.  
Contact Dermatitis. 2012 Jan;66(1):38-45.

### Irritant Contact Dermatitis

외부 자극 물질에 의해 피부 장벽기능이 손상되며 유발되는 피부염

- release of **stress-associated molecular patterns and DAMPs** by injured cells
- sensed by receptors of the **innate immune system**
- release of a myriad of **chemokines, proteases, and derivatives of arachidonic acid metabolism**
- Irritants may also excite **nociceptors**
- release of **vasoactive peptides**
- producing **acute pain and neurogenic inflammation**
- **vasodilation and the infiltration of diverse leukocytes from the blood into the skin, which further amplify the reaction**



Nature Reviews Disease Primers volume 7, Article number: 38 (2021)

### **Irritant Contact Dermatitis**

- **How chemicals cause skin irritation are poorly understood**
  - ✓ vary from the disorganization of the lipid bilayers of cell membranes to the damage of epidermal barrier proteins
- **Corrosives (부식성 물질)**
  - ✓ acids, bases or detergents
  - ✓ trigger an **intense cell necrosis**
  - ✓ causing major disruption of the skin barrier
  - ✓ **irreversibly damage** of the skin beyond repair
- **Irritant substances (자극물질)**
  - ✓ **reversible local inflammatory reaction caused by the innate immune system**
  - ✓ Water or solvent
  - ✓ minimal and reversible effects on epidermal cells
  - ✓ require repetitive applications before an ICD reaction occurs

### **Irritant Contact Dermatitis**

- Damage to the epidermis -> **Barrier disfunction**
- **Clinical manifestations**
  - ✓ erythema, induration and oedema, painful and burning areas of skin
- **Resolution of inflammatory reaction**
  - ✓ removal of the offending agent
  - ✓ elimination and replacement of injured or dead cells by skin repair processes

*Nature Reviews Disease Primers volume 7, Article number: 38 (2021)*

### **Hand eczema Covid: School hand-washing 'damaging children's skin'**

© 16 March 2021



<https://www.bbc.com/news/uk-england-lincolnshire-56415838>



JORDAN FERRIS

### **Management of Irritant contact dermatitis (ICD)**



- **First-line treatments**
  - **physical protection of skin**, protective cream/emollient, **topical corticosteroids**, and topical tacrolimus/pimecrolimus.
- **Second-line treatments**
  - ultraviolet therapy (PUVA (psoralen + UVA), UVB), and bexarotene gel
- **Third-line treatments**
  - Superficial radiation therapy and oral alitretinoin

# Atopic dermatitis

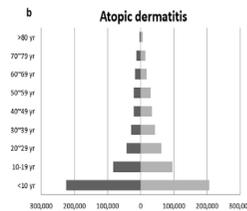
## 아토피피부염이란?

- 주로 유아기 혹은 소아기에 시작되는 만성 재발성의 염증성 피부질환으로  
소양증(가려움증)과 피부건조증, 특징적인 습진을 동반

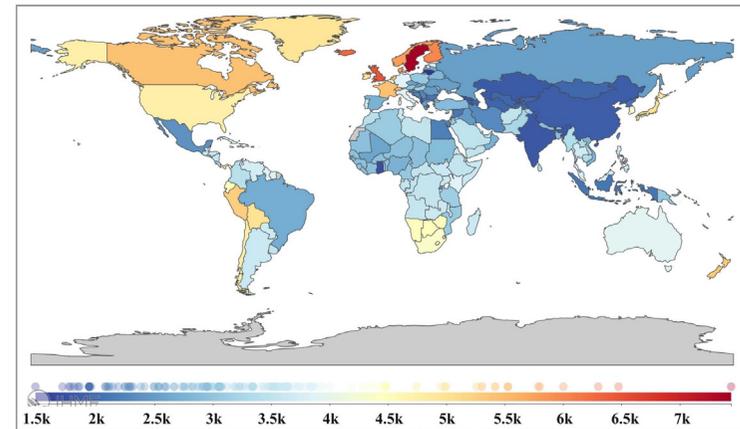
## Prevalance of AD

- Prevalence ranging from 7.2 to 22.6%,
  - In adults : 1%-3%
  - In children : 10%-20%
- Primarily a disease of **early childhood**
- Since 1960s, the prevalence of AE has increased more than **3-fold**

ISSAC (The International Study of Asthma and Allergies in Childhood) KORIa	6-12 years	12-15 years
1995	7.3%	3.9%
2000	10.7%	6.1%



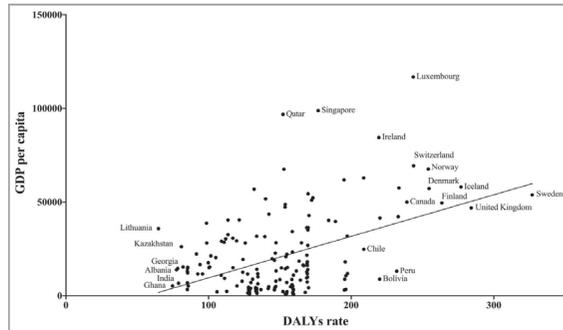
Allergy Asthma Immunol Res. 2016;8(3):181-190  
Allergy Asthma Immunol Res. 2015 Mar;7(2):101-5  
Acta Derm Venereol. 2013;93:438-41  
Eur Clin Respir J. 2015; 2: 10.3402/ecrj.v2.24642



Global Burden of Disease project 2017 data

Br J Dermatol. 2021 Feb;184(2):304-309

DALY of AD correlates with GDP



The disability-adjusted life year (DALY): a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.

The global burden of atopic dermatitis: lessons from the Global Burden of Disease Study 1990–2017\* *Br J Dermatol.* 2021 Feb;184(2):304-309

Hanifin and Rajka's diagnostic criteria, 1980

Major 3개, Minor 3개

	Patients	Controls
<b>Major features.</b>		
(1) Pruritus	100	-
(2) Chronic or chronically relapsing dermatitis	100	-
(3) Typical distribution of skin lesions	91.7	-
(4) Personal and/or family history of atopy	80.1	18.7*
<b>Minor features.</b>		
(1) Xerosis	85.2	11.3*
(2) White dermographism	84.2	0.7*
(3) Hand and/or foot dermatitis	81.9	-
(4) Chronic Morgan infraorbital fold	78.1	46.3*
(5) Itch when sweating	77.6	12.0*
(6) Anterior neck folds	75.2	54.7*
(7) Food intolerance	74.4	6.7*
(8) Intolerance to wool	71.3	29.3*
(9) Course influenced by emotional factors	68.4	-
(10) Immediate skin test reactivity	66.8	NE
(11) Elevated serum IgE	65.7	NE
(12) Tendency toward cutaneous infection	65.3	9.4*
(13) Cheilitis	56.9	12.7*
(14) Orbital darkening	53.4	7.3*
(15) Ichthyosis and/or keratosis pilaris	52.8	8.7*
(16) Early age of onset	48.1	-
up to 6 months	75.9	-
up to 3 years	82.9	-
up to 5 years	24.5	11.3*
(17) Recurrent conjunctivitis	23.1	2.0*
(18) Nipple eczema	20.8	4.0*
(19) Pityriasis alba	14.3*	NE
(20) Anterior subcapular cataracts	0.0*	NE
(21) Keratoconus	0.0*	NE

NE = No examination. \*p < 0.001. For patient results, 100% = 481 patients, unless indicated otherwise.  
 † 100% = 404 patients.  
 ‡ 100% = 286 patients.  
 § 100% = 323 patients.

Limitation

- 일부 항목은 매우 드물거나 특이적이지 않음
- 백인에서만 나타나기도
- 측정자 간 차이가 큼

보다 간단한 진단기준!

United Kingdom working party, 1994

Table 1. UKWP criteria for AD in children

UKWP criteria for AD in children	
sensitive	<b>Must have:</b>
	<ul style="list-style-type: none"> <li>• An itchy skin condition in the last 12 months</li> </ul>
specific	<b>Plus three or more of:</b>
	<ul style="list-style-type: none"> <li>• Onset below age 2*</li> <li>• History of flexural involvement</li> <li>• History of a generally dry skin</li> <li>• Personal history of other atopic disease†</li> <li>• Visible flexural dermatitis as per photographic protocol</li> </ul>

*Br J Dermatol.* 1994 Sep;131(3):383-96

감별진단

- 음: 거드랑이, 사타구니, 손목, burrow, 밤에 특히 심한 가려움증
- 지루피부염: 두피, 귀 뒤, 노란 지루성 인설, 생후 6개월 이내
- 접촉피부염: 특정 접촉부위 반복
- 어린선: 어릴 때부터, 주로 편쪽, 진물, 염증성 병변은 드물.
- 건선: 비교적 뚜렷한 경계, 하얀 인설, 발병 연령
- 광과민성 피부염: 햇빛 노출 부위



〈그림. 연령별 아토피피부염 증상〉



① 유아기



② 소아기



③ 청소년/성인기

**소아기**

- 얼굴은 오히려 덜 침범
- 팔오금, 오금, 목 같이 접히는 부위에 뚜렷한 병변
- 건조한 형태

**유아기:**

- 뺨이나 이마, 머리
- 몸통이 거칠고 건조
- 팔다리는 접히는 부위보다는 팔다리의 바깥쪽
- 진물이나 가피(딱지) 형태의 급성 병변의 양상

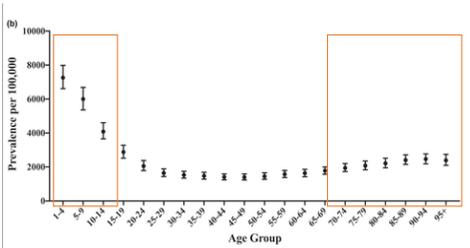
**성인기**

- 오랫동안 긁어 피부가 두껍게 보이는 현상(태선화)
- 접히는 부위 뿐만 아니라 얼굴이나 손도 흔히 침범

보건복지부    대한 의 학 회

Global burden of Disease  
: Comprehensive global study—analysing 286 causes of death, 369 diseases and injuries, and 87 risk factors in 204 countries and territories

The Global Burden of Disease (GBD) Study  
**Atopic Dermatitis**  
: **highest disease burden among skin diseases** as measured by disability-adjusted life-years (DALYs)



Br J Dermatol. 2021 Feb;184(2):304-309

2012~2017년 아토피 진료실인원 현황

구 분	아토피 진료실인원(명)						12년 대비 17년 증가율
	2012년	2013년	2014년	2015년	2016년	2017년	
계	995,558	1,008,823	977,761	950,518	954,252	932,483	-6.3%
19세 이하	659,151	655,077	609,918	576,272	556,818	526,538	-20.1%
20세 이상	336,407	353,746	367,843	374,246	397,434	405,945	20.7%

[표-2] 2012~2017년 아토피 인구10만명 당 진료실인원 현황

구 분	아토피 인구10만명 당 진료실인원(명)						12년 대비 17년 증가율
	2012년	2013년	2014년	2015년	2016년	2017년	
계	2,005	2,018	1,943	1,883	1,880	1,831	-8.7%
19세 이하	6,121	6,215	5,921	5,743	5,683	5,529	-9.7%
20세 이상	865	897	919	925	970	980	13.3%

※ 국민건강보험공단 제출자료, 정준숙의원실 재구성

**Treatment of AD** sama

(a) **Treatment of atopic dermatitis: adult**

- For every grade, *additional* therapeutic options are given
- Add antiseptics / antibiotics in cases of superinfection
- Consider compliance and diagnosis, if therapy has no effect
- Refer to full text for restrictions, especially for treatment marked with <sup>1</sup>
- Licensed indication are marked with <sup>2</sup>, off-label treatment options are marked with <sup>3</sup>

**SEVERE:**  
SCORAD >50 / or persistent eczema

Hospitalization;  
short course of cyclosporin A<sup>1,2</sup>, dupilumab<sup>2</sup>,  
short course of oral glucocorticosteroids<sup>1,2</sup>;  
longer course of systemic immunosuppression: methotrexate<sup>3</sup>,  
azathioprin<sup>2</sup>, mycophenolate mofetil<sup>2</sup>; PUVA<sup>1</sup>; alitretinoin<sup>1,3</sup>

**MODERATE:**  
SCORAD 25-50 / or recurrent eczema

Proactive therapy with topical tacrolimus<sup>2</sup> or class II or class III  
topical glucocorticosteroids<sup>2</sup>, wet wrap therapy, UV therapy (UVB  
311 nm, medium dose UVA1),  
psychosomatic counseling,  
climate therapy

**MILD:**  
SCORAD <25 / or transient eczema

Reactive therapy with topical glucocorticosteroids class II<sup>2</sup> or  
depending on local cofactors:  
topical calcineurin inhibitors<sup>2</sup>, antiseptics incl. silver<sup>2</sup>,  
silver coated textiles<sup>1</sup>  
topical crisaborole<sup>2</sup>

**BASELINE Basic therapy**

Educational programmes,  
emollients, bath oils,  
avoidance of clinically relevant allergens  
(encasings, if diagnosed by allergy tests)

A Wollenberg. J Eur Acad Dermatol Venereol 2020, 34(12): 2717-2744

**Treatment of AD** SAMA

(b) Treatment of atopic dermatitis: children

- For every grade, additional therapeutic options are given
- Add antiseptics / antibiotics in cases of superinfection
- Consider compliance and diagnosis, if therapy has no effect
- Refer to full text for restrictions, especially for treatment marked with <sup>1</sup>
- Licensed indication are marked with <sup>2</sup>, off-label treatment options are marked with <sup>3</sup>

<b>SEVERE:</b> SCORAD >50 / or persistent eczema	Hospitalization; dupilumab <sup>1,2</sup> ; course of systemic immunosuppression: cyclosporin A <sup>3</sup> , methotrexate <sup>3</sup> , azathioprin <sup>3</sup> , mycophenolate mofetil <sup>1,3</sup>
<b>MODERATE:</b> SCORAD 25-50 / or recurrent eczema	Proactive therapy with topical tacrolimus <sup>2</sup> or class II or class III topical glucocorticosteroids <sup>2</sup> , wet wrap therapy, UV therapy <sup>1</sup> (UVB 311 nm), psychosomatic counseling, climate therapy
<b>MILD:</b> SCORAD <25 / or transient eczema	Reactive therapy with topical glucocorticosteroids class II <sup>2</sup> or depending on local cofactors: topical calcineurin inhibitors <sup>2</sup> , antiseptics incl. silver <sup>2</sup> , silver coated textiles <sup>1</sup> topical crisaborole <sup>3</sup>
<b>BASELINE</b> Basic therapy	Educational programmes, emollients, bath oils, avoidance of clinically relevant allergens (encasings, if diagnosed by allergy tests)

A Wollenberg. J Eur Acad Dermatol Venereol 2020, 34(12): 2717-2744

### Cyclosporin

- Calcineurin inhibitor
- First choice of systemic anti-inflammatory drugs**
- Side effects**
  - Acute and chronic nephrotoxicity, hypertension, infections, gingival hyperplasia, elevated blood lipids, liver enzymes and bilirubin
  - Dose dependent and observed more frequently in adults than in children
  - Close monitoring of serum creatinine, blood pressure and protein in the urine is obligatory
- Start with 3 mg/kg/day and raised up to 5 mg/kg/day
- Concomitant topical treatment with TCI or TCS is recommended

### Other systemic anti-inflammatory drugs

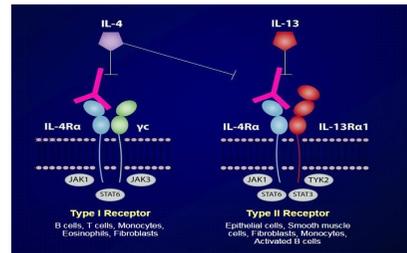
- Systemic corticosteroids
- Methotrexate
- Azathioprine
- MMF

### Phototherapy

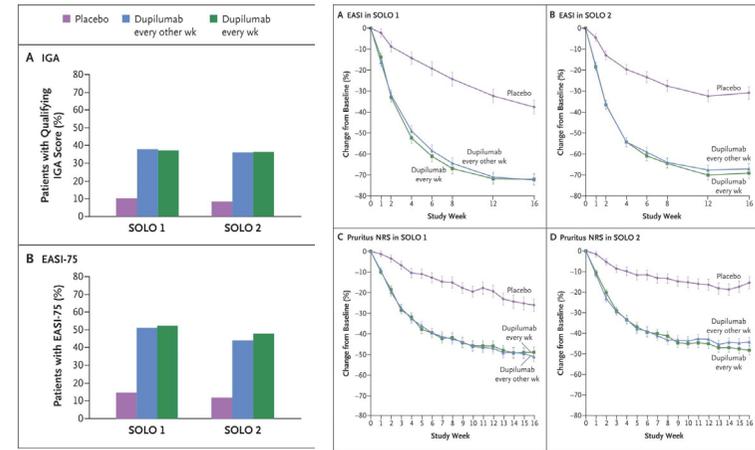
- Narrow band UVB
  - Suppress immune response in the skin
  - Reduce microbial colonization
  - Combination of UV light with TCI or cyclosporin is not recommended
  - 임신한 경우, 다른 약제를 많이 복용하고 있는 경우 등 유용

