Section 14

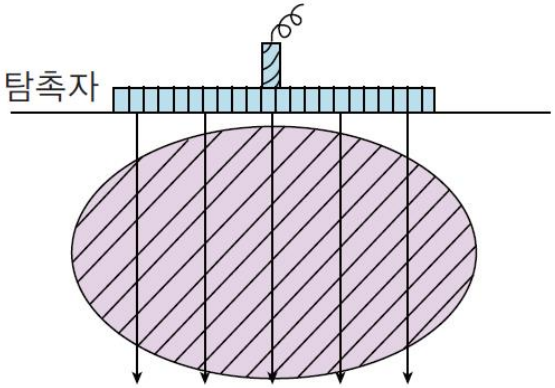
목동맥 초음파의 기본개념

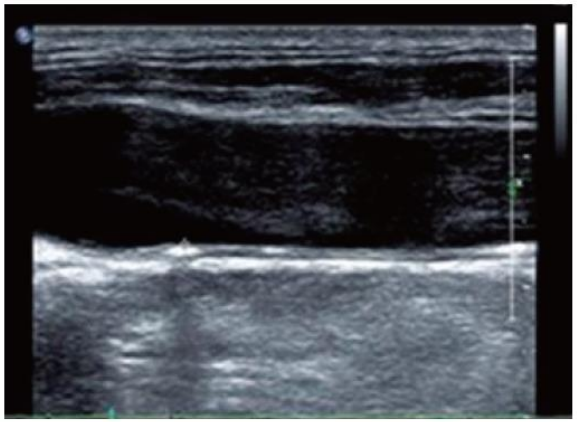
학습목표

1. 목동맥 초음파검사의 임상적 의의를 설명할 수 있다(A).
2. 탐촉자의 선택과 조작방법을 설명할 수 있다(A).
3. 목동맥 초음파의 허상을 설명할 수 있다(A).
4. 목동맥 초음파를 위한 진단장치 조절을 설명할 수 있다(A).

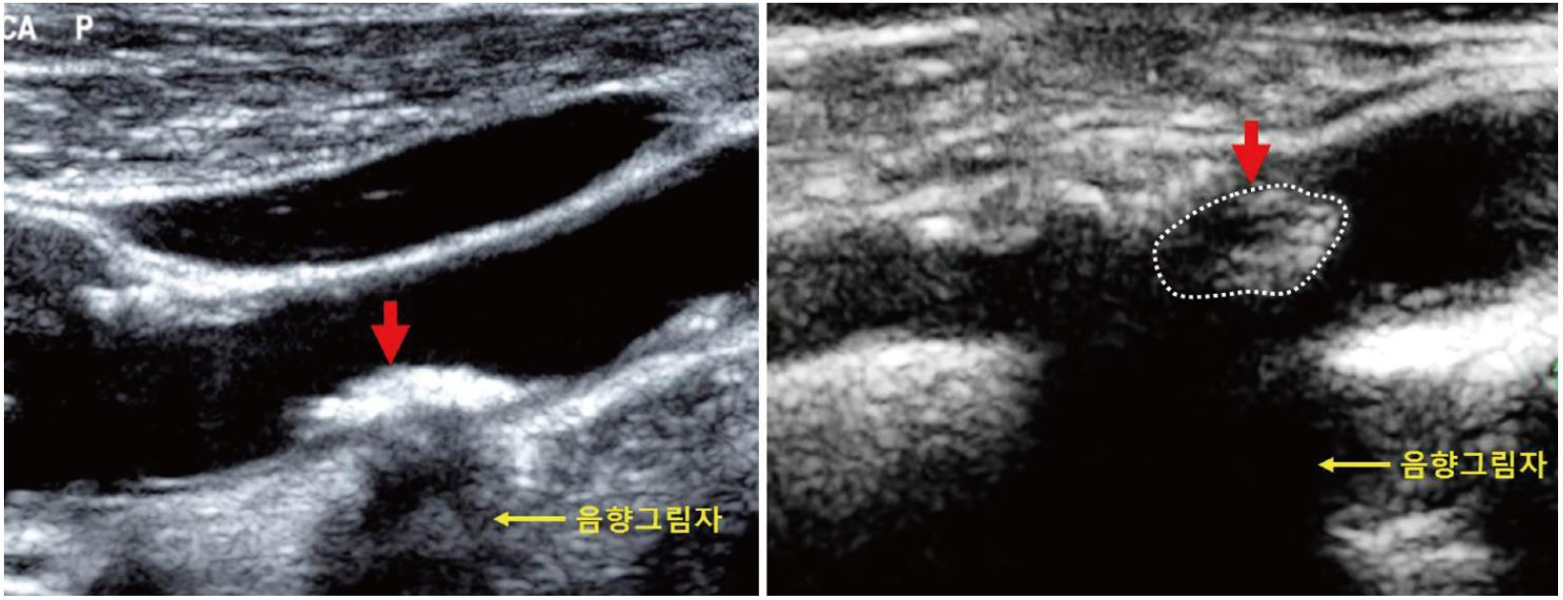


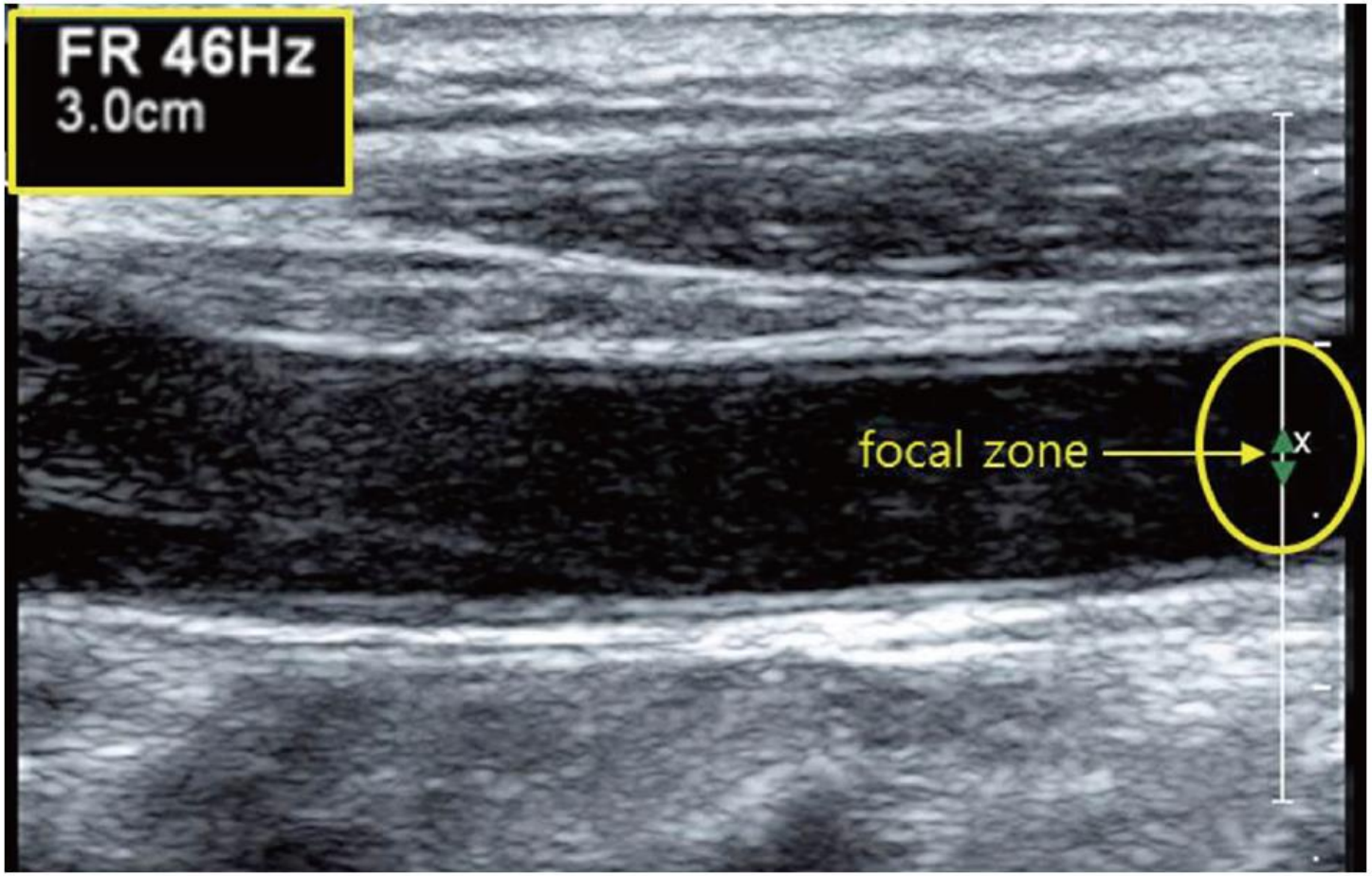
선형 탐촉자
(7.5 MHz)





선형 스캔방식


CA P
음향그림자
음향그림자

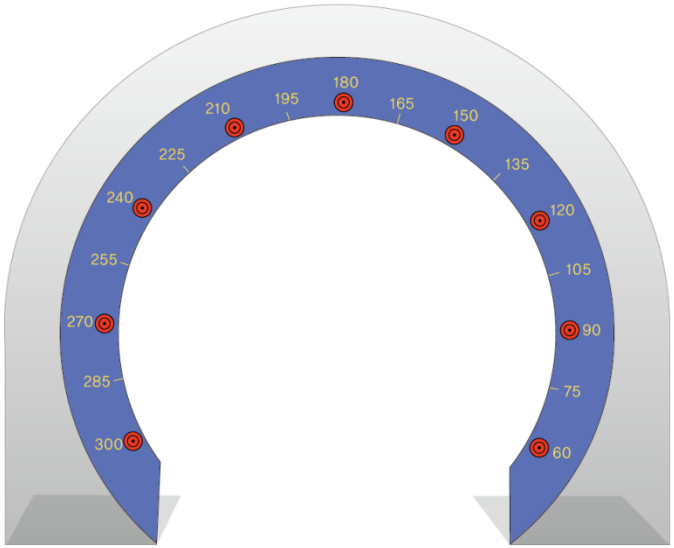

FR 46Hz
3.0cm
focal zone
x

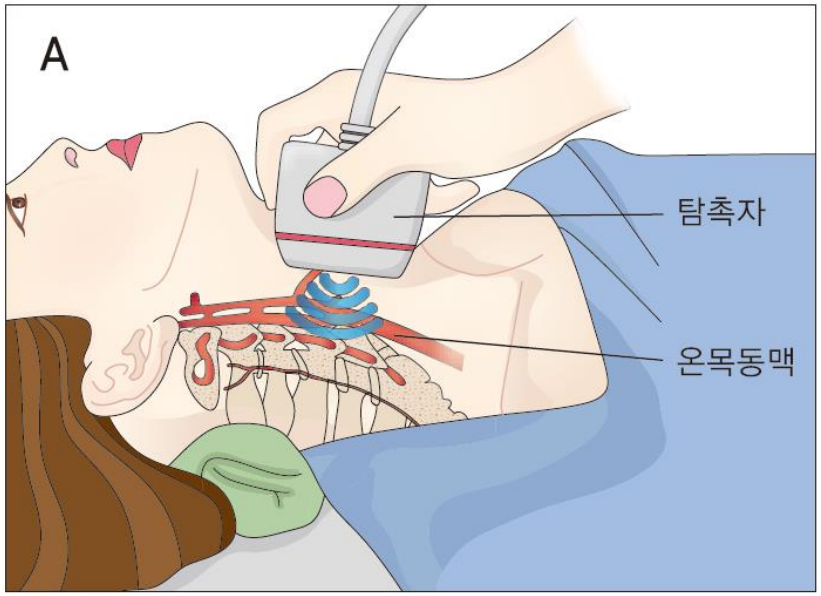
Section 15

목동맥 초음파 검사방법

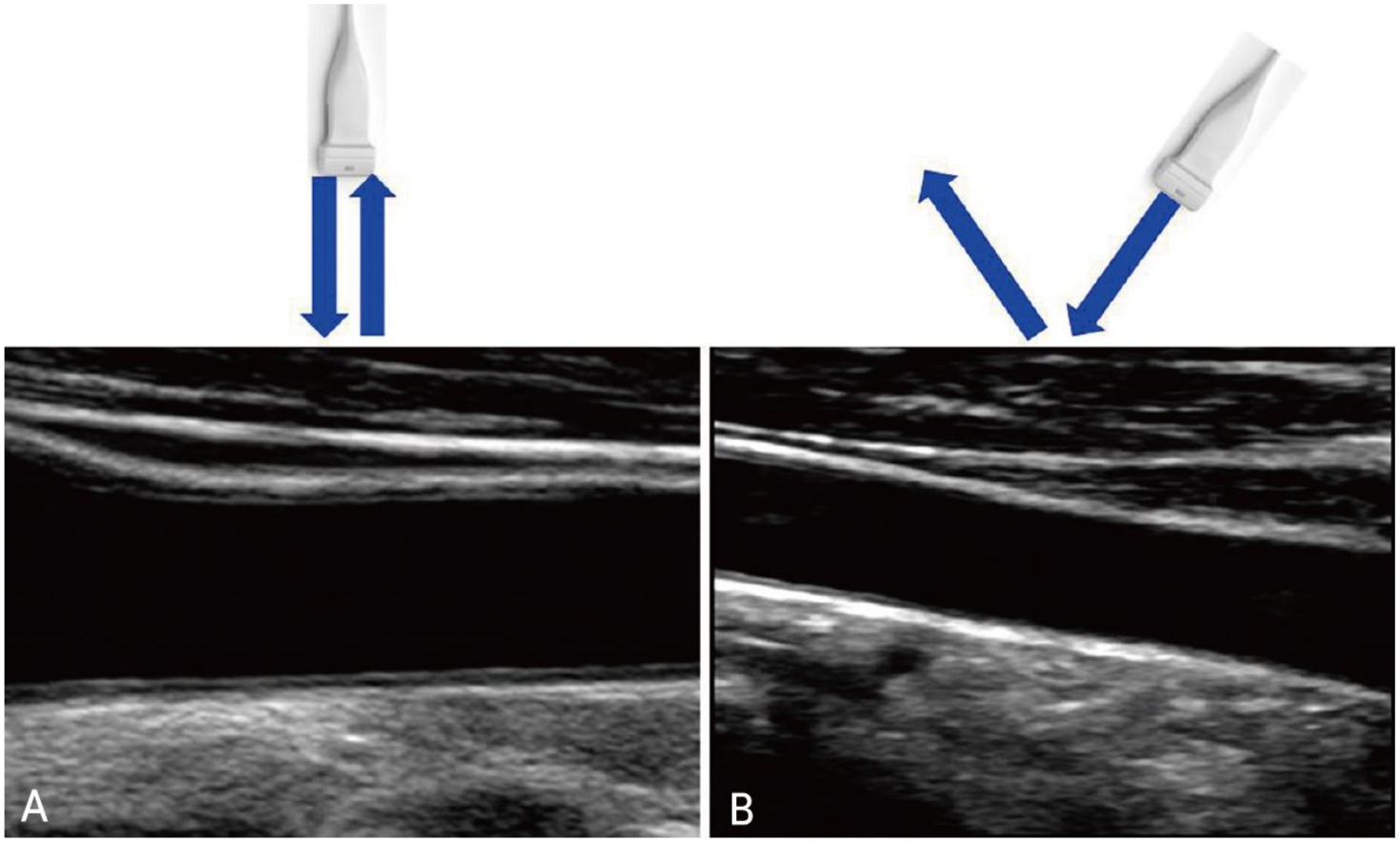
학습목표

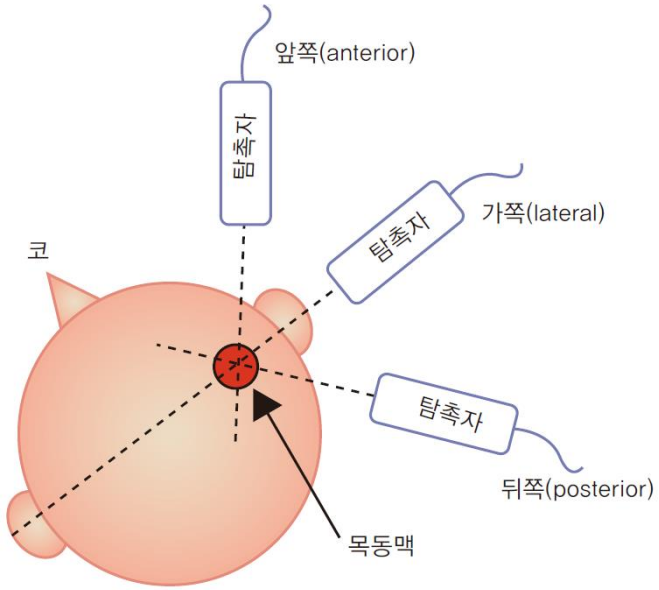
1. 검사 자세와 검사를 위한 준비사항을 설명할 수 있다(A).
2. 온목동맥, 속목동맥, 바깥목동맥을 구별방법을 설명할 수 있다(A).
3. B mode 검사법 및 IMT 측정방법을 설명할 수 있다(A).
4. Doppler 검사법을 설명할 수 있다(A).