## Dupilumab

- Fully-human, high affinity (KD=30 pM) monoclonal antibody against the alpha subunit of the interleukin 4 receptor (IL-4R)
- IgG4 isotype
- Blocks action of IL-4 and IL-13 at Type I and II receptors
- No evidence of antibody-dependent, complement- or cell-mediated cytotoxicity
- Route of administration: subcutaneous

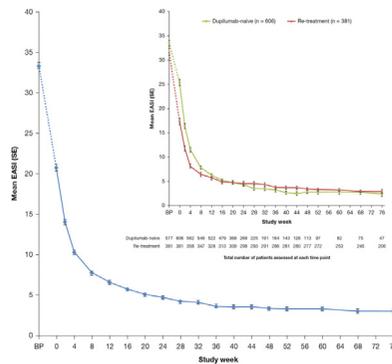


*N Engl J Med.* 2016 Dec 15;375(24):2335-2348  
*N Engl J Med.* 2014 Jul 10;371(2):130-9



Phase 3 trials, *N Engl J Med.* 2016 Dec 15;375(24):2335-2348

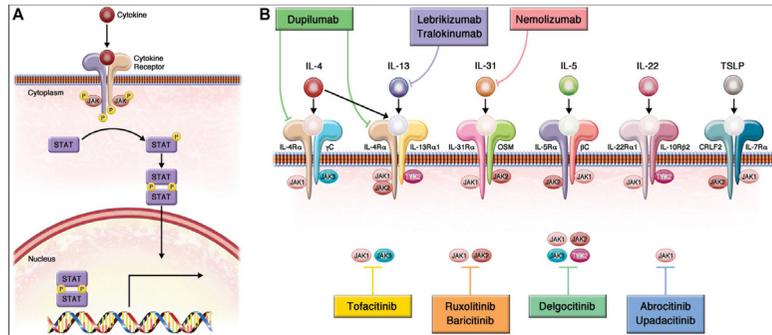
Dupilumab shows long-term safety and efficacy in patients with moderate to severe atopic dermatitis



*J Am Acad Dermatol.* 2020 Feb;82(2):377-388

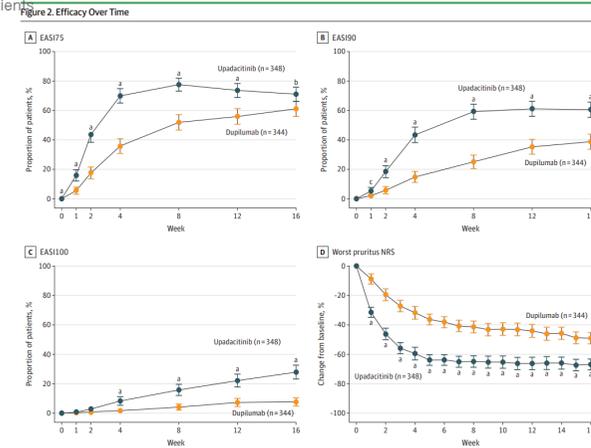
## JAK inhibitor

- Baricitinib: 올루미언트 (Olmiant®, Lilly)
- Upadacitinib: 린보크 (Rinvoq®, AbbVie)
- Abrocitinib: 시빈코 (CIBINQO®, Pfizer)



J Allergy Clin Immunol. 2021 Oct;148(4):927-940

692 patients



## Dupilumab/JAK inhibitor 보험기준

### 1) 성인 및 청소년

3년 이상 증상이 지속되는 성인(만 18세 이상) 및 청소년(만 12세-만 17세) 만성 중증 아토피 피부염환자로서 다음의 조건을 모두 만족하는 경우

가) 1차 치료제로 국소치료제(중등도 이상의 코르티코스테로이드 또는 칼시뉴린 저해제)를 4주 이상 투여하였음에도 적절히 조절되지 않고, 이후 전신 면역억제제(Cyclosporine 또는 Methotrexate)를 3개월 이상 투여하였음에도 반응(EASI(Eczema Area and Severity Index) 50%이상 감소)이 없거나 부작용 등으로 사용할 수 없는 경우

\* 동 약제 투약개시일 6개월 이내에 국소치료제 및 전신 면역억제제 투여이력이 확인되어야 함.

나) 동 약제 투여시작 전 EASI 23 이상

### 2) 소아 (만 6세-만 11세)

1년 이상 증상이 지속되는 소아(만 6세-만 11세) 만성 중증 아토피피부염 환자로서 다음의 조건을 모두 만족하는 경우

가) 1차 치료제로 국소치료제(중등도 이상의 코르티코스테로이드 또는 칼시뉴린 저해제)를 4주 이상 투여하였음에도 적절히 조절되지 않거나, 부작용 등으로 사용할 수 없는 경우

\* 동 약제 투약개시일 4개월 이내에 국소 치료제 투여이력이 확인되어야 하며, 국소치료제 투여 시점에 EASI 21 이상이어야 함.

나) 동 약제 투여시작 전 EASI 21 이상

\* **임상 사진 계속 필수:** EASI 감수 측정 시 중증도 판단을 위한 환부사진이 확인되어야 함

## Topical corticosteroids (TCS)

### • Topical corticosteroids

- Still the **first-line anti-inflammatory treatment option in AD.**
- The choice of the TCS depends on the patient's age, disease severity and location of AD lesions.
- For routine treatment of flares, once-daily application of a potent TCS is sufficient, usually for 3–5 days.
- **The most constructive way to use TCS and avoid steroid-related side-effects is not to spare them during acute flares, but through early TCS intervention combined with consequent baseline emollient skincare to stabilize the disease.**
- Side effects
  - Atrophy, striae, purpura, telangiectasia, hypertrichosis, acne-like rashes

A Wollenberg. J Eur Acad Dermatol Venereol 2020, 34(12): 2717-2744

**!!퍼센트!!  
!!제형!!**

강도(Potency)	화합명(Generic name)	제형(Formulation)
Class 1 (매우 강한 제제)	Betamethasone dipropionate 0.05%	Ointment
	Clobetasol propionate 0.05%	Cream, lotion, ointment, solution
	Halobetasol propionate 0.05%	Cream, ointment
	Diflorasone diacetate 0.05%	Ointment
Class 2 (강한 제제)	Betamethasone dipropionate 0.05%	Ointment, cream
	Mometasone furoate 0.1%	Ointment
	Fluocinonide 0.05%	Cream, gel, solution
	Diflorasone diacetate 0.05%	Ointment
	Desoximetasone 0.25%	Cream, ointment
Class 3 (강한 제제)	Amcinonide 0.1%	Cream
	Betamethasone dipropionate 0.05%	Cream
	Betamethasone valerate 0.1%	Ointment, solution
	Flucicason propionate 0.005%	Ointment
	Diflorasone diacetate 0.05%	Cream
Class 4 (중등도 제제)	Mometasone furoate 0.1%	Cream, lotion
	Methylprednisolone aceponate 0.1%	Cream, lotion, ointment
	Triamcinolone acetonide 0.1%	Ointment
	Betamethasone valerate 0.12%	Foam
	Fluocinonide acetonide 0.025%	Ointment
	Hydrocortisone valerate 0.2%	Ointment
Class 5 (중등도 제제)	Fluticasone propionate 0.05%	Cream
	Betamethasone dipropionate 0.05%	Lotion
	Triamcinolone acetonide 0.1%	Cream
	Hydrocortisone butyrate 0.1%	Cream, lotion
	Hydrocortisone valerate 0.2%	Cream
	Fluocinonide acetonide 0.025%	Cream
Class 6 (약한 제제)	Alclometasone dipropionate 0.05%	Cream, lotion
	Desonide 0.05%	Cream, lotion
	Triamcinolone acetonide 0.025%	Cream
Class 7 (약한 제제)	기타 hydrocortisone, dexamethasone, prednisolone, methylprednisolone 제제	

피부과학 6판

강도(Potency)	화합명(Generic name)	제형(Formulation)	
Class 1 (매우 강한 제제)	Betamethasone dipropionate 0.05%	Ointment	도모호론, 베타베이트
	Clobetasol propionate 0.05%	Cream, lotion, ointment, solution	디푸코
	Halobetasol propionate 0.05%	Cream, ointment	
	Diflorasone diacetate 0.05%	Ointment	
Class 2 (강한 제제)	Betamethasone dipropionate 0.05%	Ointment, cream	실크론지
	Mometasone furoate 0.1%	Ointment	에로콤 연고
	Fluocinonide 0.05%	Cream, ointment	
	Diflorasone diacetate 0.05%	Cream, gel, solution	
	Desoximetasone 0.25%	Cream, ointment	에스파손 로션, 에스파손겔, 데속시원겔, 데타손 로션, 연고
Class 3 (강한 제제)	Amcinonide 0.1%	Cream	라벤다 크림, 네오덤 크림
	Betamethasone dipropionate 0.05%	Cream	
	Betamethasone valerate 0.1%	Ointment, solution	
	Flucicason propionate 0.005%	Ointment	
Class 4 (중등도 제제)	Mometasone furoate 0.1%	Cream	에로콤, 모메타손, 더모타손 크림
	Methylprednisolone aceponate 0.1%	Cream, lotion, ointment	아드반탄, 토피솔
	Triamcinolone acetonide 0.1%	Ointment	
	Betamethasone valerate 0.12%	Foam	
	Fluocinonide acetonide 0.025%	Ointment	
	Hydrocortisone valerate 0.2%	Ointment	
Class 5 (중등도 제제)	Fluticasone propionate 0.05%	Cream	리도맥스 크림 0.3%
	Betamethasone dipropionate 0.05%	Lotion	
	Triamcinolone acetonide 0.1%	Cream	
	Hydrocortisone butyrate 0.1%	Cream, lotion	
	Hydrocortisone valerate 0.2%	Cream	
	Fluocinonide acetonide 0.025%	Cream	더마툼, 락티케어 제마지스 크림
Class 6 (약한 제제)	Alclometasone dipropionate 0.05%	Cream, lotion	리도맥스 로션 0.3%
	Desonide 0.05%	Cream, lotion	데스오엘
	Triamcinolone acetonide 0.025%	Cream	리도맥스 크림 0.15%
Class 7 (약한 제제)	기타 hydrocortisone, dexamethasone, prednisolone, methylprednisolone 제제		

피부과학 6판

### Proactive treatment - TCS

- Hanifin et al.
  - Fluticasone propionate 0.05%
  - 20 weeks
  - Flare 7.7배 감소
- Berth-Jones et al.
  - Fluticasone propionate 0.05% cream
  - 16 weeks
  - Recurrence-free period 2배
  - Recurrence 횟수 5.8배
- Peserico et al.
  - Methylprednisolone aceponate 0.1%
  - 16 weeks
  - No flare during the entire study period (66%)
- **No sign of skin atrophy during proactive treatment of TCS**

Br J Dermatol 2002;147:528-537  
BMJ 2003;326:1367.  
Br J Dermatol 2008;158:801-807  
Ann Dermatol. 2012 Aug;24(3):253-60

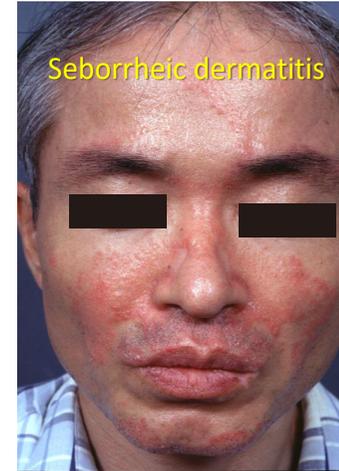
### Topical calcineurin inhibitor

- Topical calcineurin inhibitor
  - Tacrolimus 0.03%, 0.1%, pimecrolimus 1.0%
  - Inhibiting synthesis of proinflammatory cytokines
  - Alternative therapy to corticosteroids, similar to a corticosteroid with moderate activity
  - Do not cause skin atrophy and protect barrier function
  - 화끈거림, 자극감 설명 필요
    - 냉찜질, 약 냉장보관 도움
    - 1~2주 내 호전
    - 특히 tacrolimus 는 oint 제형으로 사용감이 불편함을 미리 설명

### Proactive treatment – TCI

- Wollenberg et al.
  - Tacrolimus ointment 0.1% twice weekly
  - 257 adults
  - Over 12 months
  - Induction phase twice daily for up to 6 weeks
  - Significantly fewer flares with tacrolimus 0.1% (56.9% vs. 29.6%), significantly reduced duration of flares (12.4% vs. 31.5%)
  - Median flare-free time was longer with proactive treatment with tacrolimus (142 days vs. 15 days)
- Thaçi et al.
  - European children study
  - Tacrolimus 0.03% twice weekly
  - Over 12 months
  - Proactive therapy reduced the number of flares, prolonged the flare-free time
- Paller et al.
  - Thrice weekly proactive use of tacrolimus 0.03%
  - 40 weeks
  - Median flare-free time 169 days vs. 43 days

*Allergy 2008;63:742-750  
Br J Dermatol 2008;159:1348-1356  
Pediatrics 2008;122:e1210-1218*



### Seborrheic dermatitis

- Infantile and adult forms exist
- Characterized by erythema and greasy scaling
- Scalp, ears, face, chest, and intertriginous areas
- Etiology unknown but may be related to increased sebum secretion, abnormal sebum composition, certain drugs, or *Malassezia* yeasts
- Parkinson's disease, HIV, neuroleptic drugs



Image: Seborrheic Dermatitis (Infant) - MSD Manual Professional Edition (msdmanuals.com)

### Xerotic eczema



- Winter
- Old aged: 장벽기능저하
- Irritants (frequent bathing)
- Atopy

### Treatment of Eczema

- Identifying and removing the cause
- Elimination of triggering factors
  - heat, food, drug, psychogenic factors, etc
- Classic dermatological therapies
  - Moisturizing therapy
  - Topical corticosteroids, topical calcineurin inhibitor (Tacrolimus, pimecrolimus)
  - Antihistamines
  - Systemic corticosteroid, cyclosporine, methotrexate
  - Dupilumab, JAK inhibitors for atopic dermatitis

### 스테로이드제에 반응하지 않을 때

- 스테로이드에 대한 접촉피부염? - 점점 더 가려워지는지?
- 진균 감염? - 염증은 좋아지는데 점점 더 넓어지는지?
- 옴? - 밤에 특히 가렵지 않은지? 접히는 부위 위주로 popular lesion들이 있지는 않은지? Burrow 가 관찰되지 않는지? 함께 생활하는 가족들은 비슷한 증상이 없는지?

### 만성 습진에서 스테로이드제 장기간 치료가 부담될 때

- Topical calcineurin inhibitor - 피부암 발생과 연관성 떨어짐.
- Proactive treatment - 증상이 조절된 후에는 일주일에 2~3번으로 유지
- 나이와 피부 부위에 맞는 스테로이드제 고르기
- 습진의 초기에 적극적으로 사용하는 것이 오히려 스테로이드 총사용량을 줄일 수 있음.

Thank you 😊

2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

**Session II**

---

16:10-16:40

# Abnormal uterine and vaginal bleeding

차의과학대학교 분당차병원 산부인과

**나은덕** 교수

## Nongestational Abnormal uterine bleeding in the reproductive years

분당차병원 산부인과 나은덕

### Case 1

- 20 yrs, single
- Menarche 12 yrs
- Mens: Regular, interval 40 days, 7 days duration, 7~8 large pads/d
- Sudden onset heavy menstrual bleeding
- Hgb 5.8 g/dl
- v/s: 116/68-115-20-37.4



### Case 2

- 38 yrs
- 2-0-0-2 (c/sec)
- Regular mens
- Prolonged mens 10 days



### Case 3

- 36 yrs
- 1-0-0-1 (NSVD)
- Rt. Ovarian endometrioma
- Dienogest medication for 1 yrs
- Abnormal uterine bleeding for 3 weeks



## Terminology and Definitions (FIGO AUB System 1)

Parameter	Normal	Abnormal	☑
Frequency	Absent (no bleeding) = amenorrhea		<input type="checkbox"/>
	Infrequent (>38 days)		<input type="checkbox"/>
	Normal (≥24 to ≤38 days)		<input type="checkbox"/>
Duration	Frequent (<24 days)		<input type="checkbox"/>
	Normal (≤8 days)		<input type="checkbox"/>
	Prolonged (>8 days)		<input type="checkbox"/>
Regularity	Normal or "Regular" (shortest to longest cycle variation: ≤7-9 days)*		<input type="checkbox"/>
	Irregular (shortest to longest cycle variation: ≥8-10 days)*		<input type="checkbox"/>
Flow Volume (patient determined)	Light		<input type="checkbox"/>
	Normal		<input type="checkbox"/>
Intermenstrual Bleeding (IMB) Bleeding between cyclically regular onset of menses	None		<input type="checkbox"/>
	Random		<input type="checkbox"/>
	Cyclic (Predictable)	Early Cycle Mid Cycle Late Cycle	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Unscheduled Bleeding on Progestin ± Estrogen Gonadal Steroids (birth control pills, rings, patches or injections)	Not Applicable (not on gonadal steroid medication)		<input type="checkbox"/>
	None (on gonadal steroid medication)		<input type="checkbox"/>
	Present		<input type="checkbox"/>

TABLE 1 Summary of changes to FIGO System 1 (normal and abnormal uterine bleeding).

Parameter	Change
Frequency	Amenorrhea is now part of the frequency category
Regularity	Refined definition of regularity Normal variation (shortest to longest) 7-9 d Slight variance depends on age
Duration	Now only two categories for duration Normal: ≤8 d Prolonged: >8 d
Volume	Definition of the symptom of HMB NICE definition <sup>5,23</sup> Bleeding volume sufficient to interfere with the woman's quality of life
Intermenstrual bleeding	Definition of the symptom of inter-menstrual bleeding Spontaneous bleeding occurring between menstrual periods Can be either cyclical, or random

\*The available evidence suggests that, using these criteria, the normal range (shortest to longest) varies with age: 18-25 y of age, ≤9 d; 26-41 y, ≤7 d; and for 42-45 y, ≤9 d (Harlow et al., 2000).

- Heavy menstrual bleeding (HMB) excessive menstrual blood loss, which interferes with a woman's physical, social, emotional and/or material quality of life
- HMB include:
  - 1) need to change sanitary protection every 1 - 2 hours or more than seven per day;
  - 2) blood clots greater than 2 cm;
  - 3) need to change protection during the night;
  - 4) need to use double protection (pad and tampon);
  - 5) anaemia and low ferritin levels

## Classification of Cause of AUB (FIGO AUB System 2)

Polyp  
Adenomyosis  
Leiomyoma  
Malignancy & hyperplasia



Coagulopathy  
Ovulatory dysfunction  
Endometrial  
Iatrogenic  
Not otherwise classified

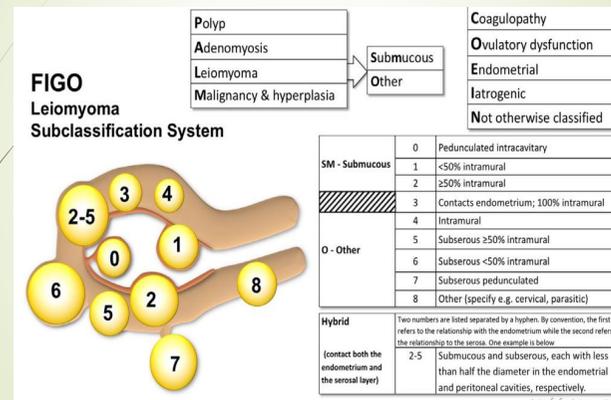


TABLE 2 Summary of changes to FIGO AUB System 2 Causes or Contributors to AUB in the Reproductive Years (PALM-COEIN).

System 2 category	Change
AUB-A	Refined sonographic diagnostic criteria
AUB-L	Inclusion of Type 3 as a submucous leiomyoma Type definitions and distinctions Distinction between Types 0 and 1; 6 and 7 Distinction between Types 2 and 3; 4 and 5
AUB-C	No longer includes AUB associated with pharmacologic agents that impair blood coagulation which are now included in AUB-I
AUB-I	Now includes AUB associated with all iatrogenic processes including the use of pharmacological agents used for anticoagulation and those thought to interfere with ovulation
AUB-O	Diagnostic threshold changes based upon the revisions of System 1, described above No longer includes ovulatory disorders associated with drugs known or suspected to interfere with ovulation
AUB-N	The name of the category has been changed from "Not Yet Classified" to Not Otherwise Classified There is a brief discussion of a potential new cause of AUB the so-called uterine "niche" or isthmocoele following lower segment cesarean section

Abbreviations: AUB, abnormal uterine bleeding; FIGO, International Federation of Gynecology and Obstetrics.

## FIGO leiomyoma subclassification system



## General assessment

- bleeding is not related to **pregnancy**
- emanating **from the cervical canal**, rather than another location such as the vagina, vulva, perineum, or perianal region
- should be evaluated for **iron deficiency** (ferritin, hemoglobin, hematocrit, platelets)
- originate in the **cervical canal or endometrial cavity**
- clinician should systematically evaluate the patient for each of the components of FIGO AUB System 2, the **PALM-COEIN classification**

## History

- Bleeding pattern
  - Quantity, frequency of changing pads or tampons, presence of clots, timing during menstrual cycle, impact on quality of life
- Symptoms of anemia Headache
  - palpitations, shortness of breath, dizziness, fatigue, pica
- Sexual and reproductive history
  - Use of contraception, sexually transmitted infections, cervical screening, possibility of pregnancy, desire for future pregnancy, known infertility
- Associated symptoms
  - Fever, chills, increasing abdominal girth, pelvic pressure or pain, bowel or bladder dysfunction, vaginal discharge or odor

- Symptoms associated with a systemic cause for AUB
  - Overweight, obesity, PCOS, hypothyroidism, hyperprolactinemia, hypothalamic or adrenal disorder
- Chronic medical illness
  - Inherited bleeding disorders (coagulopathy, blood dyscrasias, platelet functional disorders), systemic lupus erythematosus or other connective tissue diseases, liver disease, renal disease, cardiovascular disease
- Medications
  - Hormonal contraceptives, anticoagulants, SSRIs, antipsychotics, tamoxifen, herbals (eg, ginseng)
- Family history
  - Coagulation or thromboembolic disorders, hormone-sensitive cancers

## Physical examination

- Vital signs: blood pressure, pulse, orthostatics as clinically indicated, weight, BMI
- Neck: thyroid examination
- Abdomen: tenderness, distension, striae, palpable mass, hepatomegaly
- Skin: pallor, bruising, petechia, signs of hirsutism (male hair pattern distribution, acanthosis nigricans) Pelvic examination/inspection: vulva, vagina, cervix, anus, and urethra
- Bimanual examination of uterus and adnexal structures
- Rectal examination if bleeding from rectum suspected or risk of concomitant pathology
- Testing: Papanicolaou smear, cervical cultures if risk for sexually transmitted infection

## Laboratory

- Pregnancy test
- Complete blood count with platelets
- Other laboratory testing as clinically indicated
  - Thyroid function test, androgen, estrogen
  - Prolactin
  - PTT/PT/fibrinogen, thrombin time, Ristocetin cofactor, von Willebrand diagnostic panel
- TVS or SIS
- Office endometrial sampling (as clinically indicated)
- Office hysteroscopy (as clinically indicated)

## AUB and corticosteroid

- Corticosteroid injections are commonly used
- association between corticosteroid injection and abnormal bleeding in both premenopausal and postmenopausal women
- in premenopausal women, because of disruption of the hypothalamic pituitary cycle and ovulation
  - **interference with ovulation** clearly **does not explain** the bleeding observed in **postmenopausal women**
  - complex interactions that regulate and maintain normal endometrial function
    - ex) interference with endometrial macrophages

## Determination of ovulatory status

- normal menstrual cycle
- coordinated interplay within the hypothalamic-pituitary-ovarian axis
- During the follicular phase
  - Follicle stimulating hormone (FSH) causes the ovarian follicles to produce estrogen from granulosa cells
  - A dominant follicle emerges on days 5-7, leading to another rise in the estrogen level and further growth of the endometrium
  - rise in estrogen triggers negative feedback to FSH at the same time that it stimulates a surge in luteinizing hormone (LH), triggering ovulation
  - duration of the follicular phase is highly variable, ranging from 10.3 to 16.3 days

- During the luteal phase
  - corpus luteum produces progesterone, stimulating a secretory endometrium
  - If fertilization does not occur, progesterone and estrogen levels fall rapidly
  - leading to synchronous shedding of the endometrial lining approximately  $14 \pm 1$  day after ovulation has occurred
  - luteal phase remains fairly constant at a mean of 14.13 days ( $\pm 1.41$  days)
- During menses
  - Fifty percent of the endometrial lining is shed during the first 24 hours of menstrual flow
  - Vasoconstriction of the denuded spiral arterioles in the basal layer of the endometrium (and, potentially, the radial arteries in the surface of the myometrium) brings about the end of menses

- A synchronous rise and fall in estrogen and progesterone levels throughout the cycle
  - most important determinant of normal menses
  - synchronization leads to the organized growth of the endometrial epithelium, stroma, and microvasculature as well as subsequent controlled endometrial shedding
- In women who have chronic anovulatory AUB
  - cyclic stimulation and withdrawal of estrogen and progesterone are lost because of the persistent follicular and proliferative state
  - After a prolonged period of undisturbed estrogen-primed endometrial proliferation, without the influence of progesterone on its stability and organization
    - unpredictable sloughing of the endometrial lining occurs.

- Women with ovulatory AUB without any anatomical causes
  - Have regular menses that occur every 24~35 days, accompanied by either of the following:
    - large volumes of blood loss (ie, > 80 mL), 90% of which is lost within the first the first 3 days of menstruation
    - menses lasting longer than 7 days
  - hypothalamic-pituitary-ovarian axis and steroid hormone production are normal
  - The cause of AUB in these women the dysregulation of the hemostatic and vasoconstrictive capabilities of the endometrial lining
  - a rise in the total prostaglandin (PG) production
    - a significant increase in PGE<sub>2</sub> (promoting vasodilation) as well as a rise in PGE<sub>2</sub> (a potent vasodilator) and PG<sub>12</sub> (an inhibitor of platelet aggregation) receptors.

## Screening criteria for inherited bleeding disorders for women with AUB

- Adolescents
  - Menses last longer than 7 days
  - bleeding through a pad or tampon in 1 hour, with clots greater than 1 inch in diameter, resulting in anemia or low iron level
  - Bleeding requiring blood transfusion
  - Refractory heavy menstrual bleeding
  - Family history of bleeding disorder
  - History of heavy or prolonged bleeding after a procedure or surgical intervention (ie, tooth extraction, surgery, delivery)
  - Prolonged bleeding from small wounds, lasting more than 15 minutes or recurring spontaneously during the 7 days after the wound (NIH)

- Adults
  - Extremely heavy bleeding since menarche
  - Bleeding requiring blood transfusion
    - One of the following conditions:
      - Postpartum hemorrhage
      - Surgery-related bleeding
      - Bleeding associated with dental work
    - Two or more of the following conditions:
      - Epistaxis, 1-2 times per month (requiring more than 10 min to stop or needing medical attention)
      - Frequent gum bleeding
      - Family history of bleeding symptoms

- von Willebrand disease (vWD, m/c), Glanz-mann thrombasthenia, idiopathic thrombocytopenic purpura, platelet dysfunction and thrombocytopenia related to malignancy or treatment for malignancy
- The vWD profile
  - vWD factor antigen, ristocetin cofactor assay, factor VIII, and multimer analysis
- testing for vWD is recom-mended before initiating hormonal therapy
  - because estrogen may elevate vWD factor into the normal range and yield a false negative result

### Evaluation of the endometrium & EM cavity

- Endometrial sampling
  - not required for all patients with AUB
  - Obesity or over 45 years
  - family history of hereditary nonpolyposis colorectal cancer syndrome, now called Lynch Syndrome, have a lifetime risk of endometrial cancer of up to 60%, with the mean age at diagnosis of 48-50 years.
- chlamydial infection of the endometrium and AUB
- Transvaginal ultrasonography (TVUS)
- Sonohysterography

### Medications used in the treatment of AUB

## Hormonal therapies

### Estrogen and progestin contraceptives

- form of a pill, the vaginal ring, and the transdermal patch
- afford cycle control, reducing menstrual blood loss significantly as well as the incidence of irregular bleeding
- Ocs
  - estrogen component
    - prevents FSH secretion and development of a dominant follicle. It also provides endometrial stability and growth and enhances the progestational impact.
  - Progestin
    - prevents the LH surge and ovulation and creates an atrophic endometrial lining, thereby reducing overall blood loss at the time of withdrawal bleeding
- extended(12 week cycle) or continuous regimen(365 days)
  - compared with cyclic combined Ocs,
    - the amount of blood loss per cycle and the number of bleeding episodes per year decrease.
    - beneficial in the treatment of women with dysmenorrhea and pelvic pain

### Parenteral estrogen

- High-dose estrogen quickly treats acute AUB by causing
  - rapid growth of the endometrial epithelium and stroma;
  - stimulating vasospasm of uterine arteries;
  - promoting platelet aggregation and capillary clotting;
  - increasing fibrinogen, factor V and factor XI;
  - increasing the production of both estrogen and progesterone receptors
- In hemodynamically unstable women with acute AUB
  - 25 mg dose of IV CEE can be administered every 4~6 hours for up to 24 hours, followed by progesterone alone or a combination OC for 10~14 days
  - Patients should receive CEE for no longer than 24 hours before transitioning to OCs to reduce the duration of exposure to unopposed estrogen.

### Progestogen-only formulations

- ideal alternative for women who have a contraindication to estrogen
- Progesterone quickly treats AUB by
  - stabilizing endometrial fragility;
  - inhibiting the growth of the endometrium by triggering apoptosis;
  - inhibiting angiogenesis;
  - stimulating the conversion of estradiol to the less active estrone
  - prevents ovulation and ovarian steroidogenesis, interrupting the production of estrogen receptors and the estrogen-dependent stimulation of the endometrium, leading to an atrophic endometrium

- Oral progestins
  - in women with ovulatory AUB
    - oral MPA (2.5~10 mg daily), norethindrone (2.5~5 mg daily), megestrol acetate (40~320 mg daily), micronized progesterone (200~400 mg daily) taken cyclically (starting on menstrual day 5 for 21 days) or continuously
    - provides cycle control and reduction of menstrual blood loss
    - use of a luteal-phase progestin alone has not proved to be successful in the treatment of ovulatory HMB
  - In women with anovulatory bleeding
    - a cyclic progestin (ie, MPA, norethindrone, or norethisterone), given for 12~14 days each month, leads to regulation of the menstrual cycle in 50% of women
  - In patients presenting with acute AUB
    - a multidose progestin can significantly reduce menstrual blood loss
      - MPA 20 mg 3 times daily for 1 week, followed by daily dosing for 3 weeks

- Injectable progesterone
  - Depot medroxyprogesterone acetate (DMPA)
    - amenorrhea in more than 50% of users after 1 year
    - unscheduled bleeding during the first few months of use
    - 37.7% of women also experienced weight gain of more than 10 pounds at 24 months
  - lack of clinical data on the utility of DMPA for the treatment of acute or chronic AUB
  - Intrauterine progestogen-releasing systems
    - 20 mg of the progestin every 24 hours locally to the endometrium, reducing endometrial thickness and the mean uterine vascular density
    - reduction in menstrual blood loss of 86% after 3 months and 97% at 12 months of use in the treatment of HMB

## Danazol

- synthetic steroid ethisterone
- inhibits pituitary secretion of FSH and LH and has a weak androgenic influence, causing thinning or atrophy of endometrial tissue
- In the treatment of HMB
  - danazol is superior to luteal-phase oral progestins (ie, norethindrone), mefenamic acid
  - reduced menstrual blood loss by as much as 80%.
  - significantly more adverse effects, including weight gain, acne, and androgenic effects, than other medical therapies.
- Low-dose vaginal danazol
  - an alternative being considered as a way to preserve the benefits of the drug while reducing systemic side effects, although few data are currently available.
  - Larger studies are needed to determine the utility of lower-dose danazol in the treatment of AUB.

## GnRH agonists

- down-regulate GnRH receptors, thereby inhibiting gonadotropin secretion and creating a hypogonadic state that leads to endometrial atrophy
- menopausal side effects, including vasomotor symptoms, vaginal atrophy or dryness, depression, and trabecular bone loss, limit their long-term use
- Add-back therapy with low-dose estrogen and norethindrone
  - if therapy is expected to exceed 6 months
- Short-term and long-term use should be considered in clinical scenarios that have strong contraindications to all other medical or surgical interventions
- Atrophy and amenorrhea usually occur among premenopausal women within 3e4 weeks of the drug's administration
- Few RCT on the efficacy of GnRH agonists in the treatment of AUB.