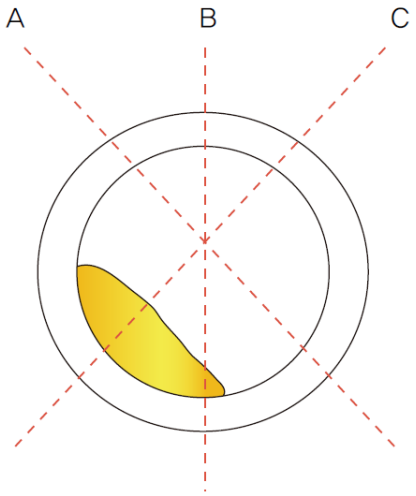

180
195
165
210
150
225
135
240
120
255
105
270
90
285
75
300
60

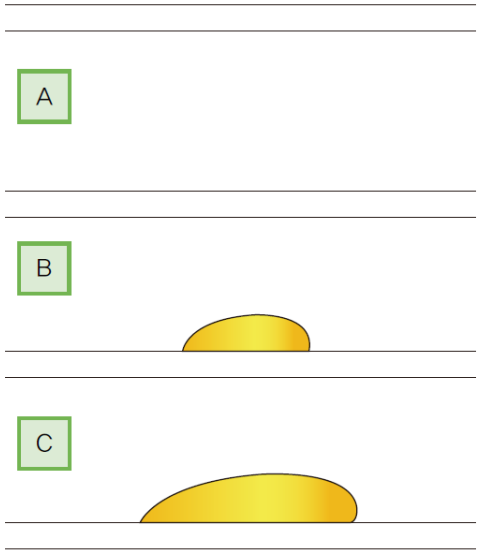

A
탐촉자
온목동맥

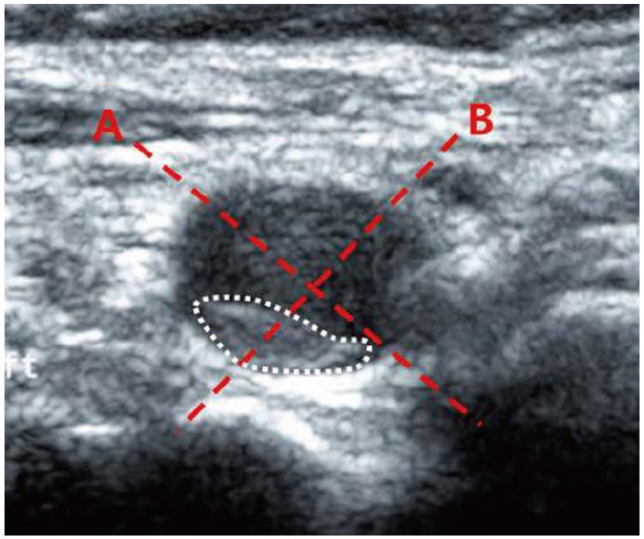

B
방향 표지자

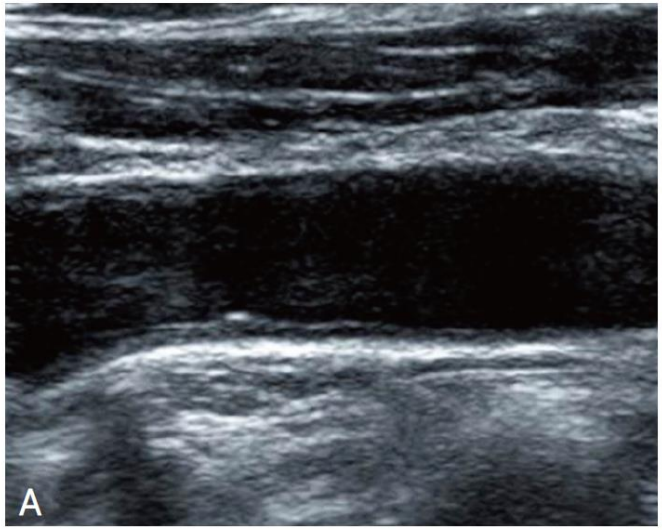

A
B

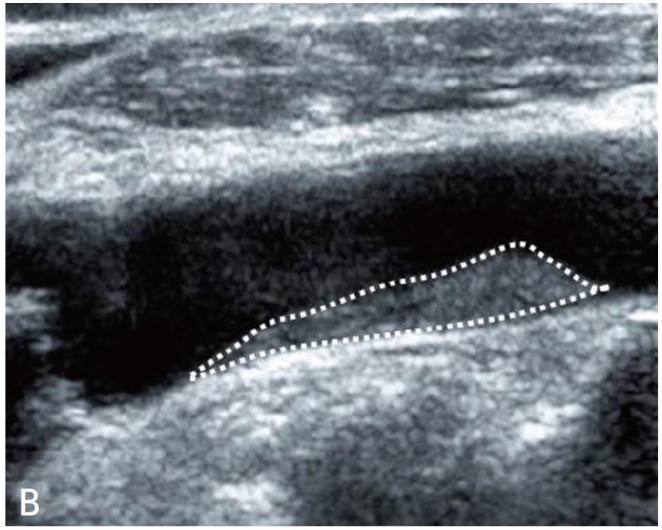

앞쪽(anterior)
탐촉자
가쪽(lateral)
탐촉자
코
탐촉자
뒤쪽(posterior)
목동맥

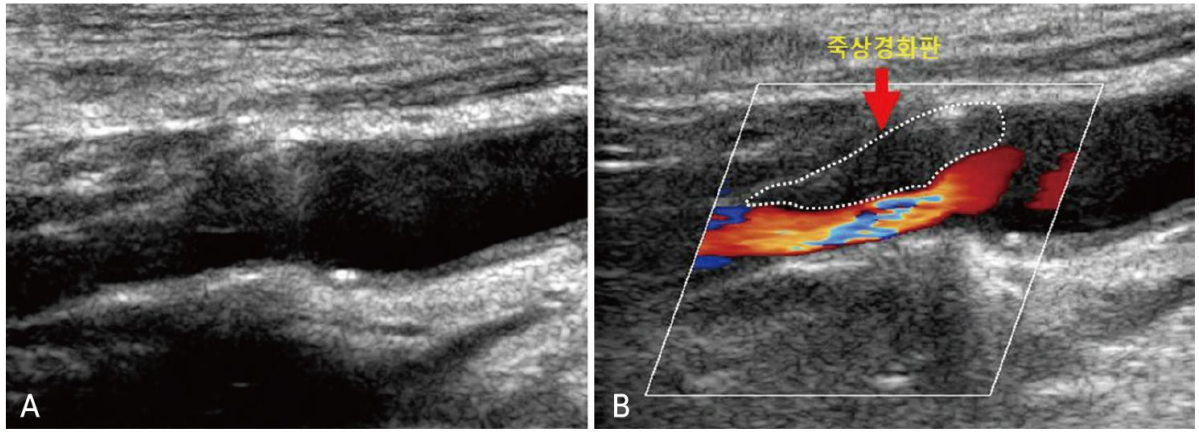

A
B
C


A
B
C


A
B


A


B


죽상경화판
A
B

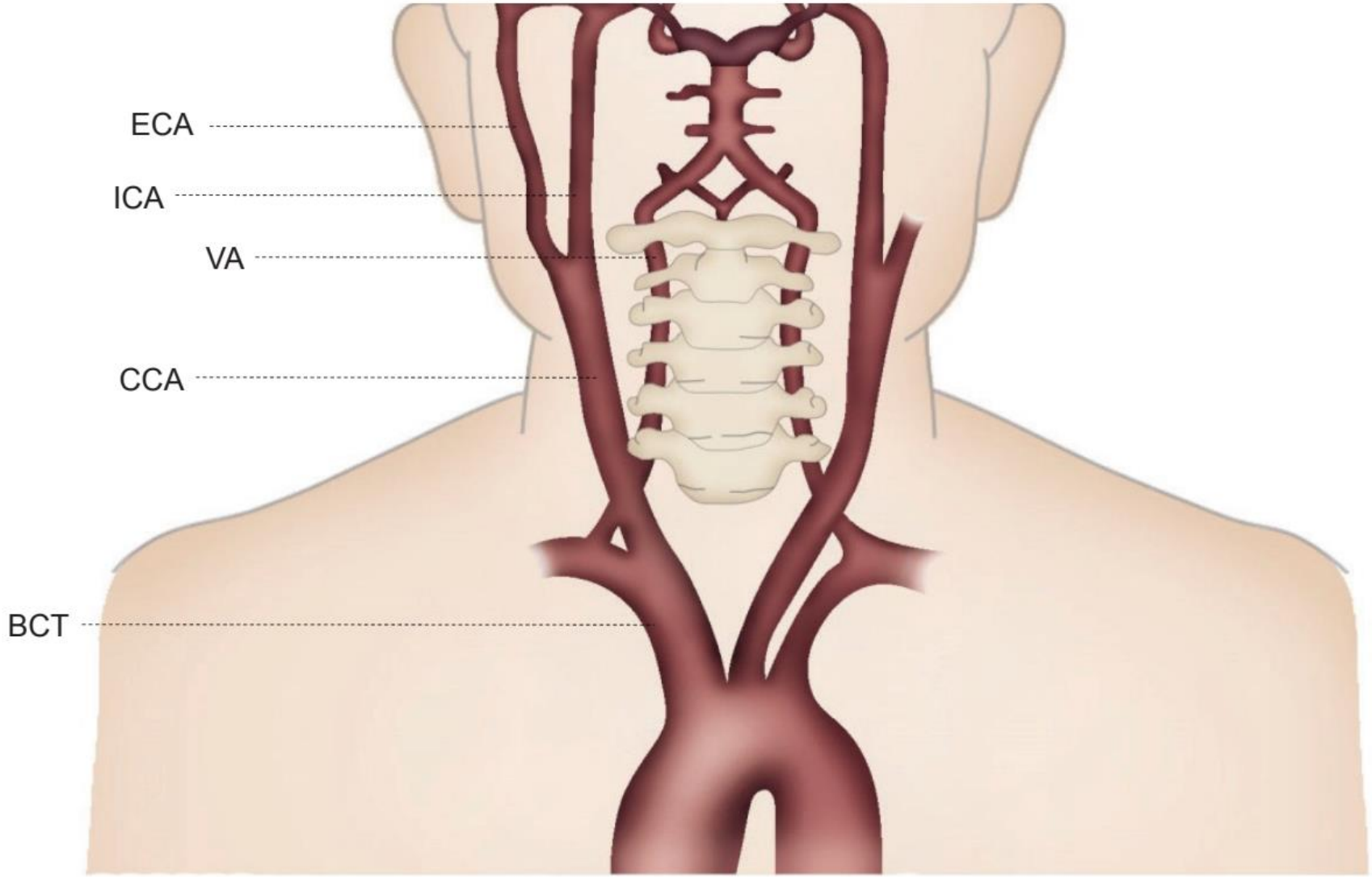


Fig. 1. Arterial branches to the brain. ECA; external carotid artery, ICA; internal carotid artery, VA; vertebral artery, CCA; common carotid artery, BCT; brachiocephalic trunk.

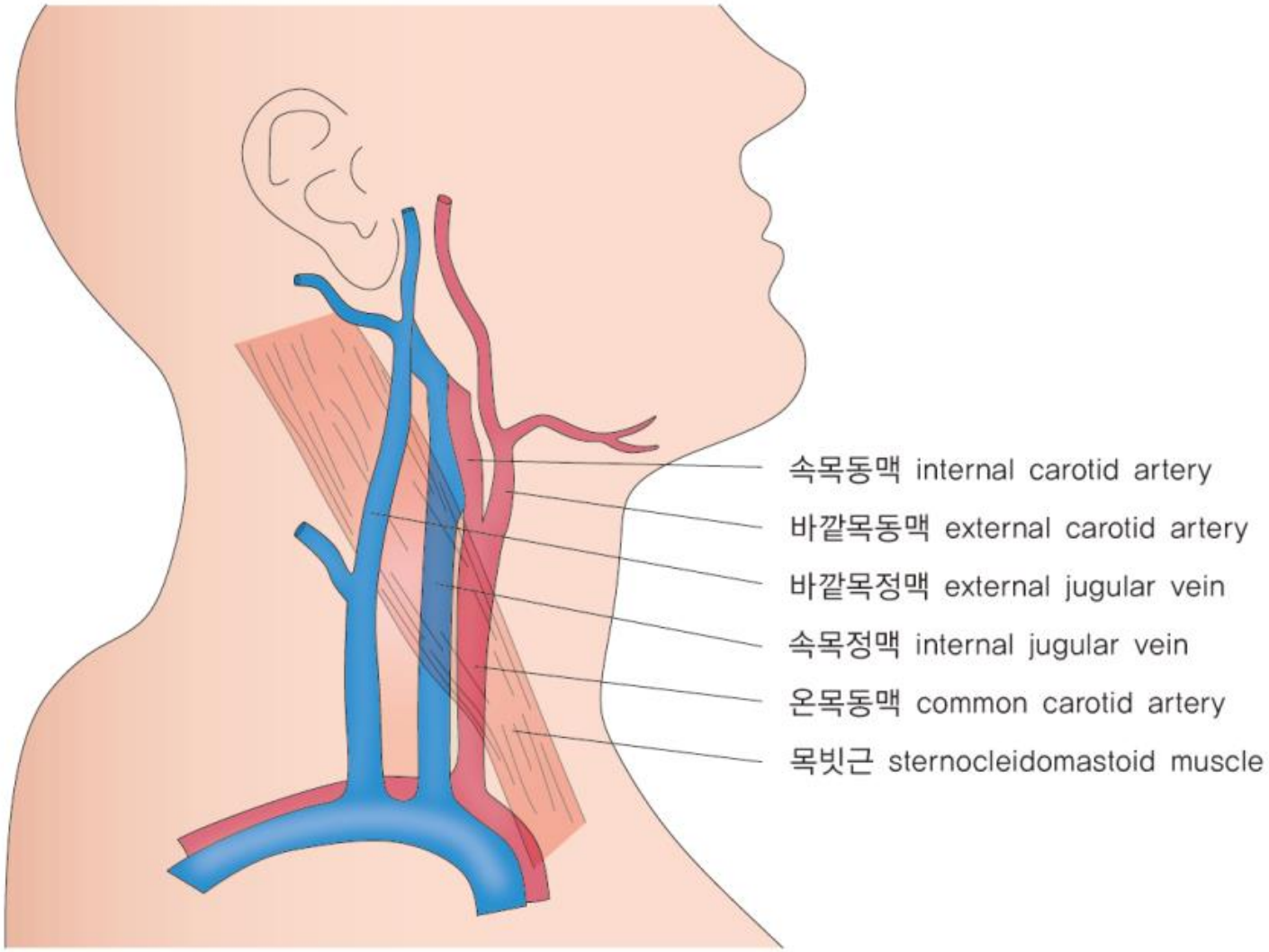
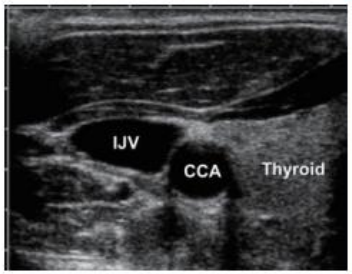
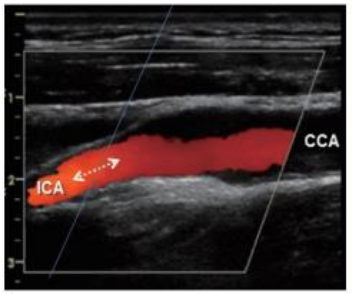
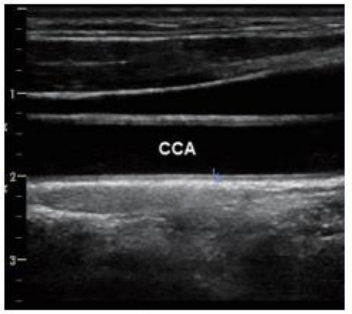
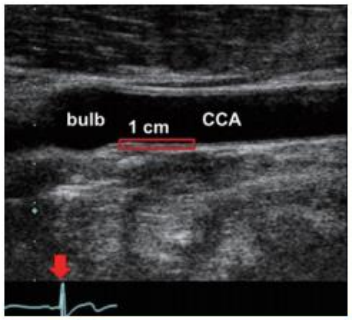
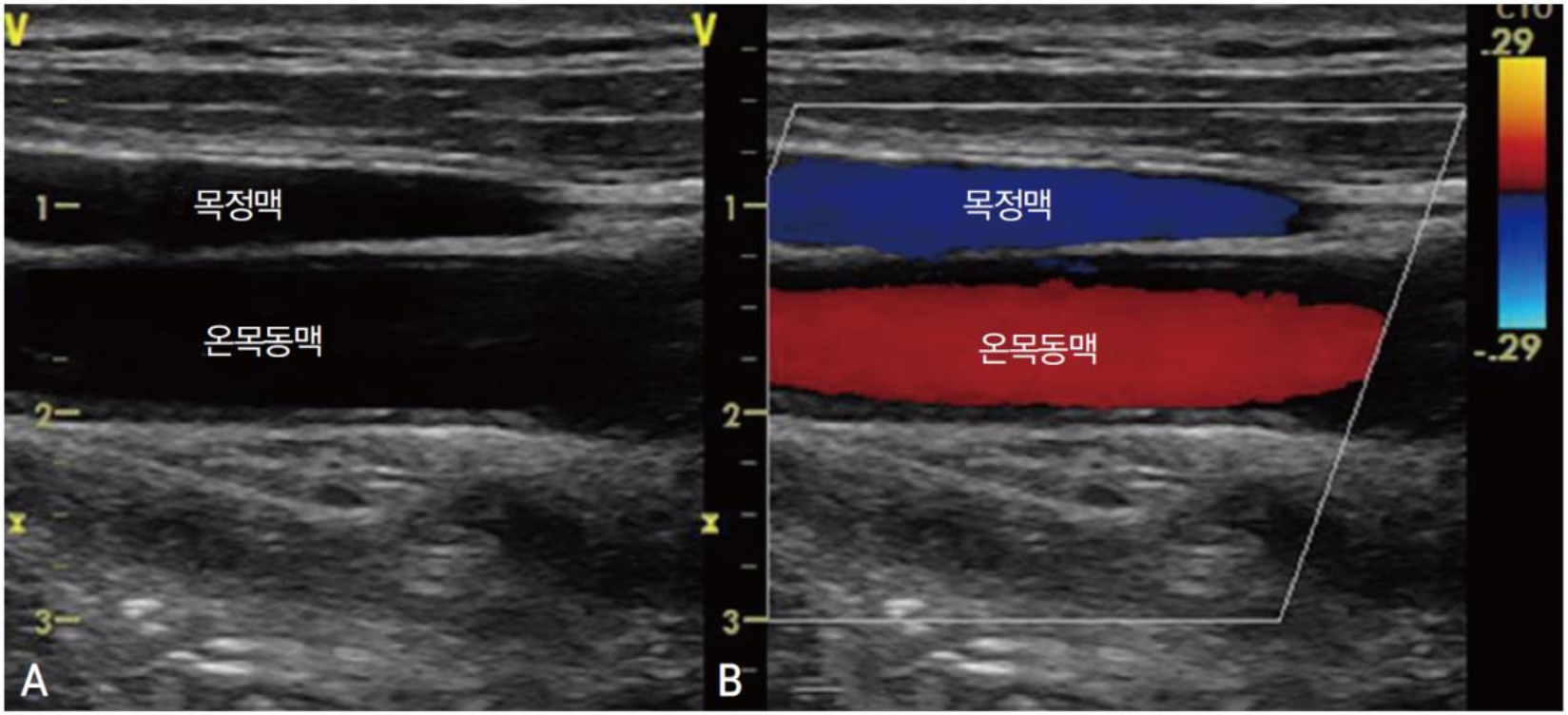
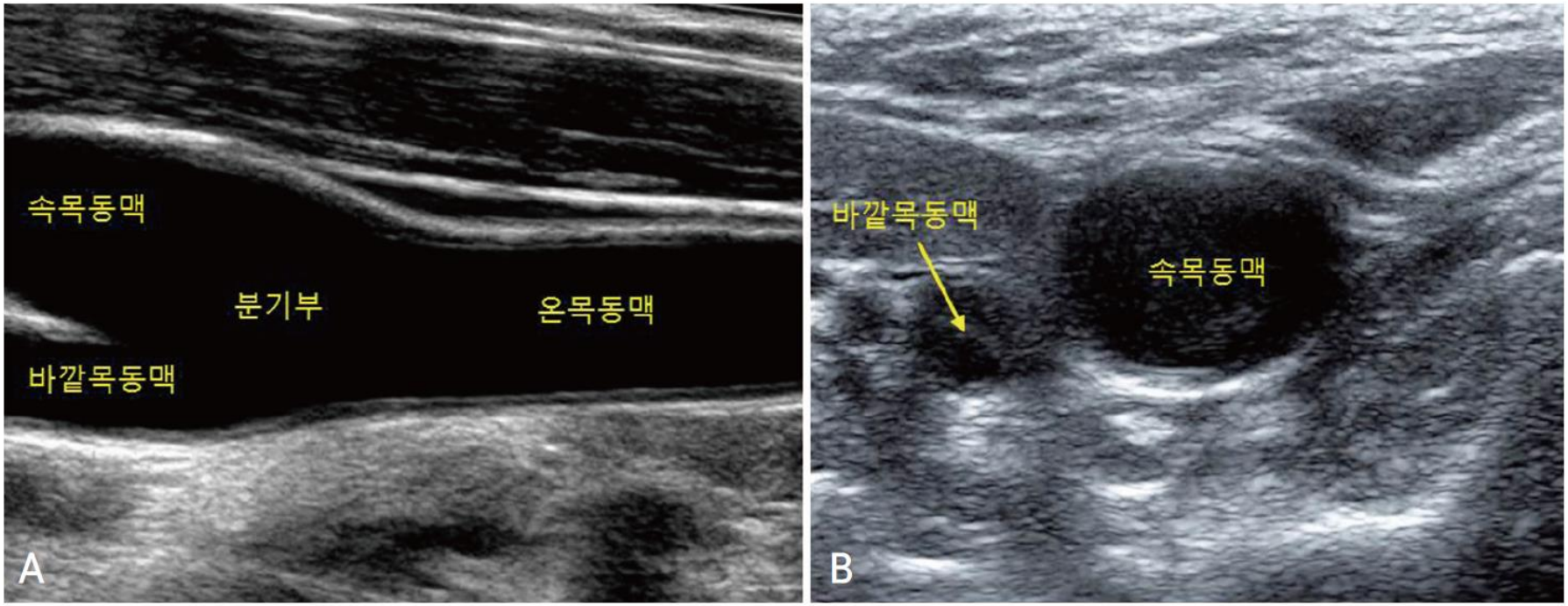