## Nonhormonal therapies

## Nonsteroidal antiinflammatory drugs (NSAIDs)

- suppress prostaglandin synthesis by inhibiting cyclooxygenase
- PGE2 and PGF2a are highly concentrated at the menstrual endometrium in women with HMB
- NSAID increases thromboxane A2, thereby increasing platelet aggregation and vasoconstriction and reducing menstrual blood loss
- treatment with an NSAID may reduce blood loss by as much as 40%.
- Mefenamic acid and naproxen in HMB
  - Meclomen: 100 mg 3 times daily
  - Ibuprofen: 600-800 mg every 6-8 h

## Tranexamic acid

- works by competitively blocking plasminogenbinding sites, preventing plasma formation, fibrin degradation, and clot degradation
- In the treatment of HMB, tranexamic acid has proved to be superior to placebo, mefenamic acid, luteal-phase progestins.
- most commonly prescribed and studied treatment regimen
  - Orally 1 g to 1.3 g every 6e8 hours during menstruation

## Treatment Options for Medical Management of Abnormal Uterine Bleeding

**TABLE 4**  
**Treatment Options for Medical Management of Abnormal Uterine Bleeding**

Drug	Suggested dosage	Notes
<b>Acute bleeding</b>		
Conjugated equine estrogen	Hemodynamically unstable: 25 mg intravenously every 4 to 6 hours for up to 24 hours Hemodynamically stable: 2.5 mg orally every 6 hours for 21 days	Follow treatment with a progestin to provoke withdrawal bleeding; do not use in patients at increased risk of thrombosis
Estrogen-progestin oral contraceptives	1 monophasic pill containing 35 mcg of ethinyl estradiol orally 3 times daily for 7 days	Other regimens also effective; do not use in patients at increased risk of thrombosis
Progestins	Norethindrone, 5 mg orally 3 times daily for 7 days	Other high-dose oral progestins are also effective
Tranexamic acid	10 mg per kg intravenously every 8 hours or 20 to 25 mg per kg orally every 8 hours	Faster onset if given intravenously; do not use in patients at increased risk of thrombosis
<b>Chronic bleeding</b>		
Depo-medroxyprogesterone (Depo-Provera)	150 mg intramuscularly or 104 mg subcutaneously every 13 weeks	Unscheduled bleeding is a common initial adverse effect, but one-half of patients become amenorrheic after 12 months of use
Estrogen-progestin oral contraceptives	1 monophasic pill containing 35 mcg of ethinyl estradiol daily	Other routes (transdermal patch, intrauterine ring) are likely also effective; regimens with no- or lower-hormone-free intervals may be more effective
Levonorgestrel	52-mg (20-mcg-per-day) intrauterine device (IUD)	Effectiveness data are based primarily on trials involving the 20-mcg-per-day device; effect on bleeding suppression may wane before contraceptive effectiveness expires
Nonsteroidal anti-inflammatory drugs	Naproxen, 500 mg orally 2 times daily	Other oral nonsteroidal anti-inflammatory drugs are also effective; administer only while patient is bleeding; do not use in patients with coagulopathy
Progestins	Norethindrone, 2.5 to 5 mg orally once daily	Other oral progestins are also effective; administration during only the luteal phase is significantly less effective for treating heavy bleeding
Tranexamic acid (Lysteda)	1,000 to 1,500 mg orally 3 times daily	Faster onset if given intravenously; do not use in patients at increased risk of thrombosis

Note: The 2016 U.S. medical eligibility criteria for contraceptive use, published by the Centers for Disease Control and Prevention (<https://www.cdc.gov/mmwr/volumes/65/wr/mm6503a1.html>), can be referenced to guide the use of the hormonal treatments listed in this table. Information from references 27 through 42.

## Take home message

- 자궁내막에서 나오는 출혈을 확인한다.
- 배란성 출혈인지 무배란성 출혈인지 확인한다.
- 응고장애의 가지고 있는지 확인한다.
- 급성 출혈의 경우에 에스트로겐 용법의 금기증에 해당되는지 확인하고 호르몬 용법을 적절하게 사용한다.
- 구조적 문제로 인한 출혈은 적절한 수술이나 약물을 사용하고 그렇지 않은 경우 급성 출혈 시기에 적절한 치료를 하고 후에 적절한 유지 치료가 필요하다.

2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

**Session II**

---

16:40-17:10

## Chronic sinusitis

차의과학대학교 분당차병원 이비인후과-두경부외과

**길홍권** 교수



# Chronic sinusitis

: Based on European Position paper on Rhinosinusitis and Nasal polyps(EPOS) 2020

차의과학대학교 분당차병원  
이비인후과-두경부외과  
임상강사 길홍권

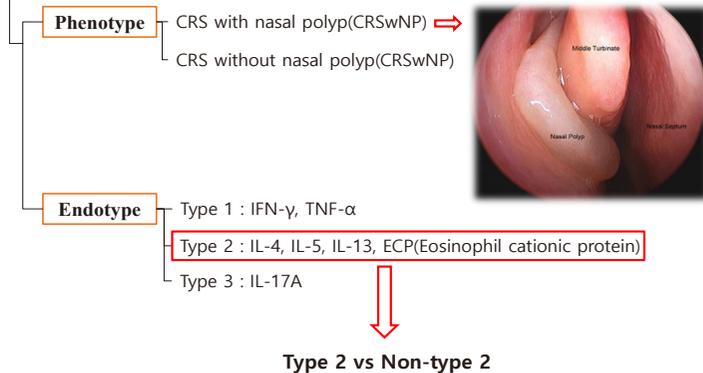
## Clinical definition

- Rhinosinusitis(비부비동염) : inflammation of the nose and paranasal sinuses

12wks	Acute rhinosinusitis(ARS)
	<b>Chronic rhinosinusitis(CRS)</b>
증상	필수 증상 1개 포함 최소 2개 이상 증상 동반
	필수 nasal blockage / obstruction / congestion or nasal discharge (anterior / posterior nasal drip)
	기타 ± facial pain/pressure; ± reduction or loss of smell;
객관적 소견	비내시경 검사 혹은 CT에서 확인된 최소 1개 이상의 소견
Endoscopic signs	Nasal polyps(비용종)
	Mucopurulent discharge primarily from middle meatus (중비도의 화농성 비루)
	Oedema/mucosal obstruction primarily in middle meatus (중비도의 부종 혹은 점막 폐쇄)
CT changes	Mucosal changes within the ostiomeatal complex and/or sinuses (부비동 내 혹은 개구비도 단위의 점막 변화)

## Classification

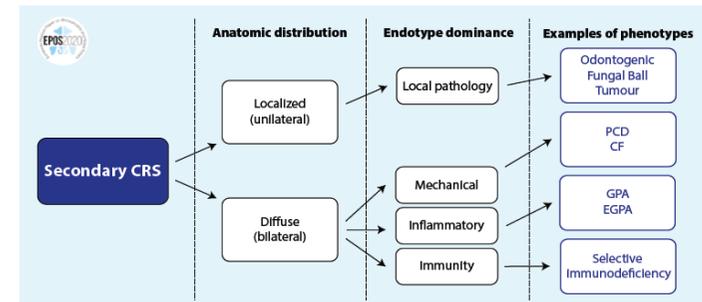
- 과거의 분류



## Classification

- 현재의 분류(EPOS 2020)

Figure 2.2.2. Classification of secondary CRS (Adapted from Grayson et al<sup>[150]</sup>).

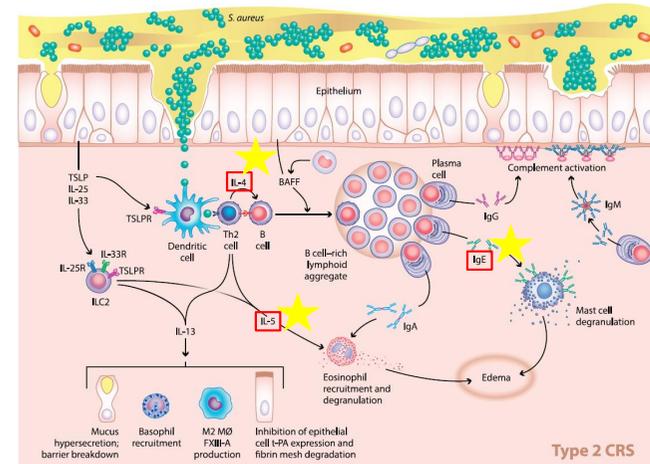


CRS, chronic rhinosinusitis; PCD, primary ciliary dyskinesia; CF, cystic fibrosis; GPA, granulomatosis with polyangiitis (Wegener's disease); EGPA, eosinophilic granulomatosis with polyangiitis (Churg-Strauss disease).

### Epidemiology and predisposing factors

- **Prevalence**
  - USA : 13% by 2009 National health interview survey
  - Europe : 10.9% by 2011 GA2LEN(Global allergy and asthma european network)
  - China : 8%
  - **South Korea : 11%** ⇒ 국민건강영양조사 분석(2008 ~ 2012)
    - CRSsNP : 5.8%
    - CRSwNP : 2.6%
- **Predisposing factors**
  - Allergy
  - Asthma and other lower airway diseases
  - NASIDs exacerbated respiratory disease(N-ERD)
  - Immune deficiencies
  - GERD
  - Microbiology : Bacteria and biofilms, virus, fungal infection
  - Ciliary impairment : Primary ciliary dyskinesia(PCD)
  - Smoking
  - Alcohol...

### Pathophysiology



### Diagnosis

다음과 같은 증상이 2개 이상, 12주 이상 지속되는 경우

- 1) 비강 분비물(비루 또는 전, 후비루)
- 2) 코막힘(비폐색) 또는 비출혈
- 3) 후각감소 및 장애
- 4) 안면통 또는 압박감

그리고 다음 객관적인 결과 중 하나 이상 해당될 경우

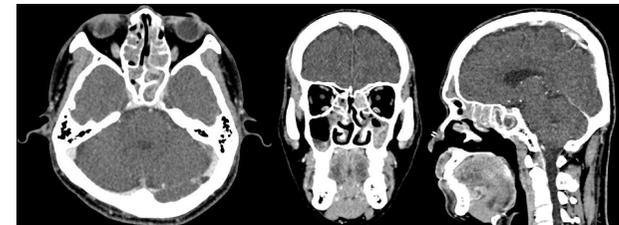
- 1) 비내시경 또는 CT에서 염증의 증거
- 2) 부비동에서 유래한 화농성 비루의 증거



그림 2-2. (A)는 0도 내시경을 이용하여 좌측 비강을 전반적으로 관찰하고 있다. (B)는 30도 내시경을 이용하여 좌측 중비도 내의 화농성 비루를 관찰하고 있다. (C)와 (D)는 70도 내시경을 이용하여 각각 좌측 상악동 내부와 우측 전두와를 관찰하고 있다.

### Diagnosis

- 영상 검사
  - CT : 표준 검사 - PNS CT c Contrast, 3mm cut



- MRI : 부비동 종양 감별 진단, 안와 및 두개 내 침윤, 합병증 판단

- 기타 검사
  - 혈액 검사 : IgE, Eosinophil
  - 미생물 검사 : 적절한 항생제 선택
  - 조직검사 : Nasal polyp과 부비동 종양의 감별
  - 후각 검사 : KVSS test
  - 코막힘 검사 : Acoustic rhinometry

### Management – Antibiotics

★ Short-term oral antibiotics	No recommendation
★ Long-term oral antibiotics	Option
Topical antibiotics	Recommendation against
Intravenous antibiotics	Recommendation against

- Short-term(≤ 4 weeks) oral antibiotics – **No recommendation**
  - Amoxicillin/clavulanate, ciprofloxacin, levofloxacin, cefuroxime...

**6.1.1.2. Conclusion**  
The EPOS2020 steering group, due to the very low quality of the evidence, is uncertain whether or not the use of a short course of antibiotics has an impact on patient outcomes in adults with acute exacerbations of CRS compared with placebo. Also, due to the very low quality of the evidence, it is uncertain whether or not the use of a short course of antibiotics has an impact on patient outcomes in adults with CRS compared with placebo. Gastrointestinal-related adverse events (diarrhoea

### Management – Antibiotics

- Long-term(> 4weeks) oral antibiotics : **Macrolide - Option**

1. Macrolide = Placebo
2. Macrolide = Topical corticosteroid
3. Macrolide = Surgery
4. Clarithromycin > Erythromycin

⇒ The EPOS2020 steering group, due to the low quality of the evidence, is uncertain whether or not the use of long-term antibiotics has an impact on patient outcomes in adults with CRS, particularly in the light of potentially increased risks of cardiovascular events. There is a need for

- Low IgE : <200µg/L
- Low-dose, long-term : Clarithromycin 250mg or Azithromycin 250mg qd 12wks
- **Cardiovascular complication : QT prolongation, arrhythmia**

- Topical antibiotics : Mupirocin – **Recommendation against**

⇒ Topical antibacterial therapy does not seem to be more effective than placebo in improving symptoms in patients with CRS. However, it may

- Intravenous antibiotics – **Recommendation against**

⇒ **6.1.4.1. Conclusions**  
Due to the very low quality of the evidence, it is uncertain whether or not the use of intravenous antibiotics therapy has an impact on patient outcomes in adults with chronic rhinosinusitis compared with placebo.

### Management – Nasal irrigation

- **Strong recommendation**
- **Position**



- Best : kneeling with the head on the floor

- **Contents**
  - No difference between hypertonic and normal saline
  - Recommended isotonic solution

- **Additive agent**
  - Steroid, Xylitol, Hyaluronic acid
  - ✗ Antibiotics, honey, antifungal agent

- **Disinfection**
  - Microwave for 90s
  - Boiling for 120s
  - UV exposure over 45s



### Management – Steroid

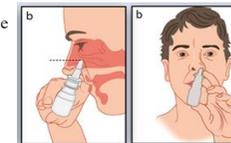
- ★ **Intranasal corticosteroid : Strong recommendation**

- There is high-quality evidence that long term use of nasal corticosteroids is effective and safe for treating patients with CRS
- Avamys(Fluticasone furoate), Nasacort(Triamcinolone acetonide), Nasonex(Mometasone furoate)...



Bioavailability <0.5%

- Adverse events
  - Drug related major adverse events were not reported
    - Increasing : Epistaxis
    - No difference : HPA axis suppression, adrenal insufficiency, cataract, asthma exacerbation
- Administration technique



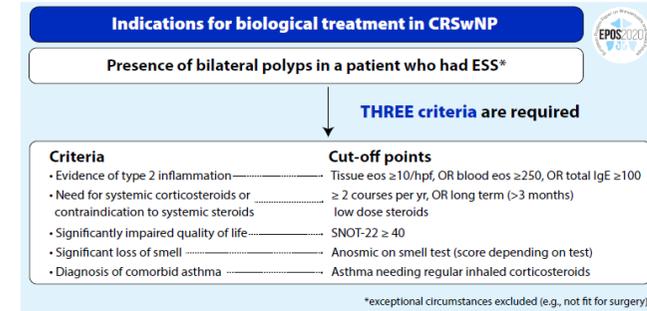
### Management – Steroid and etc...

- **PO steroid - Option**
  - Short course of systemic corticosteroid : a significant reduction in total symptom score and nasal polyp score in patients with CRSwNP
  - (methyl)Prednisolone 25~60mg qd 7~20day with tapering
- **Antihistamine - No recommendation**
  - There is insufficient evidence to decide on the effect of the regular use of antihistamines in the treatment of patients with CRS.
- **Decongestant - No recommendation**
  - Optional for severe nasal obstruction as a temporary adjunctive therapy to INCS
- **Anti-leukotrienes : Singulair(montelukast) - No recommendation**
  - Optional for patients who are intolerant or unresponsive to INCS

### Management – Biologicals

- **Biological treatment – Recommendation**

Figure 1.6.3. Indications for biological treatment in CRS.

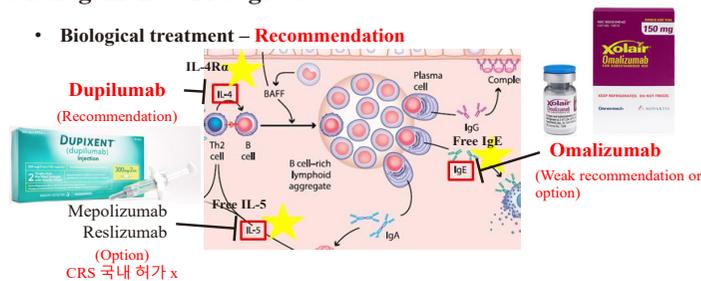


CRS, chronic rhinosinusitis; CRSwNP: chronic rhinosinusitis with nasal polyps; ESS, endoscopic sinus surgery; hpf: high power field (x400); SNOT-22, sino-nasal outcome test-22.

내과적 혹은 수술적 치료로써 호전되지 않는 중증 CRSwNP에서 사용 권장

### Management – Biologicals

- **Biological treatment – Recommendation**



✓ 효용/효과

1. 아토피 피부염  
성인(만 18세 이상), 청소년(만 12-만 17세) 및 소아(만 6개월-만 11세)에서 국소치료제로 적절히 조절되지 않거나 이를 치료제가 권장되지 않는 중등도에서 중증 아토피 피부염의 치료
2. 천식  
성인(만 18세 이상) 및 청소년(만 12-만 17세)에서 기존 치료에 적절하게 조절되지 않는 중증 천식으로 다음 중 하나에 해당하는 제2형 염증성 천식의 추가 유지 치료  
1) 중증 호산구성 천식(혈중 호산구 ≥150/μl 또는 호기산화질소(FNO) ≥25 ppb)  
2) 경구 코르티코스테로이드 의존성의 중증 천식
3. 비용종을 동반한 만성 비부비동염  
성인(만 18세 이상)에서 기존치료에 적절하게 조절되지 않는 비용종을 동반한 만성 비부비동염의 추가 유지 치료

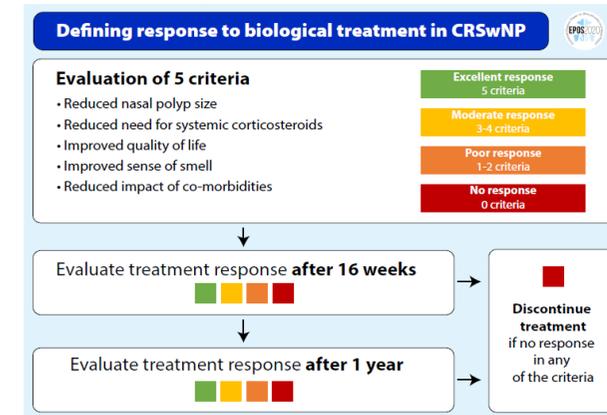
비급여

Dupilumab (Dupixent)  
- Vial당 700,000원  
- 300mg SC 2주 간격  
Xolair (Omalizumab)  
- 150mg 기준 270,000원  
- 70~600mg SC 2주 간격

### Management – Biologicals

- **Biological treatment – Recommendation**

Figure 1.6.4. Response criteria for biologicals in the treatment of CRS.



**Management – Surgery**

- No absolute indication for surgical management!
- Patients with sinus disease refractory to a trial of primary medical therapy
- Preoperative symptom scores( SNOT-22)  $\geq 20$  and lund-mackay score  $\geq 1$
- Patients with less than 12 months of sinus disease derived greatest benefit after ESS

*As the aim of surgery is to improve the severity of patient's symptoms, the decision to operate should only be made in patients with symptomatic disease, with the exception of patients with actual or impending complications.*



분당차병원 이비인후과-두경부외과



2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

**Session II**

---

17:10-17:40

# Benign neoplasm of large intestine

차의과학대학교 분당차병원 소화기내과

**김지현** 교수

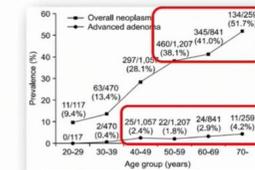


## 대장 용종

2023-11-11  
분당차병원  
소화기내과 김지현

## Colon polyps & cancer

- ❖ Colorectal polyp
  - Colon adenoma : 50세 이상 = 40.5%
  - Advanced adenoma = 2.5%
- ❖ CRC [2017 statistics]
  - 전체 주요 암종 발생률 = 2위
  - 남자 - 3위, 여자 - 3위



Gut Liver. 2009 Mar;3(1):35-40. / 보건복지부. <http://www.mohw.go.kr>

## Polypectomy

### Prevention of Colorectal Cancer by Colonoscopic Polypectomy

- Reduction of CRC incidence: 76-90%

Table 2. Comparison of the Observed Incidence of Colorectal Cancer in the National Polyp Study Cohort with That Expected on the Basis of Data from the Three Reference Groups.

Reference Group (Education)	Type of Study	Period in Percent Actual	No. of Patients	National Polyp Study Cohort	No. of Standardized Expected Colorectal Cancer	Reduction in Incidence of Colorectal Cancer	P Value
Mayo Clinic (United States)	Retrospective cohort	1965-1970	226	48.3	0.10	90	<0.001
St. Mark's (United Kingdom)	Retrospective cohort	1957-1980	1618	43.4	0.12	88	<0.001
SEER (United States)	Cross-sectional	1963-1987	10% of U.S. population	20.7	0.24	76	<0.001

N Engl J Med 1993;329:1977

### Colonoscopic Polypectomy and Long-Term Prevention of Colorectal Cancer Deaths

- Reduction of CRC mortality : 53%

Table 3. Deaths from Colorectal Cancer in the Adenoma Cohort, as Compared with Incidence-Based Mortality from Colorectal Cancer in the General Population.<sup>a</sup>

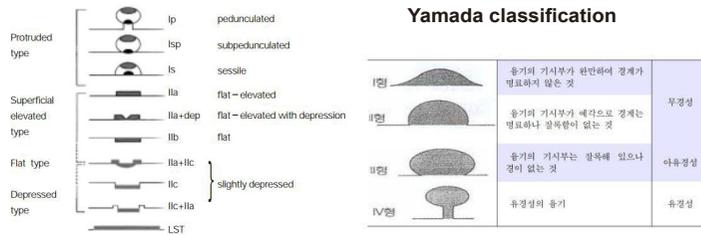
Follow-up Time	Adenoma Cohort				General Population			
	No.	Person-Years at Risk	Observed Deaths	Expected Deaths	SMR (95% CI)	Reduction %	P Value	
All	2602	37,073	12	23.4	0.47 (0.26-0.80)	53	0.008	
<10 yr	2602	22,903	4	9.1	0.44 (0.14-1.06)	56	0.09	
≥10 yr	2031	14,170	8	16.3	0.49 (0.23-0.93)	51	0.04	

N Engl J Med 2012 23:366-687

## 대장용종의 조직학적 분류

Neoplastic	Non-neoplastic
Premalignant polyp	Mucosal tag
Tubular adenoma	Hyperplastic
Tubulovillous adenoma	Inflammatory
Villous adenoma	Juvenile
Carcinoma in situ	
High-grade dysplasia	
Intraepithelial cancer (CIS)	
Intramucosal cancer (infiltrating into lamina propria)	
Invasive carcinoma	
Submucosal cancer (malignant polyp) – beyond the muscularis mucosa	

## 대장용종의 형태학적 분류



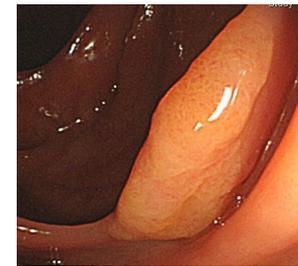
## LST : lateral spreading tumor

- Lateral growth, at least 10mm in diameter

G-H (Granular type-homogenous)



NG (flat elevated)



## Classification of LST

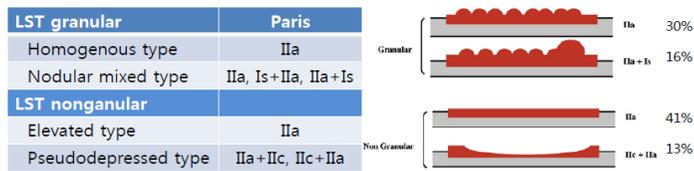


Table 1. LST의 형태학적 아형과 크기에 따른 전이 및 침박하층인 병존율 (n=955)<sup>3</sup>

	MISM	total (%)	< 2 cm (%)	> 2 cm (%)
과립형 granular type: LST-G				
균일과립형: homogeneous type	M	22.0	13.5	39.5
	SM	1.8	1.0	3.4
과립혼합형: nodular mixed type	M	33.5	25.4	38.4
	SM	18.0	5.1	25.0
비과립형 nongranular type: LST-NG				
평탄용기형: flat elevated type	M	12.7	11.3	17.9
	SM	4.1	1.9	11.9
위함몰형: pseudo-depressed type	M	23.5	19.6	31.8
	SM	25.0	15.2	45.5

Kudo S. 1993  
Kudo S et al. Stomach and Intestine. 2005; 40:1367  
Kudo S et al. Gastrointest Endosc. 2009; 69: S3

## 용종 치료의 원칙

- Neoplastic vs. non-neoplastic**  
→ resect or not
- Benign vs. malignant**  
→ piecemeal resection or not  
(en bloc resection is always preferred.)
- If malignant, how deep into submucosal layer?**  
→ endoscopic resection or surgery

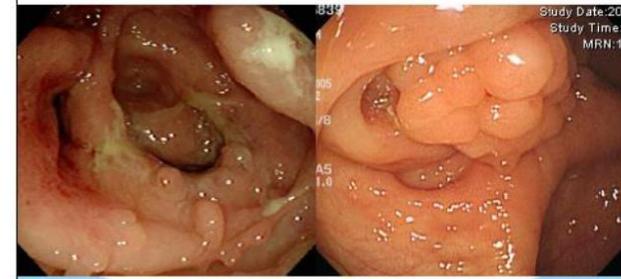
## 어떻게 치료할 것인가?



- 제거해야 하는가?  
= **Neoplastic polyp** 인가?
- 내시경으로 절제할 것인가?  
= **Deep SM invasion**의 증거가 없는가?

점막하층 암세포 대량 침윤 → 림프절 전이율 10%  
“점막하 대량 침윤이 강력히 의심되면, 내시경 절제하지 말자!”

## Inflammatory polyp



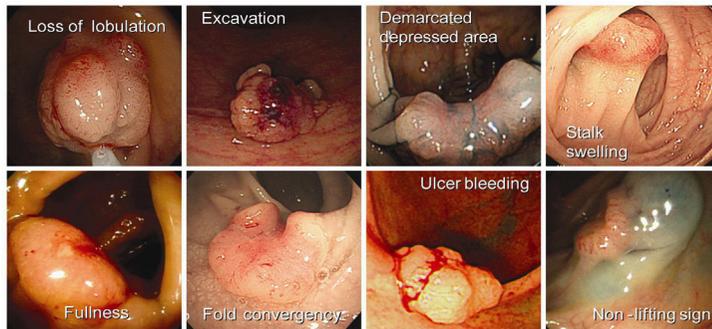
## Hyperplastic polyp



## Depth of submucosal invasion

1. **Gross appearance**
2. **Pit pattern analysis**
  - magnifying endoscopy and chromoscopy
  - HD endoscopy
3. **Pit pattern analysis**
  - magnifying endoscopy
  - NBI

## Endoscopic gross appearance



## Endoscopic appearance

- Massive SM invasion

Size & Gross type <b>depressed &gt; 1cm</b> <b>flat or superficial elevated &gt; 2cm</b> <b>protruded or LST &gt; 3cm</b>
<b>Hardness, stiffness, or rigidity</b>
<b>Severe depression, erosion, or ulcer</b>
<b>Polyp on polyp appearance</b>
<b>Fold convergence</b>
<b>Loss of air-induced deformity</b>
<b>Pit pattern: type V<sub>n</sub> (nonstructural)</b>
<b>Non-lifting sign</b>

## Pit pattern

I		Round pit (normal pit)	Normal	
II		Asteroid pit	Non-neoplastic	
III <sub>s</sub>		Tubular or round pit that is smaller than the normal pit (Type I)	Adenoma	
III <sub>L</sub>		Tubular or round pit that is larger than the normal pit (Type I)	Adenoma	
IV		Dendritic or gyrus-like pit	Adenoma	
V <sub>L</sub>		Irregular arrangement and sizes of III <sub>s</sub> , III <sub>L</sub> , IV type pit pattern	M cancer SM	
V <sub>N</sub>		Loss or decrease of pits with an amorphous structure		

Pit-pattern classification of colorectal lesions Takemura Y et al. Gastrointest Endosc. 2010

## Vascular pattern

### NBI international colorectal endoscopic (NICE) classification

	Type 1	Type 2	Type 3
Color	Same or lighter than background	Browner relative to background (verify color arising from vessels)	Brown to dark brown relative to background; sometimes patchy whiter areas
Vessels	None, or isolated lacy vessels may be present coursing across the lesion	Thick brown vessels surrounding white structures <sup>2</sup>	Has area(s) with markedly distorted or missing vessels
Surface pattern	Dark or white spots of uniform size, or homogenous absence of pattern	Oval, tubular or branched white structures <sup>2</sup> surrounded by brown vessels	Areas of distortion or absence of pattern
Most likely pathology	Hyperplastic	Adenoma <sup>3</sup>	Deep SM-invasive cancer

Sano classification Type I Type II-III A Type III B

No treatment  
Or Endoscopic  
Resection

Endoscopic  
Resection

Surgery

<sup>1</sup> Can be applied using colonoscopes both with or without optical (zoom) magnification.

<sup>2</sup> These structures may represent the pits and the epithelium of the crypt opening.

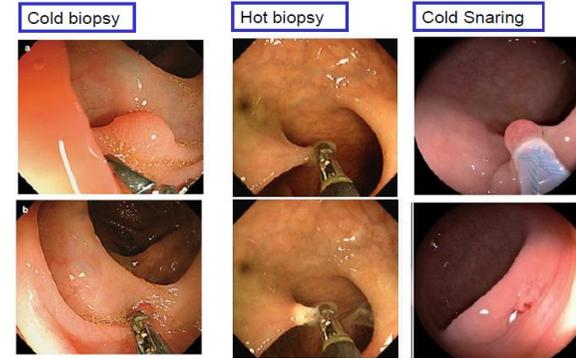
<sup>3</sup> Type 2 consists of Vienna classification types 3, 4 and superficial 5. In some countries, e.g. the USA, type 2 includes all adenomas with either low- or high-grade dysplasia (high-grade dysplasia in the USA includes adenomas with carcinoma-in-situ or intramucosal carcinoma. In Japan, intramucosal cancer may be termed cancer rather than high-grade dysplasia). Some lesions with superficial SM-invasive cancer may also have type 2 appearance.

Tanaka et al. Dig Endoscopy. (2011)

## 용종절제술의 실제

- **Forcep**
    - Cold biopsy
    - Hot biopsy
  - **Snare**
    - Cold snare technique
    - Hot snare technique
    - Endoscopic mucosal resection (EMR)
  - **Knife**
    - Endoscopic submucosal dissection (ESD)
- Diminutive polyp (< 5mm)
- Small polyp (6-9mm)
- Large polyp (≥ 5mm)
- En block Rx & Complete Rx**

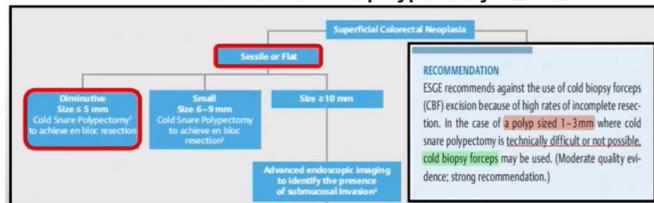
## Diminutive polyp (< 5mm)



## Diminutive (< 5mm), non-pedunculated polyps

- Most colorectal lesions / rarely HGD or Ca. (0.06%)

### Practice Guideline of colon polypectomy - ESGE



Endoscopy. 2017;49(3):270-297

## Cold forcep polypectomy

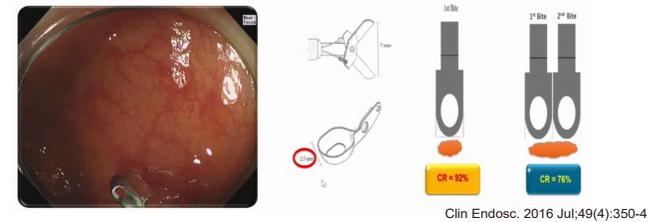


TABLE 3. Complete resection rates of adenomatous polyps

Parameter, no./No. (%)	CSP (n = 59)	CFP (n = 69)	Total (n = 128)	P value
Complete resection rate of adenomatous polyps	57/59 (96.6)	57/69 (82.6)	114/128 (89.1)	.011
Size of adenomatous polyps, mm				
≤4*	27/22 (100)	31/34 (96.9)	58/59 (98.3)	1.000†
5-7	30/32 (93.8)	26/37 (70.3)	56/69 (81.2)	.013

SP, Cold snare polypectomy; CFP, cold forceps polypectomy. Fisher exact test.

Gastrointest Endosc. 2015;81(3):741-7.

## Diminutive polyp – 완전한 제거

Table 4. Residual Rate after the Removal of Diminutive Polyps

	Vanaganas et al. <sup>16</sup>	Peluso and Goldner <sup>17</sup>	Woods et al. <sup>18</sup>	Efthymiou et al. <sup>19</sup>
Country	USA	USA	USA	Australia
Study design	Prospective case series	Prospective case series	Prospective randomized comparative	Prospective case series
Removal method	Hot biopsy	Hot biopsy	Cold biopsy vs. hot biopsy	Cold biopsy
Follow-up method	Sigmoidoscopy 4 weeks	Sigmoidoscopy 1 or 2 weeks	Sigmoidoscopy 3 weeks	EMR immediately after cold biopsy
Total polyp (n)	35	62	156	54
Cold biopsy	NA	NA	76	54
Hot biopsy	35	62	77	NA
Remark lesion	NA	NA	16/76 (21)	33/54 (61)
Among cold biopsy	NA	11/62 (17.7)	21/77 (21)	NA
Among hot biopsy	12/35 (34.3)			
Significance			NS	

Values are presented as n (%).  
EMR, endoscopic mucosal resection; NA, not assessed.

저온 생검법 (21-61%)과 고온 생검법 (17-34%)에서 병변 잔존 가능성이 존재하므로 완전한 제거에는 추천되지 않는다.

## Diminutive polyp – 조직학적 적정성

- 회수된 조직의 적정성을 연구한 전향적 무작위비교 연구

Monkemuller KE et al. Endoscopy (2004)

- 고온 생검법 39/45 (86.6%)
- 저온 생검법 42/43 (97.6%)
- 적정성 충족률 (p < 0.05)

적정성 여부에서는 저온 생검법이 추천된다

## Diminutive polyp (< 5mm)

미소폴립의 제거에서는 완전제거율, 안전성, 회수조직의 조직학적 적정성 여부를 고려할 때 고온 생검법은 권고되지 않는다.