속목동맥 internal carotid artery
바깥목동맥 external carotid artery
바깥목정맥 external jugular vein
속목정맥 internal jugular vein
온목동맥 common carotid artery
목빗근 sternocleidomastoid muscle

Table 2. Four steps for comprehensive carotid ultrasound imaging

Step	View	영역	방법	영상
1	횡축 스캔	prox-CCA to mid-ICA	경동맥을 중앙에 두고, 천천히 총경동맥 근위부에서 내경동맥까지 상행	
2	내경동맥, 외경동맥	prox 1 cm of each branch	혈류와 도플러 각도 평행하도록, ≤ 60도; 협착병변 전후 pulsed wave Doppler	
3	장축 스캔	CCA, bulb, ICA	병변 부위 놓치지 않도록 다각도로 접근	
4	내중막 두께	distal 1 cm of CCA, far wall	장축이 수평 되도록; 튜닝포크/더블라인 잘 보이는 뷰에서 이완기말(arrow) 정지 영상	

CCA, common carotid artery; ICA, internal carotid artery; IJV, internal jugular vein.


목정맥
온목동맥
A
목정맥
온목동맥
B
.29
-.29


속목동맥
분기부
온목동맥
바깥목동맥
A
바깥목동맥
속목동맥
B

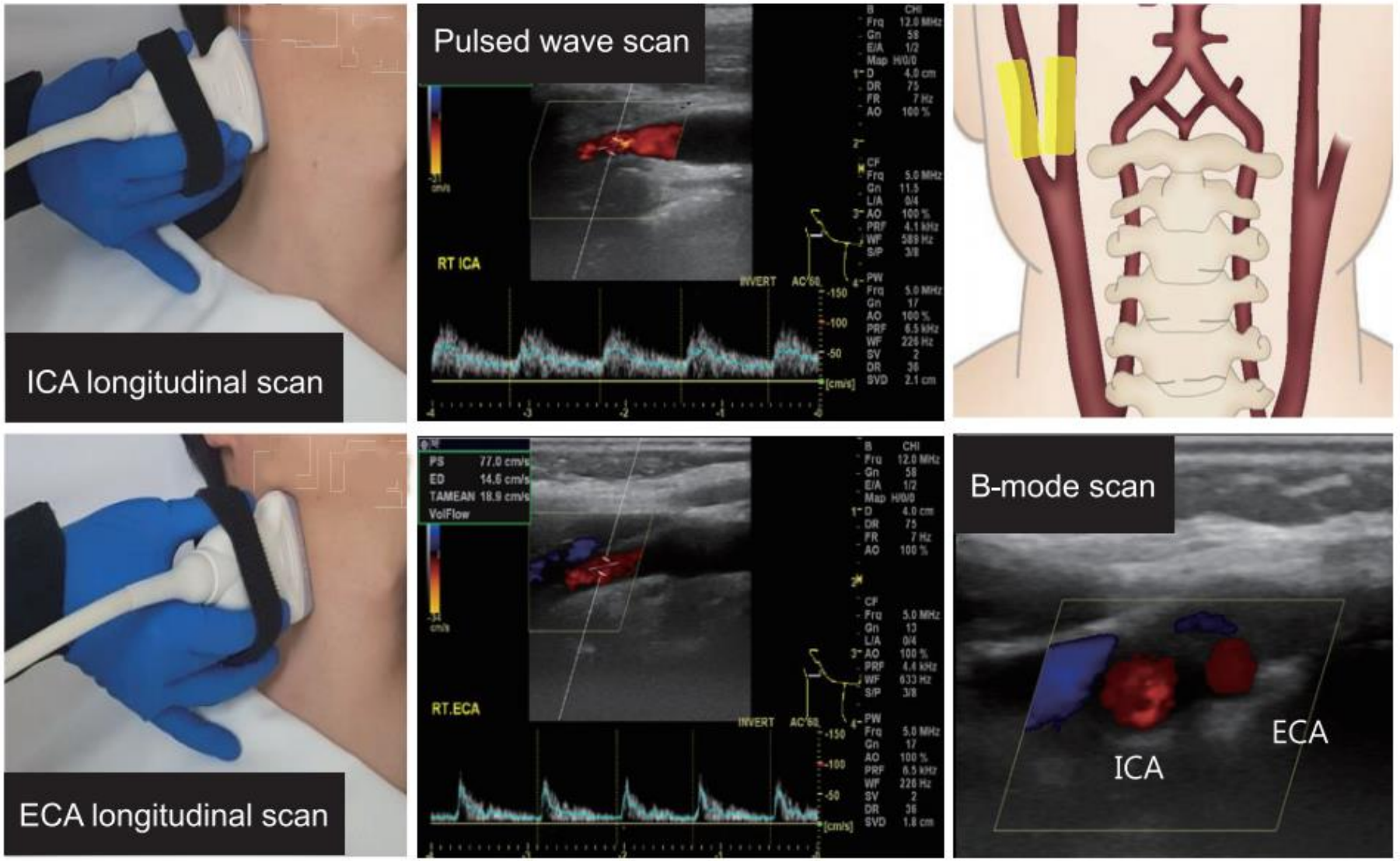
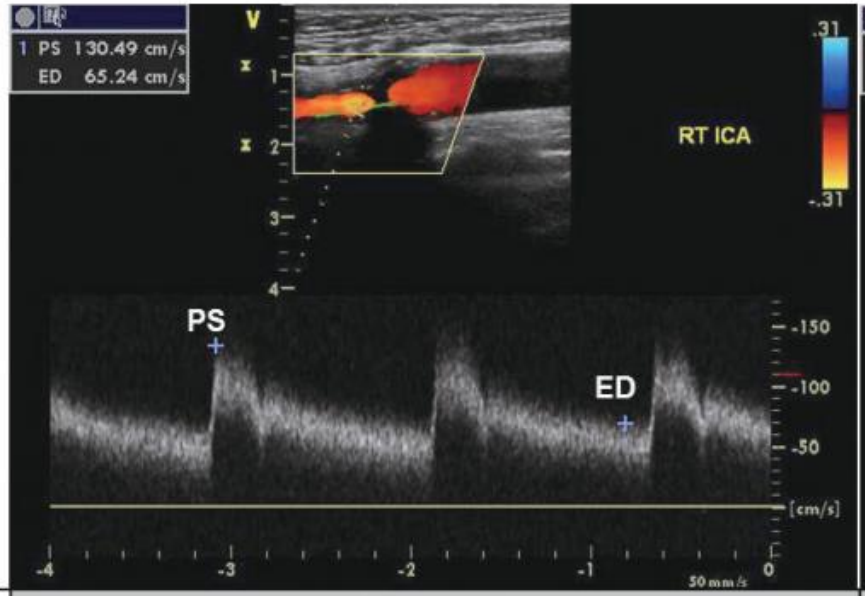
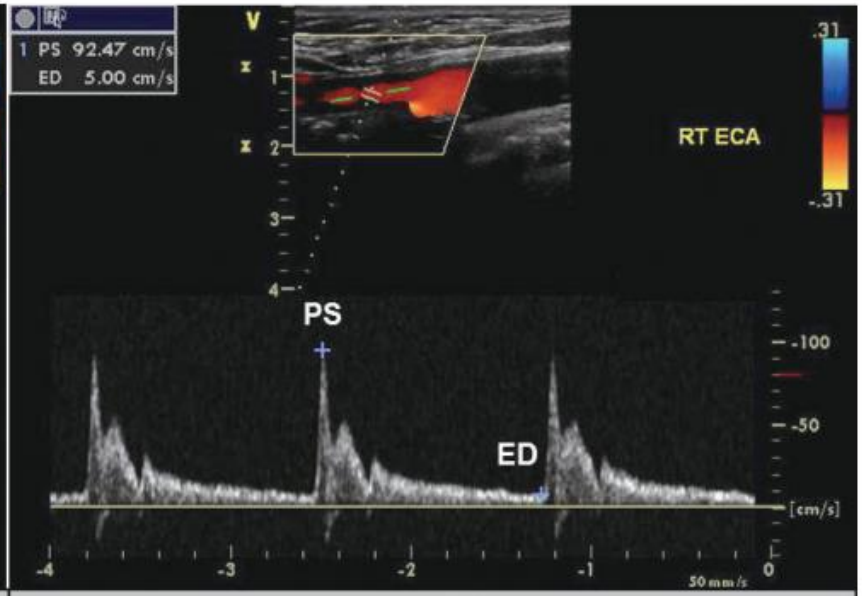