- 근거의 질: 낮음(low quality)
- 권고의 강도: 강력히 권고함(strong recommendation)
- 동의 수준: 전적으로 동의함(42%), 대체로 동의함(37%), 일부 동의함(11%), 대체로 동의하지 않음(5%), 전적으로 동의하지 않음(5%).

대장폴립절제술 가이드라인 (2012)

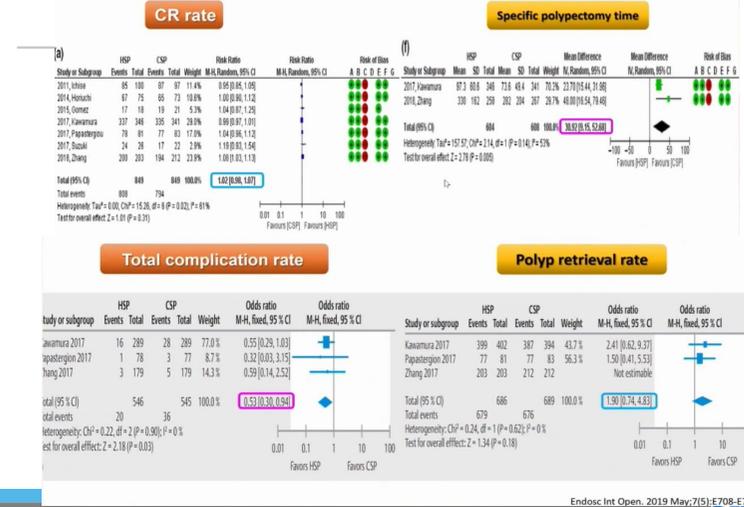
## Cold snare polypectomy (CSP)

- Snare를 이용하여 polyp 주변의 정상 조직을 1-2mm 정도 포함하여 포획한 후 snare를 서서히 조이면서 물리적으로 절단
- 절단 시에 tenting을 하게 될 경우 조직이 튀어 나가면서 회수에 실패하는 경우가 발생할 수 있음. → 이를 방지하기 위해 절단 시 snare를 살짝 병변의 원위부로 누르면서 올라미를 완전히 조이면서 절단.

## CSP (vs. Hot snare polypectomy)

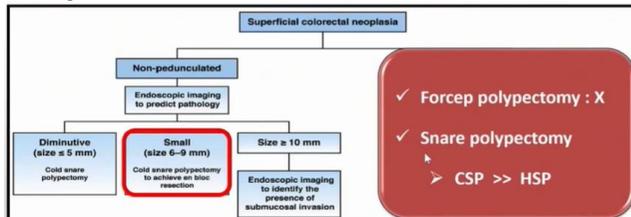
- Hot snare polypectomy에 비하여 delayed bleeding 빈도가 낮고 post coagulation syndrome 위험이 없음.
- 항응고제를 복용하고 있는 환자에서 10mm 미만의 폴립을 포함한 전향적 연구에서 낮은 지연 출혈률 보고
- 4-9mm 크기의 폴립 796개를 포함한 대규모 전향적 연구 결과, cold snare polypectomy의 완전 절제율은 hot snare polypectomy와 차이가 없었음 (98.2% vs 97.4%)

## Forest plots of the meta-analysis of HSP vs CSP



## Small (6-9mm), non-pedunculated polyps

- Polyps = 30% screening / rare HGD or Ca. (2.9-5.3%)
- ESGE guideline : 6-9mm 크기의 무경성 폴립 제거시 cold snare polypectomy를 우선적으로 추천
- ASCE guideline:



## Endoscopic mucosal resection (EMR)

- ≥ 5mm 인 무경성 폴립을 포함한 대부분의 폴립
- Injection effect
  - Submucosal layer injection: 점막층과 근층 분리 → 천공 예방
  - Tampon 효과, vasoconstriction 효과 → immediate bleeding 예방
  - 편평용종, 유경성 용종 → 관찰과 포획을 용이하게



### CSP vs. EMR in small polyps

- 6-9mm 크기의 폴립을 포함한 전향적 연구에서 완전 절제율은 CSP에 비하여 EMR이 우월 (98.5% vs 91.5%), 지연 출혈과 시술 시간의 차이는 없어 작은 폴립에서 EMR의 유용성을 보고함
- 1-9mm 크기의 폴립 1713개를 포함한 후향적 연구에서는 CSP와 EMR 완전 절제율은 차이가 없고, CSP 지연 출혈의 합병증은 낮고 시술 시간을 줄임
- 최근 6-10mm 크기의 무경성 폴립 167개를 포함한 전향적 연구에서 CSP는 EMR 과 비교하여 완전 절제율, 출혈 및 천공 등의 부작용은 차이가 없었음.

### EMR vs. CSP

	EMR	CSP
Resection depth from the m.m	338 μm	76 μm
specimen damage	30/184 (16%)	53/184 (29%)
	risk factor for procedure-associated VMX/+	

- 더 넓고, 깊은 절제가 필요할 때에는 **HSP or EMR !!**
- EMR may be more appropriate than CSP for lesions suspicious of being **high-grade adenomas** or **more aggressive cancer**, which show depression & redness

J Gastroenterol Hepatol. 2020 Feb;35(2):241-248

### CSP for large sessile serrated lesions

Overview of studies on pCSP / pCS-EMR

Study (Year)	Design	Patients	Lesions	Injection	Median size (range), mm	Type of lesion	IPB %	DPPB %	Perforation %	Follow-up % (lesions)	Recurrence %
Mangira (2020)	Retro	186	204	(+)	20 (20-30)	SSLs	2.2	3.8	0	80 (164/204)	5.5
Tutticci (2018)	Pro	99	163	(+)	15 (10-40)	SSLs	1.0	0	0	82 (134/163)	0.6
Tate (2018)	Pro	34	41	(-)	15 (10-30)	SSLs	0	0	0	37 (15/41)	0
Rameshshankar (2018)	Retro	10	29	(+)	15 (10-30)	SSLs	0	0	0	100 (29/29)	3.4
Piraka (2017)	Retro	73	94	(+)	20 (12-60)	SSLs +Adenoma	1.1	0	0	77 (56/73)	9.7
Choksi (2015)	Retro	15	15	(+)	23 (10-45)	Adenoma	0	0	0	NA	NA
Muniraj (2015)	Retro	30	30	(+)	19 (±8)	SSLs +Adenoma	0	0	0	90 (27/30)	0

Clin Gastroenterol Hepatol. 2020 Nov 2;S1542-3565(20)31511-1.

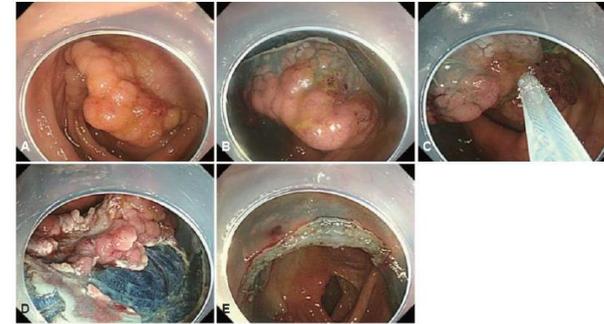
## Piecemeal EMR (EPMR)

- **Indication**
  - LST > 2~3 cm in diameter
- **원칙**
  - Planned EPMR
  - Minimum number of fragments
  - Do not split a cancer-containing part
  - Cancer or high grade dysplasia-containing part first



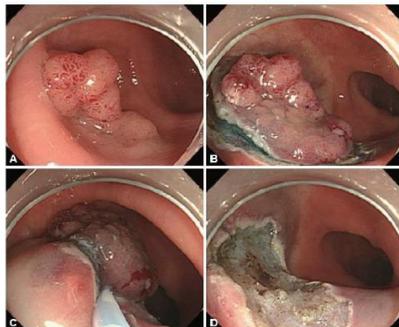
: An invasive cancer focus in the large nodule

## Piecemeal EMR (EPMR)



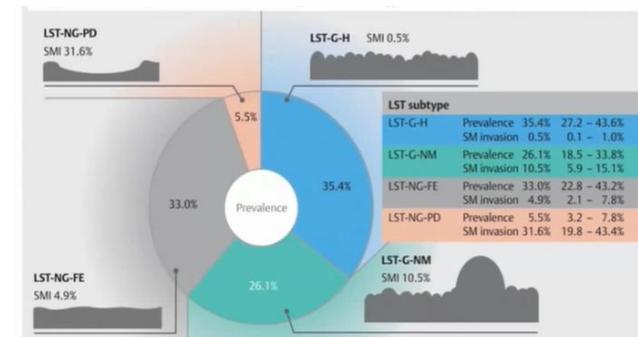
## EMR with pre-cutting (EMR-P)

- 점막하 용액 주입 후 폴립 주위를 360도 절개  
→ Snare 로 전체 폴립을 포획하여 절제



## Prevalence of endoscopic LST subtypes and risk of SMI

- 8.5% (95% CI 6.5%-10.5%) of LSTs contained SMI



Endoscopy. 2018;50(3):263-282

### LST – Long term f/u

Clinicopathological features of local recurrent colorectal tumors after ESD Japanese single center study (> 5 years F/U, n= 201)

Total local recurrence		1.5%	
<b>Risk factors for local recurrence</b>			
➢ Resection status	En bloc resection	0.6 %	p=0.038
	<b>Piecemeal resection</b>	<b>9.1%</b>	
➢ Histologic complete resection	Complete resection	0%	p=0.001
	<b>Incomplete resection</b>	<b>11%</b>	
➢ Carcinoma	Tis	1%	p=NS
	T1 (<1000µm)	0%	
	<b>T1 (≥1000µm)</b>	<b>7.7%</b>	

Endoscopy. 2017;85:546-53

### LST – Long term f/u

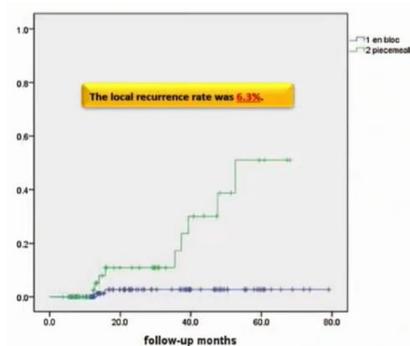
prediction of invasion depth NBI - JNET

	Type 1	Type 2A	Type 2B	Type 3
Vessel pattern	• Invisible <sup>1)</sup>	• Regular caliber • Regular distribution (meshed/spiral pattern) <sup>1)</sup>	• Variable caliber • Irregular distribution	• Loose vessel areas • Interruption of thick vessels
Surface pattern	• Regular dark or white spots • Similar to surrounding normal mucosa	• Regular (tubular/branched/papillary)	• Irregular or obscure	• Amorphous areas
Most likely histology	Hyperplastic polyp/ Sessile serrated polyp	Low grade intramucosal neoplasia	<b>High grade intramucosal neoplasia/ Shallow submucosal invasion<sup>2)</sup></b>	Deep submucosal invasive cancer
Endoscopic image				

Pathologically, **all local recurrent** lesions treated endoscopically were **identified as adenomas**.

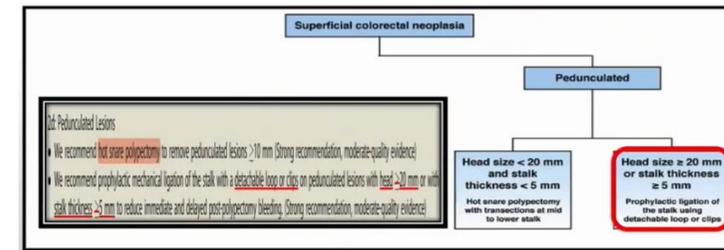
SM 2&3 = 95%

### LST – Long term f/u

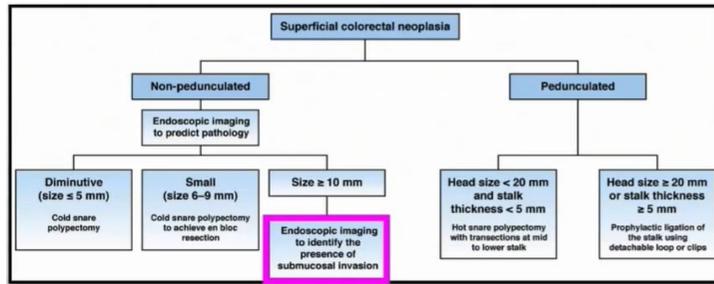


### Pedunculated polyps

- PPB risk = 1) polyp size & stalk diameter 2) Rt. Colon 3) Presence of Mailg.



## Endoscopic removal of Colorectal lesions



## Polypectomy 후 추적 대장내시경 기준

- 대장내시경에서 발견된 대장 폴립 조직형
- 대장내시경에서 발견된 대장 폴립 개수
- 대장내시경에서 발견된 대장 폴립 크기
- 기타: 대장내시경 quality, 연령, 대장암 과거력 등

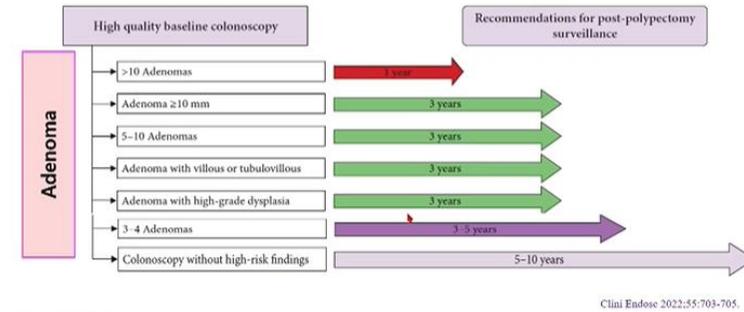
## 추적 대장내시경 가이드라인

- 1 • 미국 (2020) US Multi-Society Task Force on Colorectal Cancer
- 2 • 유럽 (2020) European Society of Gastrointestinal Endoscopy
- 3 • 영국 (2020) British Society of Gastroenterology/Association of Coloproctology of Great Britain and Ireland/Public Health England
- 4 • 한국 (2022) 소화기내시경학회, 소화기학회, 대한장연구학회

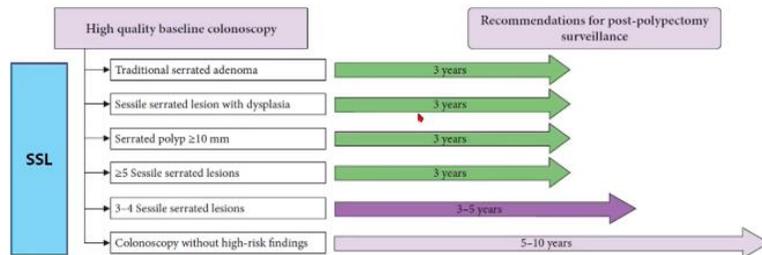
Average risk for CRC	Absence of inflammatory bowel disease, family history of CRC, hereditary syndrome associated with increased risk, serrated polyposis syndrome, personal history of CRC
Normal colonoscopy	A colonoscopy where no adenoma, SSP, TSA, HP $\geq 10$ mm, or CRC is found
Low-risk adenoma	1-2 nonadvanced adenomas $< 10$ mm in size
Advanced adenoma	1 or more of the following findings: • Adenoma $\geq 10$ mm in size • Adenoma with tubulovillous/villous histology • Adenoma with high-grade dysplasia
Advanced neoplasia	1 or more of the following findings: • Adenoma $\geq 10$ mm in size • Adenoma with tubulovillous/villous histology • Adenoma with high-grade dysplasia • CRC
High-risk adenoma	1 or more of the following findings: • Advanced neoplasia • 3 or more adenomas
Adequate ADR	ADR $\geq 30\%$ in men and $\geq 20\%$ in women
Adequate bowel preparation	Bowel preparation adequate for visualization of polyps $> 5$ mm in size
Complete examination	Complete colonoscopy to cecum, with photo documentation of cecal landmarks, such as the appendiceal orifice, terminal ileum, or ileocecal valve
High-quality examination	Examination complete to cecum with adequate bowel preparation performed by colonoscopist with adequate adenoma detection rate and attention to complete polyp excision

Gastrointest Endosc 2020;91:463-485.

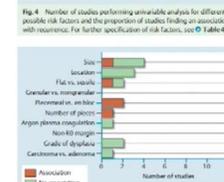
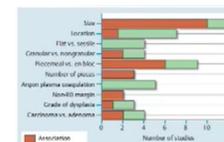
## 우리나라 추적 대장내시경 가이드라인 2022



## 우리나라 추적 대장내시경 가이드라인 2022



## 이외 상황: piecemeal resection (20mm 이상)



- ✓ Meta-analysis: local recurrence after EMR of non-pedunculated colorectal lesion (33 studies)
- ✓ Local recurrence after EMR of non-pedunculated colorectal lesions occurs in **3% of en bloc resections vs 20% of piecemeal resections.**
- ✓ **90% of recurrences are detected at 6 months after EMR.**

Piecemeal resection ( $\geq 20$  mm)  
ESGE/BSG: **2 or 3~6 month CFS** (then after a further 12 months)  
USMSTF/Korea: **6 month CFS**

Courtesy by Kim SY

Endoscopy 2014; 46:388-400

### 이외 상황: surveillance in hereditary polyposis

Syndrome	Colonoscopic surveillance
<b>FAP (Classic)</b>	Colonoscopy every <b>1 y</b> , beginning age 10-15 y (post-colectomy: every 6-12 months depending on polyp burden)
<b>AFAP (Attenuated)</b>	Colonoscopy every <b>1-2 y</b> , beginning in late adolescence
<b>MUTYH-Associated Polyposis (MAP)</b>	Biallelic mutation: colonoscopy every <b>1-2 y</b> Monoallelic mutation: colonoscopy every <b>3-5 y</b> Beginning age 25-30 y
<b>Peutz-Jeghers Syndrome (PJS)</b>	Colonoscopy every <b>2-3 y</b> , beginning age 18 y (initiation age 8-10 y)
<b>Juvenile Polyposis Syndrome (JPS)</b>	Colonoscopy every <b>2-3 y</b> , beginning age 18 y (initiation age 12-15 y)
<b>PTEN hamartoma tumor syndrome (Cowden syndrome)</b>	Colonoscopy every <b>3-5 y</b> , beginning age 35 y (more frequently if patient is symptomatic or polyps are found)
<b>Serrated Polyposis Syndrome (SPS)</b>	Colonoscopy every <b>1-2 y</b> , beginning age 40 y (after polyps $\geq 5$ mm are removed)

- 3~4 TA, 3~4 SSLs < 10mm : 3~5 yr
- 5~10 TA, 5~10 SSLs < 10mm : 3yr
- Advanced adenoma (villous, HGD,  $\geq 10$ mm) & SSL (dysplasia,  $\geq 10$ mm), TSA : 3yr
- > 10 adenomas: 1yr (consider genetic counseling)
- Piecemeal resection of adenoma/SSL > 20mm: 6mon (2 or 3~6mon)

감사합니다.

2023년 차의과학대학교 분당차병원  
협력 의료기관 의사 및 개원의 온라인 연수강좌

---

**Session II**

---

17:40-18:10

# Dysphagia

차의과학대학교 분당차병원 재활의학과

**김종문** 교수





분당차병원  
재활의학과  
에서는  
어떻게?

# Dysphagia (feat. Videofluoroscopic swallow study)

분당차병원 재활의학과  
김종문

1

## 연하재활검사

- VFSS (Videofluoroscopic swallow study)



김종문 교수  
전문 분야: 특중재활, 위상신경손상, 지체장애, 파킨슨병재활, 삼킴장애

신도메타	상세소개					
일반진료	월	화	수	목	금	
오전	파킨슨센터			파킨슨센터		
오후		기억력센터		클리닉 진료		

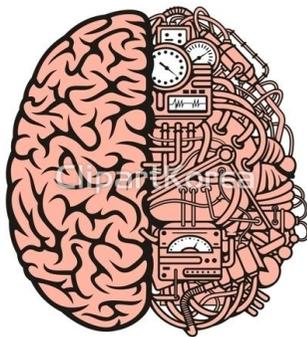


예약

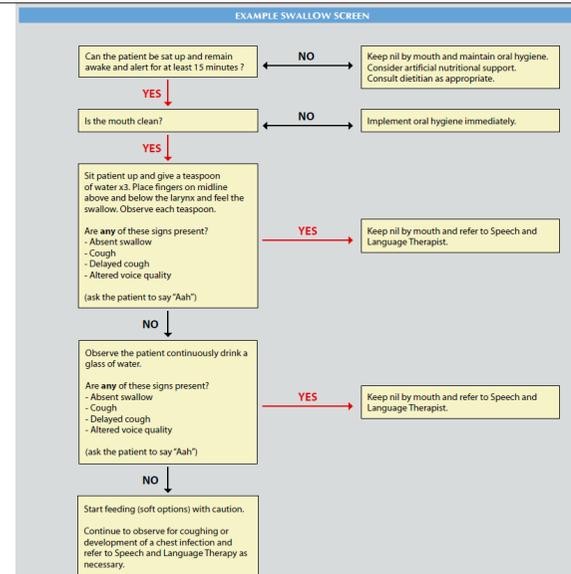


1시간 전에  
검사 시행

2



3



4

EVALUATING SWALLOWING AND NUTRITION AFTER STROKE	NUTRITIONAL SCREENING	NUTRITIONAL INTERVENTIONS
<p>Dysphagia affects a large proportion of stroke patients. Swallowing difficulties can result in aspiration and reduced oral intake, leading to the potentially serious complications of pneumonia, undernutrition and dehydration.</p> <p><b>1</b> All stroke patients should be screened for dysphagia before being given food or drink.</p> <p><b>ASPIRATION PNEUMONIA</b></p> <p><b>2</b> The water swallow test should be used as part of the screening for aspiration risk in stroke patients.</p> <p><b>3</b> Clinical history taking should take into account comorbidities and other risk factors (eg smoking, respiratory disease) to identify increased risk of developing aspiration pneumonia.</p> <p><b>SWALLOW SCREENING</b></p> <p><b>4</b> Patients with dysphagia should be monitored daily in the first week to identify rapid recovery. Observations should be recorded as part of the care plan.</p> <p><b>5</b> Patients not fit for assessment should be screened daily to avoid delay in referral for full clinical assessment.</p> <p><b>6</b> A typical swallow screening procedure should include:</p> <ul style="list-style-type: none"> <li>initial observations of the patient's consciousness level</li> <li>observations of the degree of postural control</li> </ul> <p>If the patient is able to actively cooperate and is able to be supported in an upright position the procedure should also include:</p> <ul style="list-style-type: none"> <li>observations of oral hygiene</li> <li>observations of control of oral secretions</li> <li>if appropriate, a water swallow test.</li> </ul> <p><b>7</b> Patients on nil by mouth or modified diet should continue to receive clinically essential medication by an appropriate route as advised by a pharmacist.</p> <p><b>DIET MODIFICATION</b></p> <p><b>8</b> Advice on diet modification and compensatory techniques (posture and manoeuvres) should be given following full swallowing assessment.</p> <ul style="list-style-type: none"> <li>Texture modified food should be attractively presented and appetising. Patients should have a choice of dishes.</li> </ul> <p><b>9</b> Texture modified meals may be fortified to enable patients to meet nutritional requirements.</p> <ul style="list-style-type: none"> <li>Food and fluid intake should be monitored and, if indicated, a referral made to the dietitian.</li> </ul>	<p><b>1</b> Assessment of nutritional risk should be carried out within the first 48 hours with regular re-assessment thereafter during the patient's recovery, and be recorded prior to any discharge.</p> <p><b>2</b> Assessment of a patient's nutritional risk should include an assessment of their ability to eat independently and a periodic record of their food consumption.</p> <p><b>3</b> Ongoing monitoring of nutritional status should include a combination of the following parameters:</p> <ul style="list-style-type: none"> <li>biochemical measures (ie low pre-albumin, impaired glucose metabolism)</li> <li>swallowing status</li> <li>unintentional weight loss</li> <li>eating assessment and dependence</li> <li>nutritional intake.</li> </ul> <p><b>4</b> Nutritional screening should cover: body mass index (BMI), ability to eat, appetite, physical condition, mental condition.</p> <p><b>ASSESSMENT</b></p> <ul style="list-style-type: none"> <li>A standardised clinical bedside assessment (CBA) should be used by a professional skilled in the management of dysphagia.</li> <li>The CBA developed and tested by Logemann, or a similar tool, is recommended.</li> </ul> <p><b>5</b> The modified barium swallow (MBS) test and fiberoptic endoscopic evaluation of swallow (FEES) are both valid methods for assessing dysphagia. The clinician should consider which is the most appropriate for different patients in different settings.</p> <p><b>6</b> Hospital and community pharmacists or medicines information centres should be consulted on the most appropriate method of administering medication.</p> <p><b>DYSPHAGIA THERAPY</b></p> <p><b>7</b> All patients who have dysphagia for more than one week should be assessed to determine their suitability for a rehabilitative swallowing therapy programme. Consideration should be given to:</p> <ul style="list-style-type: none"> <li>the nature of the underlying swallowing impairment</li> <li>patient suitability in terms of motivation and cognitive status.</li> </ul> <p><b>8</b> Patients with dysphagia should have an oropharyngeal swallowing rehabilitation programme that includes restorative exercises in addition to compensatory techniques and diet modification.</p>	<p>Following nutritional screening, those identified as undernourished, and those at risk of becoming undernourished, should be referred to a dietitian and considered for prescription of oral nutritional supplements as part of their overall nutritional care plan.</p> <p><b>1</b> Patients with dysphagia who are unable to meet their nutritional requirements orally should be considered for initial NG feeding as soon as possible, within one week of onset. This decision should be made by the multidisciplinary team in consultation with the patient and their carer/family.</p> <p><b>2</b> Patients in the early recovery phase should be reviewed weekly by the multidisciplinary team to ascertain if longer term (&gt;4 weeks) feeding is required.</p> <p><b>3</b> Feeding via percutaneous endoscopic gastrostomy (PEG) is the recommended feeding route for long term (&gt;4 weeks) enteral feeding. Patients requiring long term tube feeding should be reviewed regularly.</p> <p><b>4</b> Patients' and carers' perceptions and expectations of PEG feeding should be taken into account and the benefits, risks and burden of care fully explained before initiating feeding.</p> <p><b>ROLE OF REGULAR REVIEW</b></p> <p><b>1</b> Patients with persistent dysphagia should be reviewed regularly, at a frequency related to their individual swallowing function and dietary intake, by a professional skilled in the management of dysphagia.</p> <p><b>ORAL HYGIENE</b></p> <p><b>1</b> Good oral hygiene should be maintained in patients with dysphagia, particularly in those with PEG or NG tubes, in order to promote oral health and patient comfort.</p> <p><b>2</b> An appropriate oral care protocol should be used for every patient with dysphagia, including those who use dentures.</p> <p><b>CARING FOR PATIENTS WITH DYSPHAGIA</b></p> <p><b>1</b> Staff, carers and patients should be trained in feeding techniques. This training should include:</p> <ul style="list-style-type: none"> <li>modifications of positioning and diet</li> <li>food placement</li> <li>management of behavioural and environmental factors</li> <li>delivery of oral care</li> <li>management of choking.</li> </ul>

This Quick Reference Guide provides a summary of the main recommendations in SIGN 119 Management of patients with stroke: Identification and management of dysphagia. Recommendations are graded A B C D to indicate the strength of the supporting evidence. Good practice points (G) are provided where the guideline development group wishes to highlight specific aspects of accepted clinical practice. Details of the evidence supporting these recommendations can be found in the full guideline, available on the SIGN website: www.sign.ac.uk

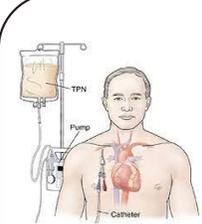


사람은



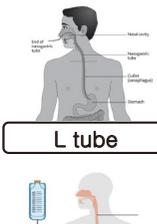
먹어야 한다.





L tube

정맥주사



PEG



입으로



입으로 어떻게?

Oral Phase

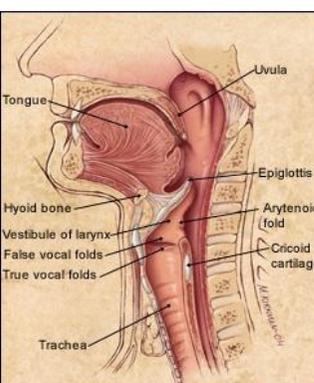


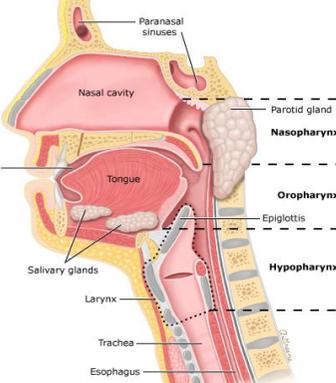
Pharyngeal/Esophageal Phase



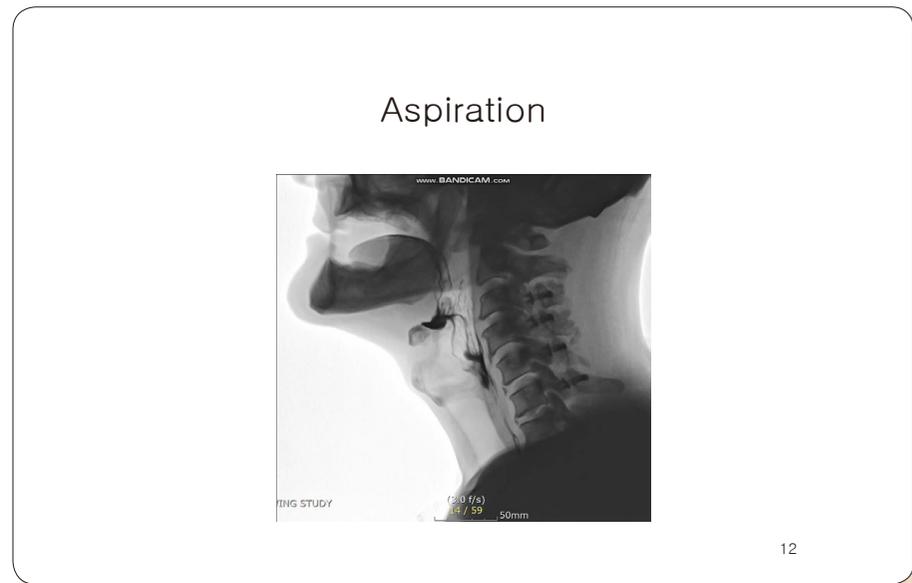
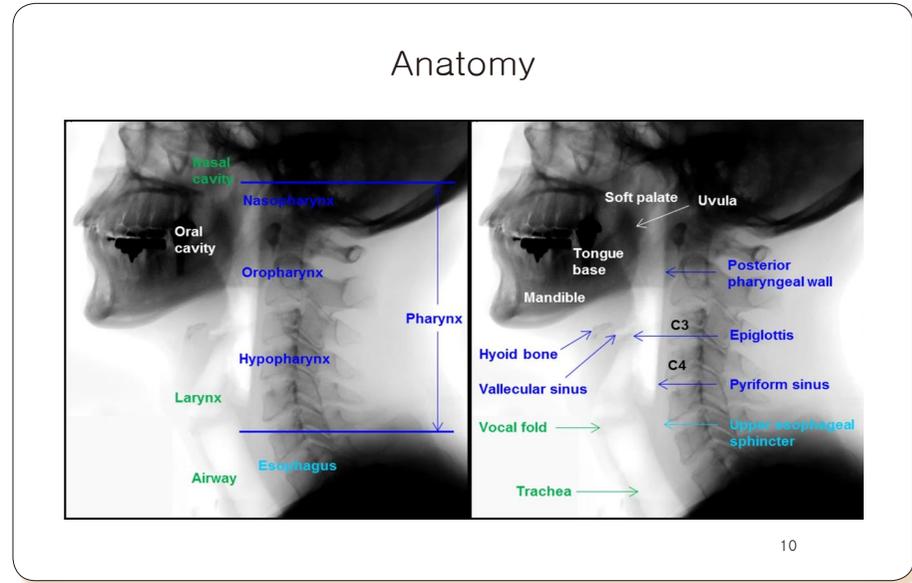
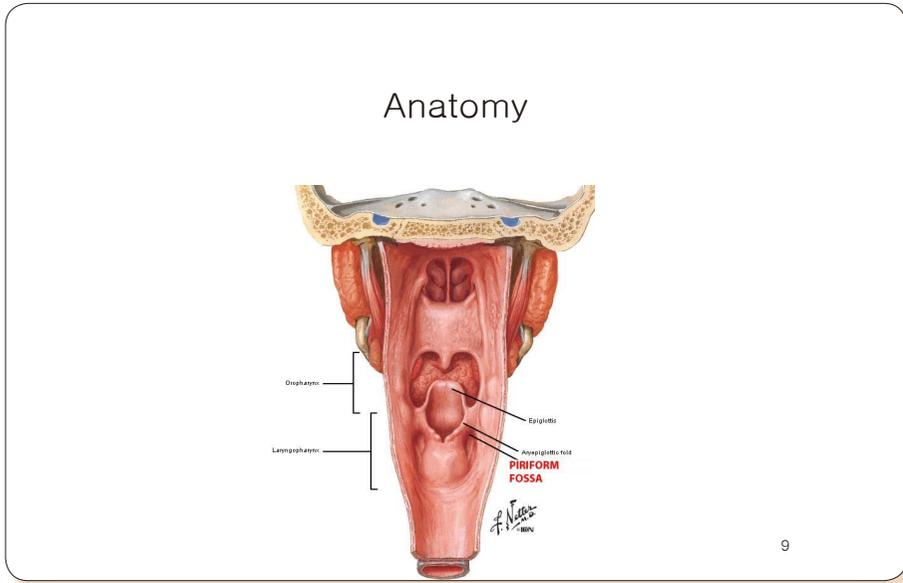
7