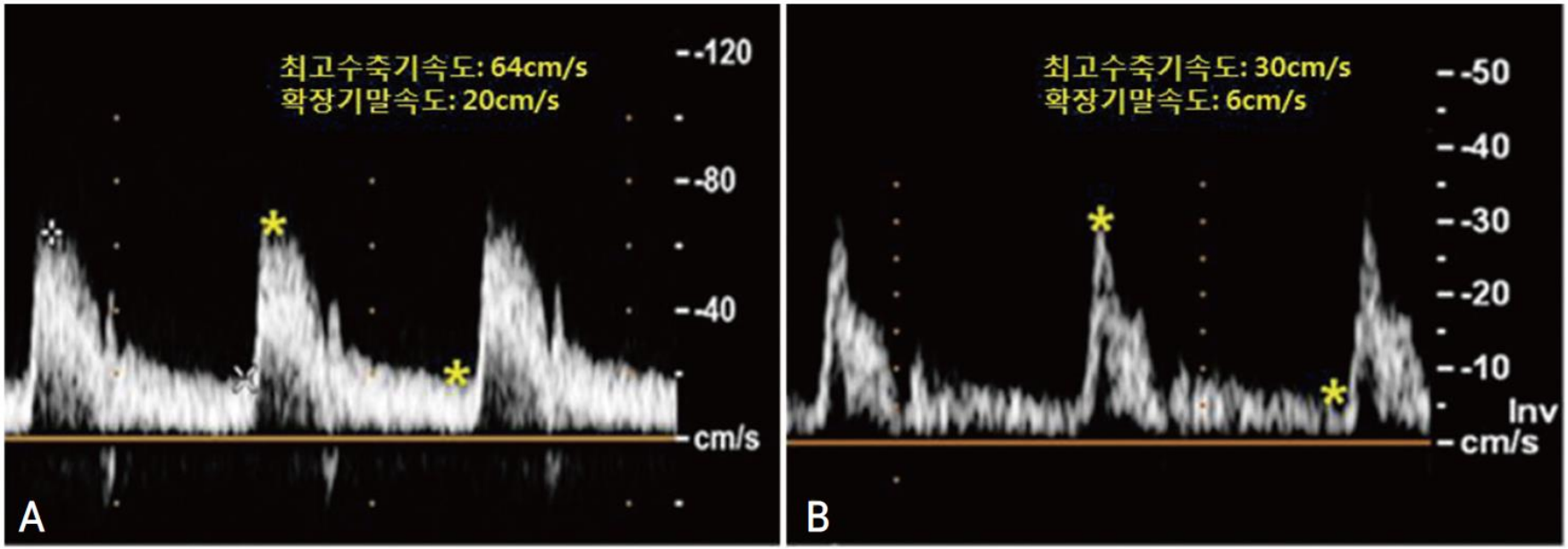
Fig. 7. Examination of internal and external carotid arteries. ECA; external carotid artery, ICA; internal carotid artery.