## Anatomy





Pharynx

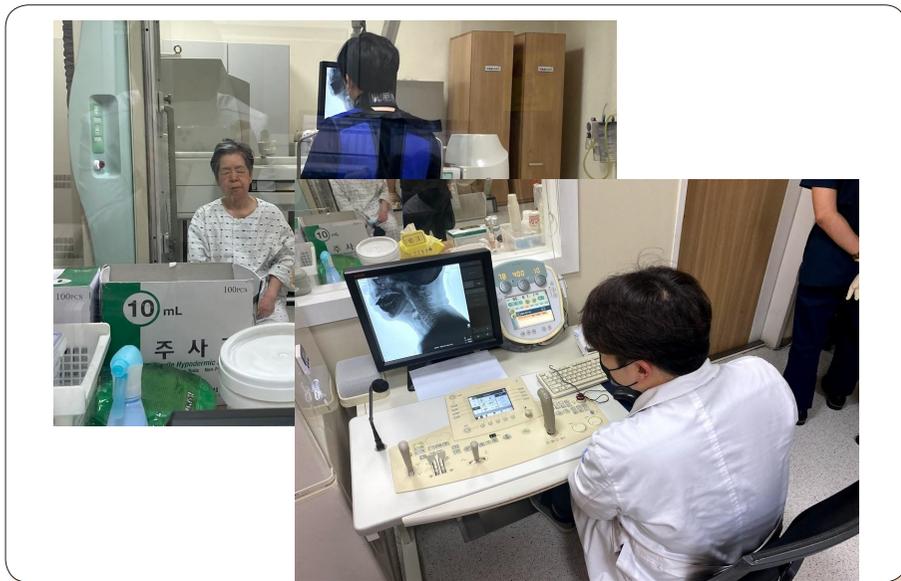




13



14



### VFSS 과정

- 밥
  - Dysphagia I
  - Dysphagia II
  - Dysphagia III
  - 요플레 (nectar)
  - 물 (Liquid)
  - 2cc - 2회
  - 5cc - 2회
  - Drinking
- 점도  
 양  
 자세



16

**차 의과학대학 분당차병원 재활의학과**  
Videofluoroscopic Swallowing Study

검사 자세  upright  side lying  head up  head neutral  head down

**1. Oral Phase**

Lip closure	1. Intact
Bolus formation	1. Intact
Residue in the oral cavity	1. Intact
Oral transit time	1. ≤ 1.5

**2. Pharyngeal Phase**

Nasal penetration	
Swallowing reflex	
Laryngeal elevation and epiglottic closure	
Residue in the Valleculae	
Residue in the Pyriform sinus	
Coating of pharyngeal wall after swallow	
Pharyngeal transit time	
Cricopharyngeal dysfunction	

**5. Esophageal Phase**

Mechanical obstruction	1. No
Delayed passage	1. No
Gastroesophageal reflux	1. No

### Nasal Penetration

**차 의과학대학 분당차병원 재활의학과**  
Videofluoroscopic Swallowing Study

검사 자세  upright  side lying  head up

**1. Oral Phase**

Lip closure	
Bolus formation	
Residue in the oral cavity	
Oral transit time	

**2. Pharyngeal Phase**

Nasal penetration	
Swallowing reflex	
Laryngeal elevation and epiglottic closure	
Residue in the Valleculae	
Residue in the Pyriform sinus	
Coating of pharyngeal wall after swallow	
Pharyngeal transit time	
Cricopharyngeal dysfunction	

**5. Esophageal Phase**

Mechanical obstruction	1.
Delayed passage	1. No
Gastroesophageal reflux	1. No

### Laryngeal elevation

HEL= Hyoepiglottic ligament

Chin Tuck



21

차 의과학대학 분당차병원 재활의학과

Videofluoroscopic Swallowing Study

검사 자세  upright  side lying  head up  head neutral  head down

1. Oral Phase

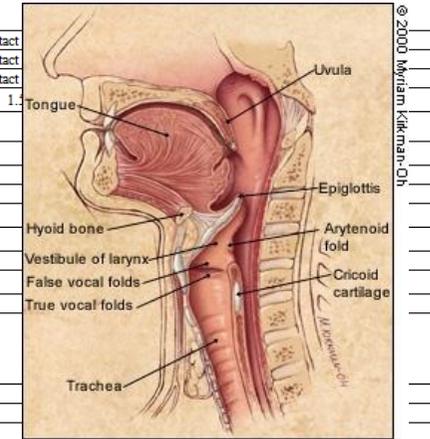
Lip closure	1. Intact
Bolus formation	1. Intact
Residue in the oral cavity	1. Intact
Oral transit time	1. ≤ 1.5

2. Pharyngeal Phase

Nasal penetration	
Swallowing reflex	
Laryngeal elevation and epiglottic closure	
Residue in the Valleculae	
Residue in the Pyriform sinus	
Coating of pharyngeal wall after swallow	
Pharyngeal transit time	
Cricopharyngeal dysfunction	

5. Esophageal Phase

Mechanical obstruction	1. No
Delayed passage	1. No
Gastroesophageal reflux	1. No



Double Swallowing



22

차 의과학대학 분당차병원 재활의학과

Videofluoroscopic Swallowing Study

검사 자세  upright  side lying  head up  head neutral  head down

1. Oral Phase

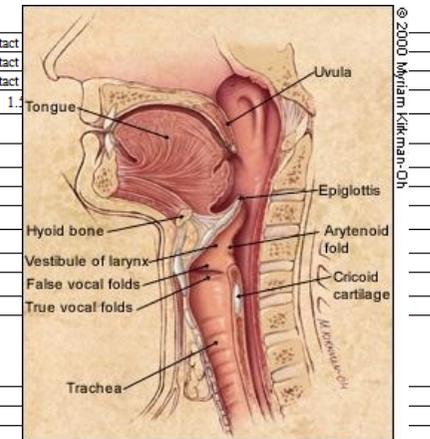
Lip closure	1. Intact
Bolus formation	1. Intact
Residue in the oral cavity	1. Intact
Oral transit time	1. ≤ 1.5

2. Pharyngeal Phase

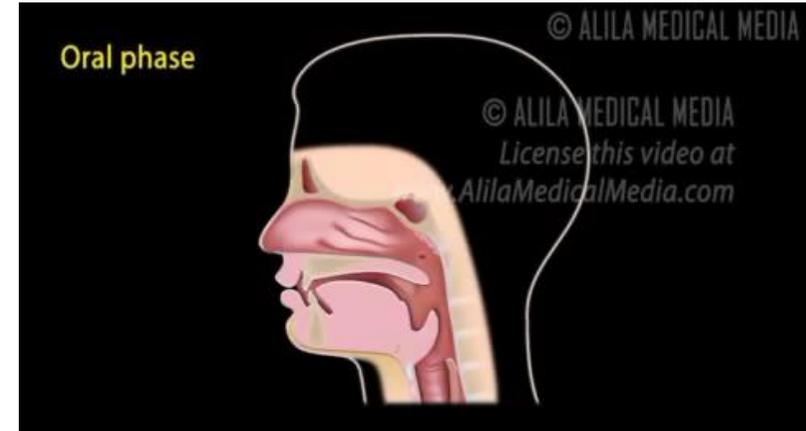
Nasal penetration	
Swallowing reflex	
Laryngeal elevation and epiglottic closure	
Residue in the Valleculae	
Residue in the Pyriform sinus	
Coating of pharyngeal wall after swallow	
Pharyngeal transit time	
Cricopharyngeal dysfunction	

5. Esophageal Phase

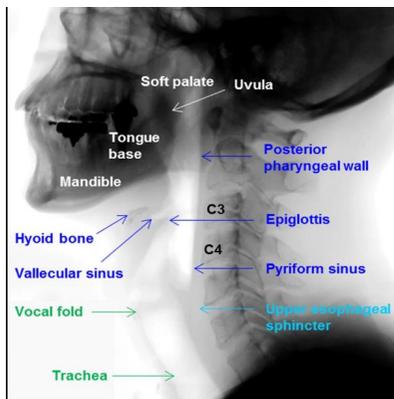
Mechanical obstruction	1. No
Delayed passage	1. No
Gastroesophageal reflux	1. No



Cricopharyngeal Dysfunction



Penetration/Aspiration  
 미량/소량/다량

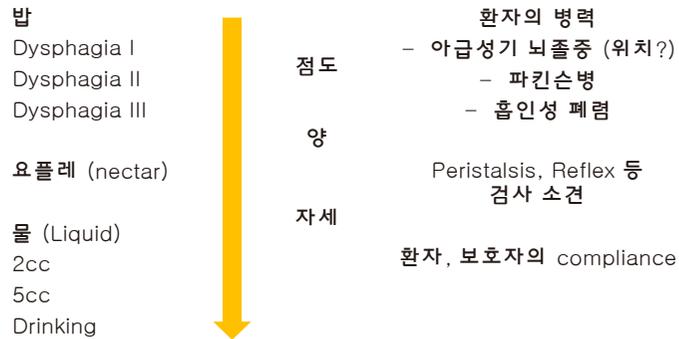


27



28

### VFSS 과정



29

### 차 의과학대학 분당차병원 재활의학과

#### Videofluoroscopic Swallowing Study

검사 자세  upright  side lying  head up  head neutral  head down

#### 1. Oral Phase

Lip closure	1. Intact	2. Inadequate	3. none
Bolus formation	1. Intact	2. Inadequate	3. none
Residue in the oral cavity	1. Intact	2. Inadequate	3. none
Oral transit time	1. ≤ 1.5 sec	2. > 1.5 sec	

#### 2. Pharyngeal Phase

Nasal penetration	1. ≤ 10%	2. 10-50%	3. > 50%
Swallowing reflex	1. Normal	2. Delayed	
Laryngeal elevation and epiglottic closure	1. Normal	2. Reduced	
Residue in the Valleculae	1. ≤ 10%	2. 10-50%	3. > 50%
Residue in the Pyriform sinus	1. ≤ 10%	2. 10-50%	3. > 50%
Coating of pharyngeal wall after swallow	1. No	2. Yes	
Pharyngeal transit time	1. ≤ 1.0 sec	2. > 1.0 sec	
Cricopharyngeal dysfunction	1. Normal	2. Impaired	

#### 5. Esophageal Phase

Mechanical obstruction	1. No	2. Yes
Delayed passage	1. No	2. Yes
Gastroesophageal reflux	1. No	2. Yes

### Treatments

- Oral hygiene
- Diet form & Amount of food
- Posture
- Maneuver
- Sensory stimulation
- Exercise

31

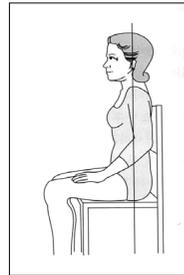
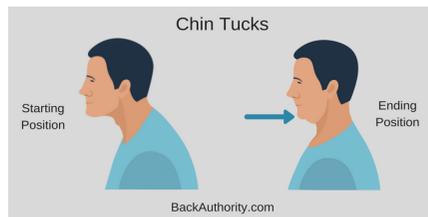
### Oral Hygiene

- 구강 위생 및 치아관리를 위해 물을 적신 면 거즈로 분비물을 닦아줌
- 침 생성을 촉진하기 위해 레몬즙을 적신 거즈를 사용하기도 함



## Posture

- Enhance motor coordination, activity of tongue and chin
- Facilitate swallowing process
- Minimize aspiration potential



33

## Compensatory Techniques

TABLE 26-10 Indications for Compensatory Techniques in Patients with Dysphagia

Clinical Diagnosis	Clinical Observations	Compensatory Technique
Delayed swallow reflex	Coughing before the swallow Aspiration	Chin tuck Supraglottic swallow
Decreased pharyngeal peristalsis (unilaterally)	Unilateral pooling in the pharyngeal region Coughing after the swallow	Turning of head to weaker side Tilting of head to stronger side
Decreased pharyngeal peristalsis	Coughing after the swallow Coughing after the swallow	Effortful swallow Double swallow Alternating liquids and swallows
Decreased laryngeal closure	Coughing during or after the swallow	Chin tuck Supraglottic swallow
Decreased opening of cricopharyngeal region	Coughing after the swallow Pooling in the pyriform sinus	Mendelsohn's maneuver Turning of head to weaker side

## Chin Tuck

- For delayed swallow reflex
  - Narrows the opening of the airway
  - Widen the vallecular space
  - Decrease the interspace between the base of the tongue and the posterior pharyngeal wall
    - Increase pharyngeal pressure
- Not effective for pyriform sinus aspiration

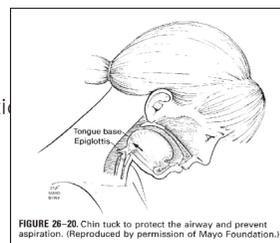


FIGURE 26-20. Chin tuck to protect the airway and prevent aspiration. (Reproduced by permission of Mayo Foundation.)

35

## Turning head to affected side

- For decreased pharyngeal peristalsis
  - Closes the pyriform sinus on that side
  - Direct food down the stronger of the pharynx
  - Adds pressure on the damaged vocal cord and moves it toward the midline, improving airway closure
  - Improves UES function

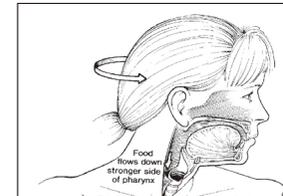


FIGURE 26-21. Turning head to the side directs food down stronger side of the pharynx. (Reproduced by permission of Mayo Foundation.)

36

### Tilting head to the sound side

- Effective for unilateral tongue dysfunction or unilateral pharyngeal disorders
- Direct food down the stronger of the oral cavity & pharynx



### Double Swallowing

- For incomplete pharyngeal clearance during the initial swallow
- For oral residue due to decreased lingual mobility
  - Swallow twice or more if needed per bolus
  - After wet swallows with subsequent dry swallows

38

### Mendelsohn Maneuver

- For decreased laryngeal elevation and cricopharyngeal opening
1. During swallow, rest your hand on your neck and feel Adam's apple raise up and throat squeeze
  2. Hold the voice box up for a couple of seconds by contracting neck muscle
  3. Relax
  4. 10 times a row 4 time per day



[https://www.youtube.com/watch?v=NHZ5g8roe\\_A](https://www.youtube.com/watch?v=NHZ5g8roe_A)

39

### Electrical stimulation

- Neuromuscular electrical stimulation
  - Pharyngeal muscle strengthening
  - Enhancing synchronous contraction
  - Relearning process of the brain



40

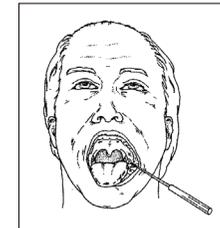
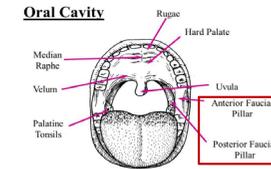
### Sensory stimulation

- Cold – ice cube training  
 cold stimulation
- Sour – acetic acid, lemonade
- Tactile stimulation

41

### Thermal Tactile Stimulation

- To increase swallow reflex (CN IX, X stimulation)
  - Short-lasting, effective in neurologically impaired Pts
1. Place laryngeal mirror, in ice for at least 10 second to cool
  2. Firmly stroke the faucial arches
  3. Repeat 5-10min, 4~5/day, 2-4wks



<https://www.youtube.com/watch?v=ukfdL7FNxJo>

42

### Maneuver

- 삼킴 근육의 근력강화 및 관절범위운동
- 마른 연하법 (Masako Maneuver)
- 등척성 두부거상운동 (Shaker's Exercise)
- 성대 내전 운동 (Vocal cord adduction exercise)
- 기타
  - 발대 빨기
  - 기침하기
  - Incentive spirometer

43

### 뇌졸중의 재활치료

### 삼킴장애 시 운동하는 모습



대한뇌졸중학회

44

### Masako Maneuver

- 혀를 물고 마른 연하(dry swallow) 하는 운동
- Tongue-holding maneuver
- 후방부의 인두벽을 앞으로 이동시킴



45

### Shaker's Exercise

- 누운 자세에서 어깨를 바닥에 붙이고 고개를 들어 발끝을 보는 자세 1분 유지, 3회
- 설골후두복합체(hyolaryngeal complex)의 전방이동과 상부식도괄약근의 이완 향상 효과
- 하루 3회, 수주 훈련



<https://www.youtube.com/watch?v=RoInwiAeOew>

46

### Surgery & Medication

- Surgery : rarely needed
  - Balloon dilatation : for achalasia
  - CP myotomy : CP achalasia
- Medication : review the patient's medication which may worsen or induce dysphagia

47

Thank you for listening