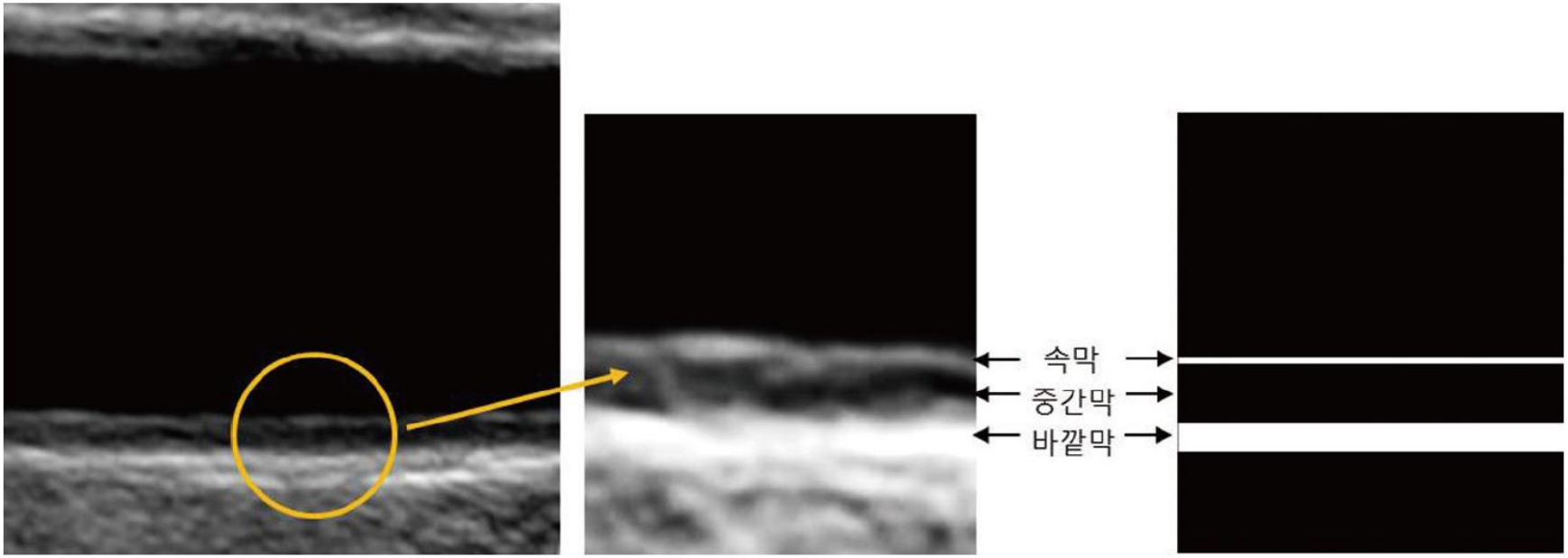


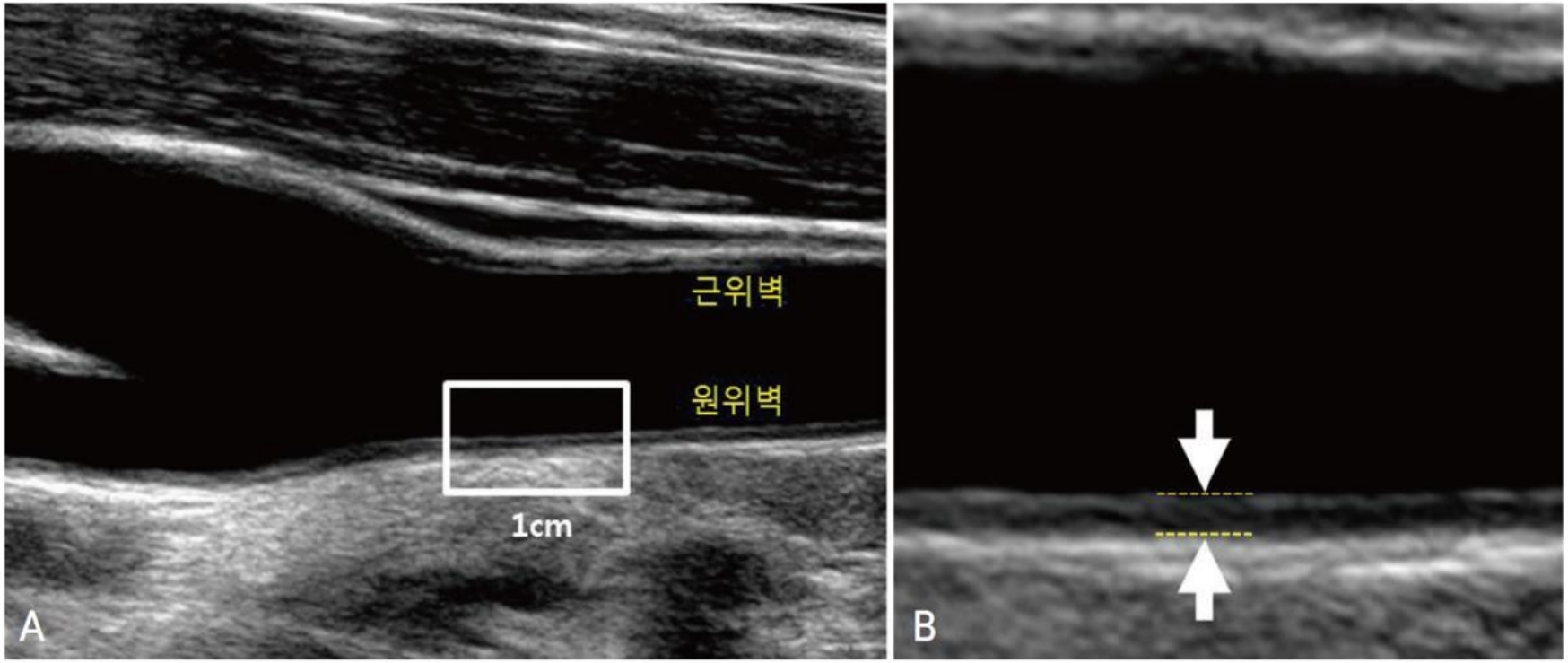


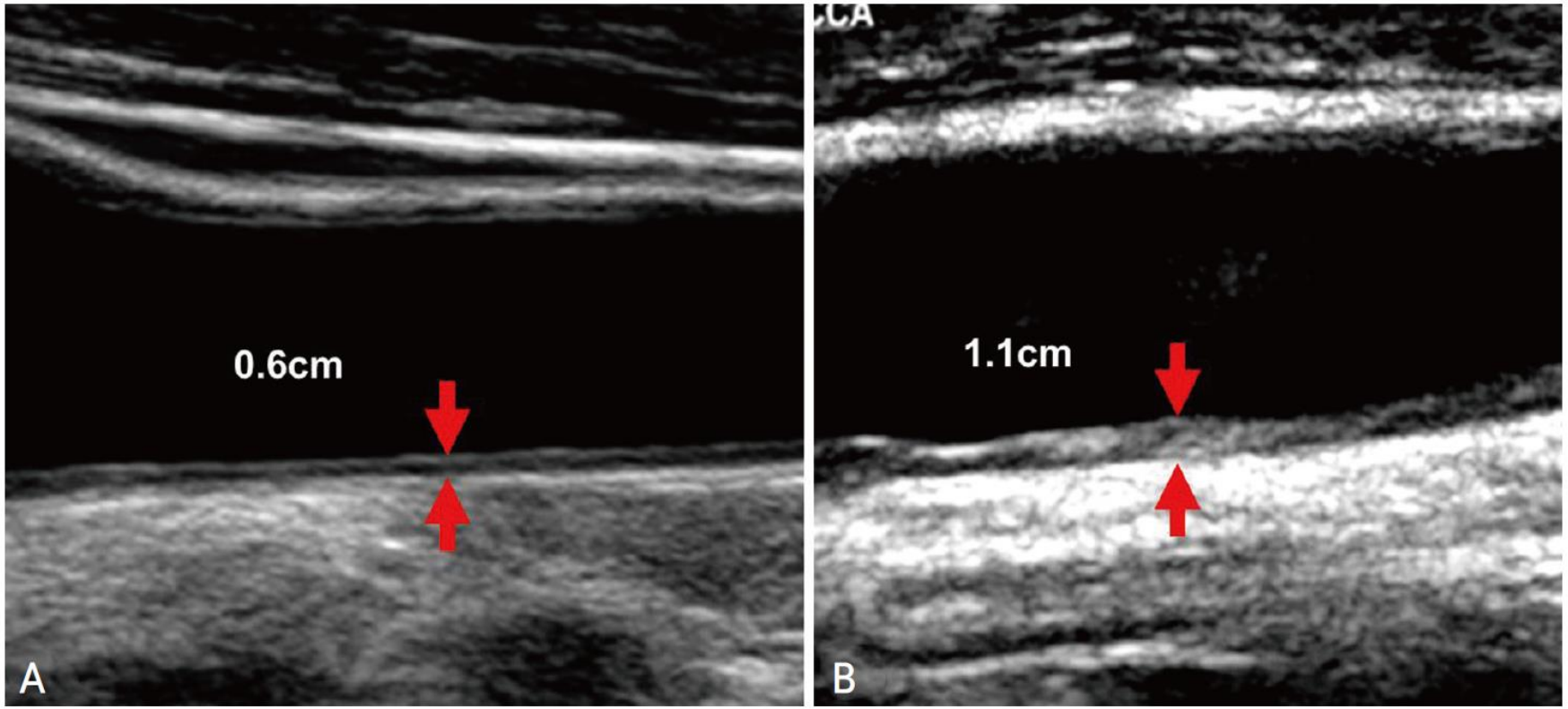
	내경동맥	외경동맥
크기	크다	작다
위치	외측	내측
목분지	없다	있다
파형	**Low-resistance spectral waveform** 혈류가 많아서 진하게 보임. 원위부 저항이 적어서 수축기 정점이 둥근모양. 이완기말까지 혈류가 유지되며, 외경동맥보다 높은 속도.	**High-resistance spectral waveform** 원위부 저항이 높아서 수축기 정점이 첨탑모양. 이완기말 혈류가 미약하며, 아주 낮은 속도.

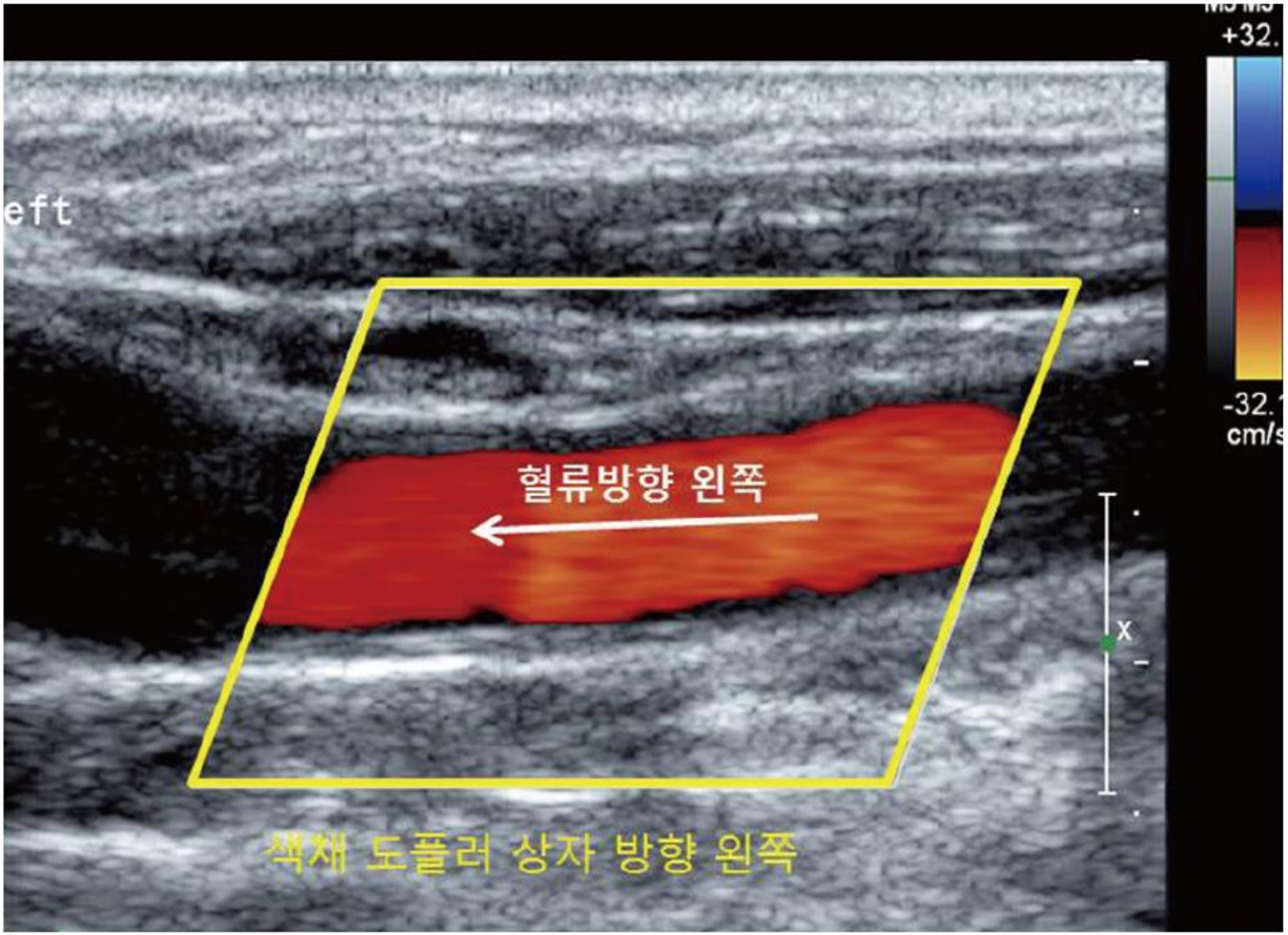
Figure 2. How to differentiate the internal from the external carotid artery. PS, peak systolic; ED, end-diastolic.

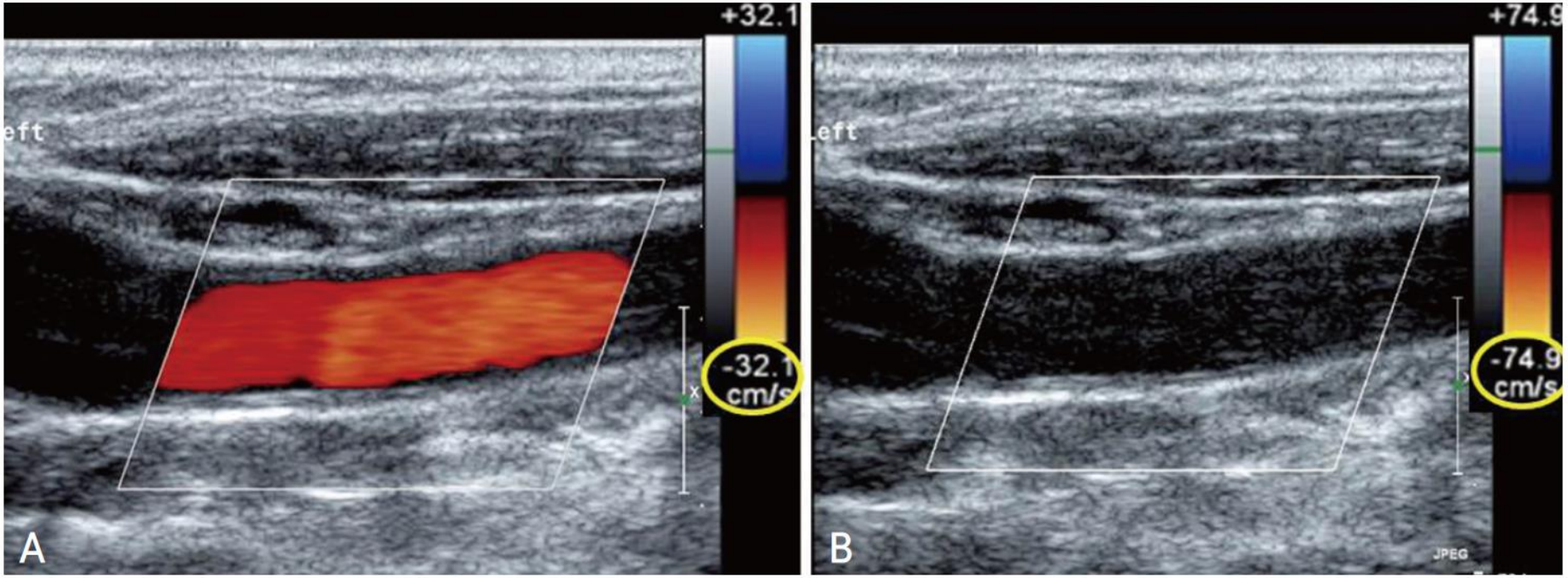

최고수축기속도: 64cm/s
확장기말속도: 20cm/s
120
80
40
cm/s
A
최고수축기속도: 30cm/s
확장기말속도: 6cm/s
50
40
30
20
10
Inv
cm/s
B

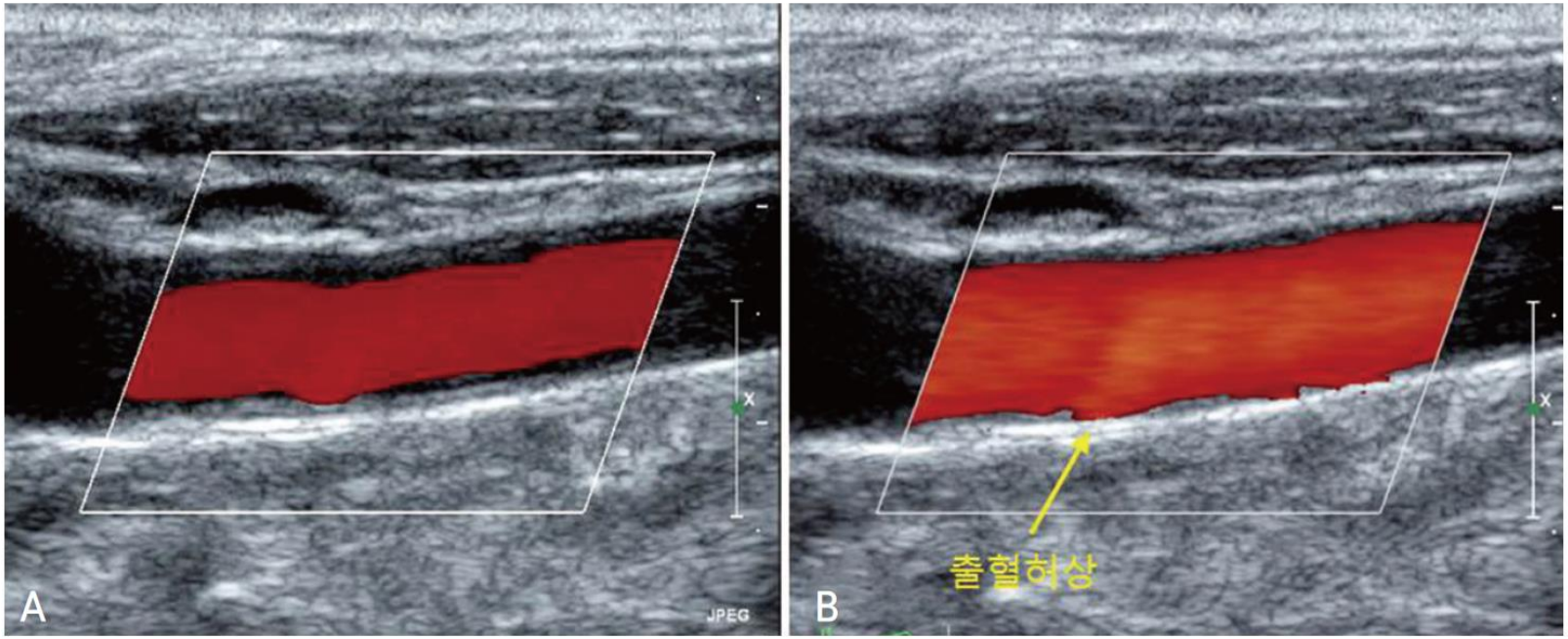

속막
중간막
바깥막

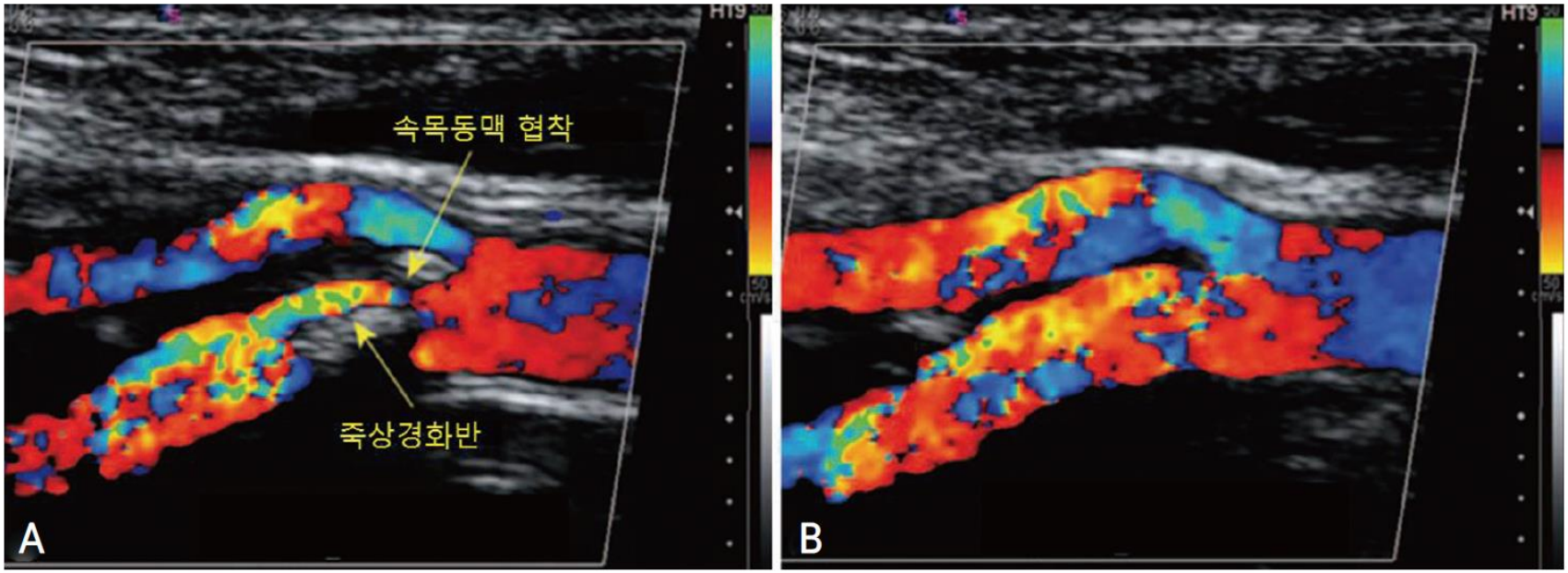

근위벽
원위벽
1cm
A
B

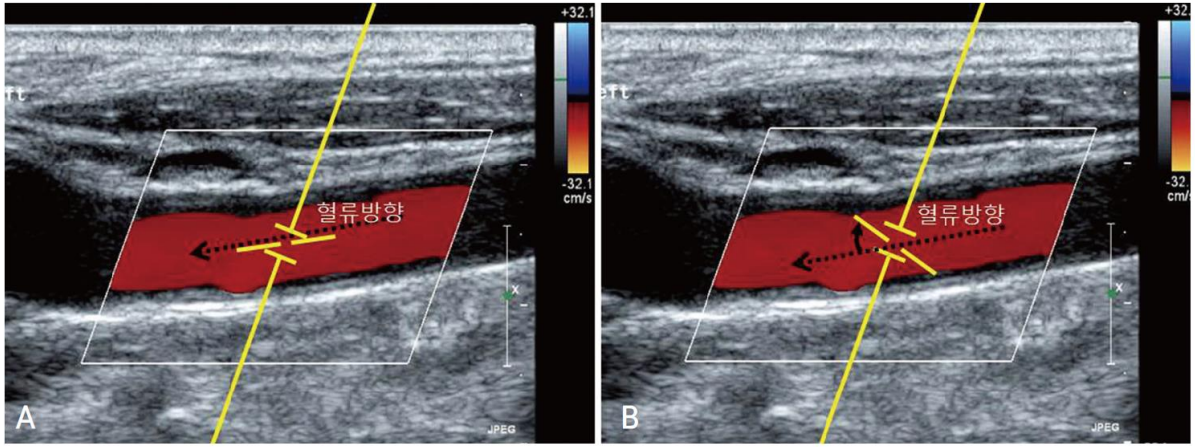

0.6cm
A
CCA
1.1cm
B

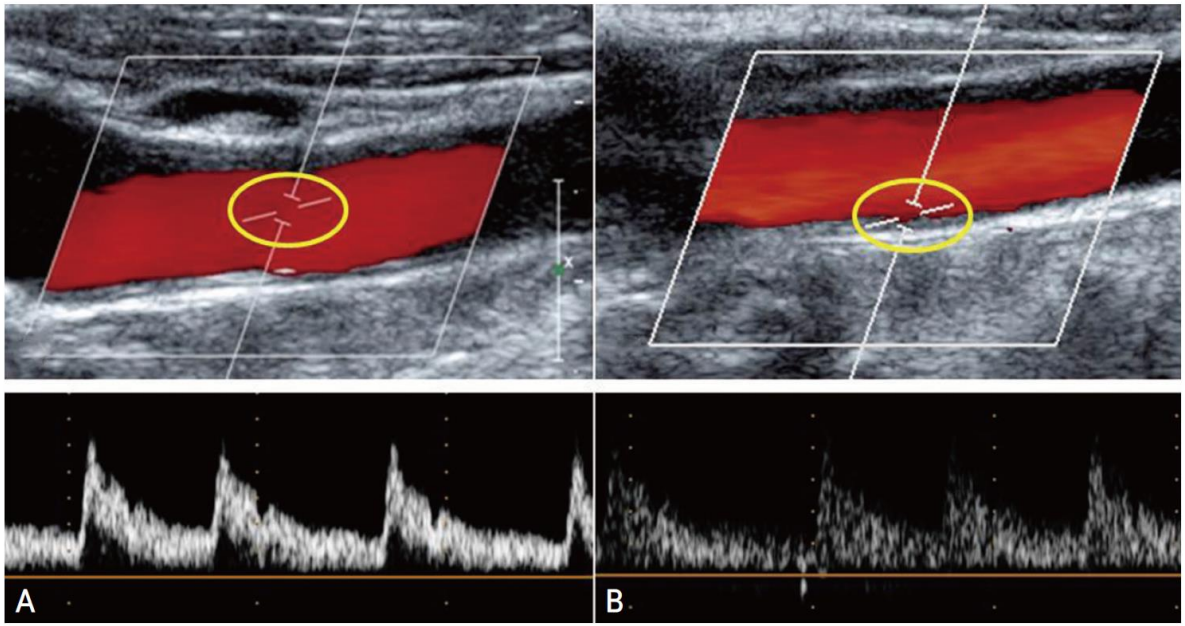

eft
+32.
-32.
cm/s
혈류방향 왼쪽
x
색채 도플러 상자 방향 왼쪽


+32.1
eft
-32.1
cm/s
A
+74.9
Left
-74.9
cm/s
B
JPEG


A
JPEG
B
출혈허상


속목동맥 협착
죽상경화반
A
B


혈류방향
A
JPEG
혈류방향
B
JPEG


A
B

::: 경동맥초음파 검사 보고서 :::

이름		등록번호		성별/나이	M/56	혈압(㎜Hg)	134/92
적응증	CRVO	BSA(㎡)	134/92	키/몸무게	176/68	시술종류	
의뢰의사		진료과	MI/CI	검사자		판독의사	
검사일	4-27-20	최근검사일	None	입원/외래	외래	병동/병실	외래-MI/CI

◆ CAROTID PLAQUE

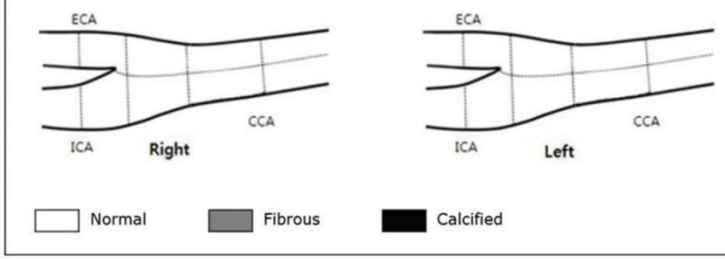
	Plaque
Presence	None

◆ CAROTID IMT

	Right (mm)	Left (mm)
CCA	0.7	0.7

◆ DOPPLER ULTRASOUND

Right			Left		
CCA-PSV(cm/s)	PSV	76	CCA-PSV(cm/s)	PSV	88
	EDV	27		EDV	33
ICA(cm/s)	PSV	84	ICA/CCA(PSV)	PSV	63
	EDV	38		EDV	28
ICA/CCA(PSV)			ICA/CCA(PSV)		



◆ COMMENTS

No carotid plaque or stenosis
Normal IMT

::: 경동맥초음파 검사 보고서 :::

이름		등록번호		성별/나이	M/62	혈압(㎜Hg)	130/70
적응증	Angina	BSA(㎡)	130/70	키/몸무게	162/67	시술종류	
의뢰의사		진료과	MI/CI	검사자		판독의사	
검사일	4-27-20	최근검사일	None	입원/외래	외래	병동/병실	외래-MI/CI

◆ CAROTID PLAQUE

	Plaque
Presence	Two

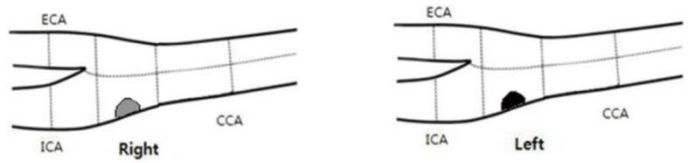
Size (mm)		6.5 x 2.4
Location		Lt Bulb
Morphology	Texture	Homogenous
	Characteristics	Calcified
	Surface	Smooth

◆ CAROTID IMT

	Right (mm)	Left (mm)
CCA	0.7	0.7

◆ DOPPLER ULTRASOUND

Right			Left		
CCA-PSV(cm/s)	PSV	85	CCA-PSV(cm/s)	PSV	85
	EDV	25		EDV	34
ICA(cm/s)	PSV	79	ICA/CCA(PSV)	PSV	72
	EDV	32		EDV	36
ICA/CCA(PSV)			ICA/CCA(PSV)		



◆ COMMENTS

Two carotid plaques at both bulb

Normal IMT

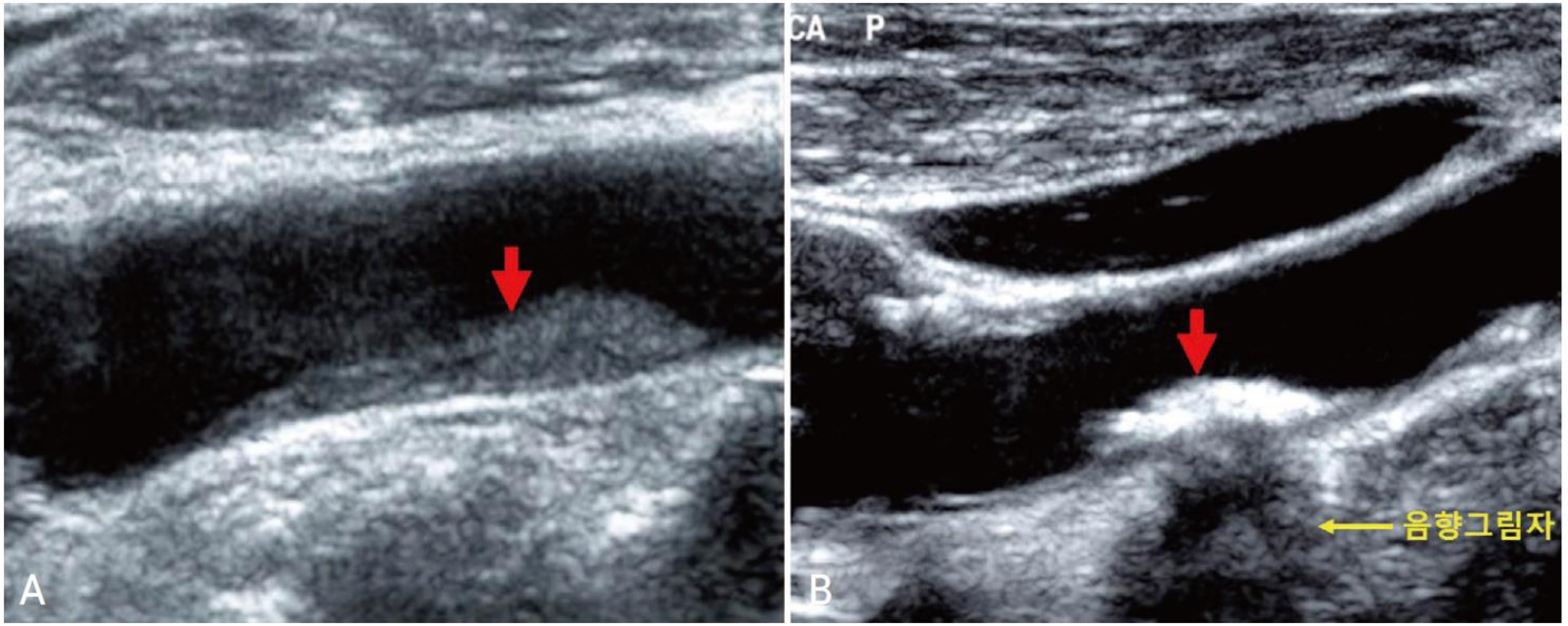
No carotid stenosis

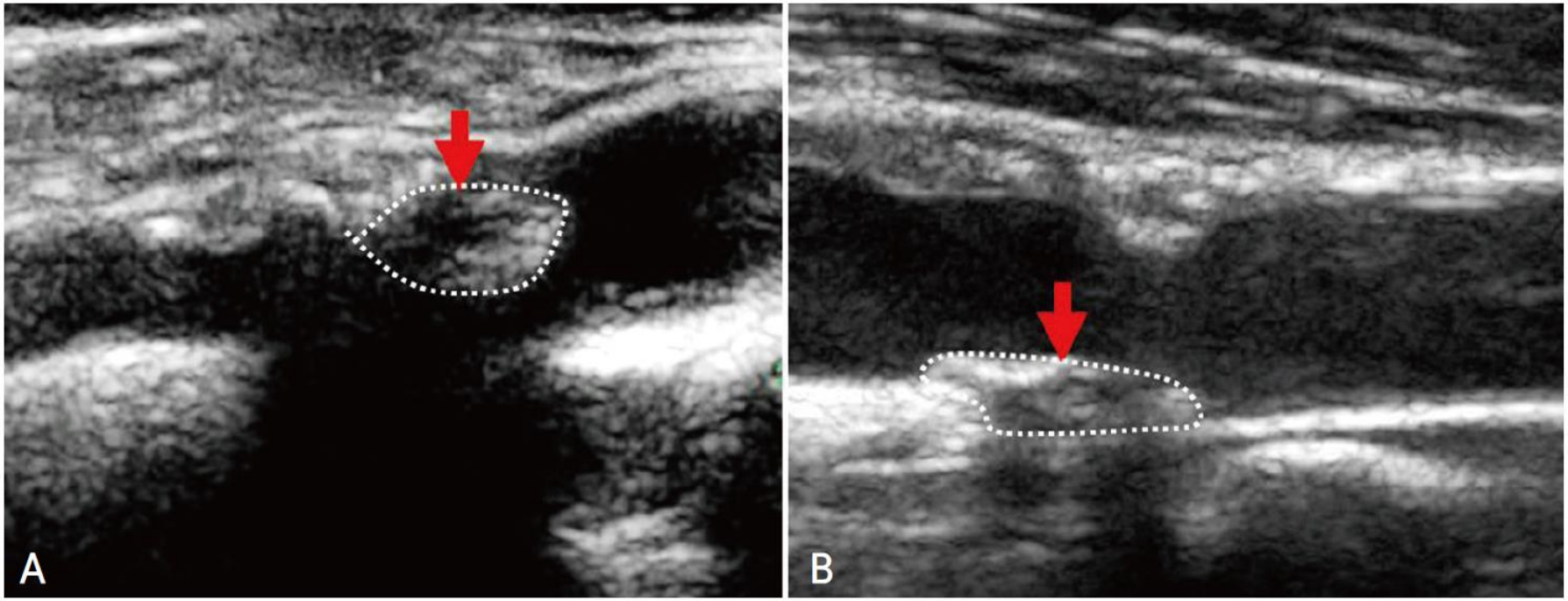
Section 16

비정상 목동맥 초음파 소견

학습 목표

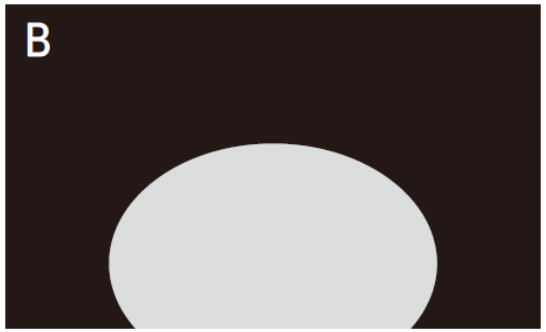
1. 죽상경화판의 정의 및 평가 방법을 설명할 수 있다.
2. 목동맥 협착 평가 방법을 설명할 수 있다.


A
CA P
B
음향그림자


A
B



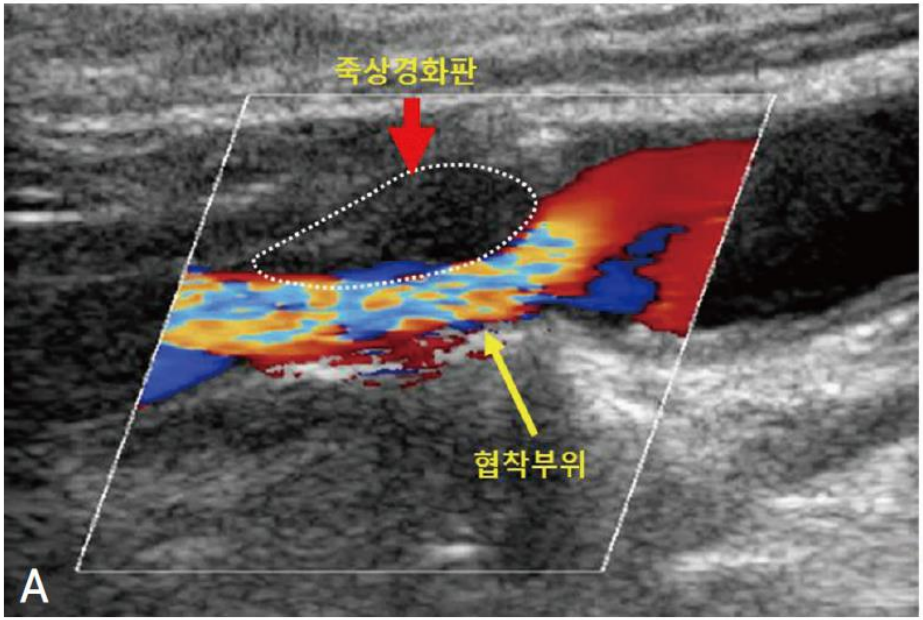
석회화 죽상경화반

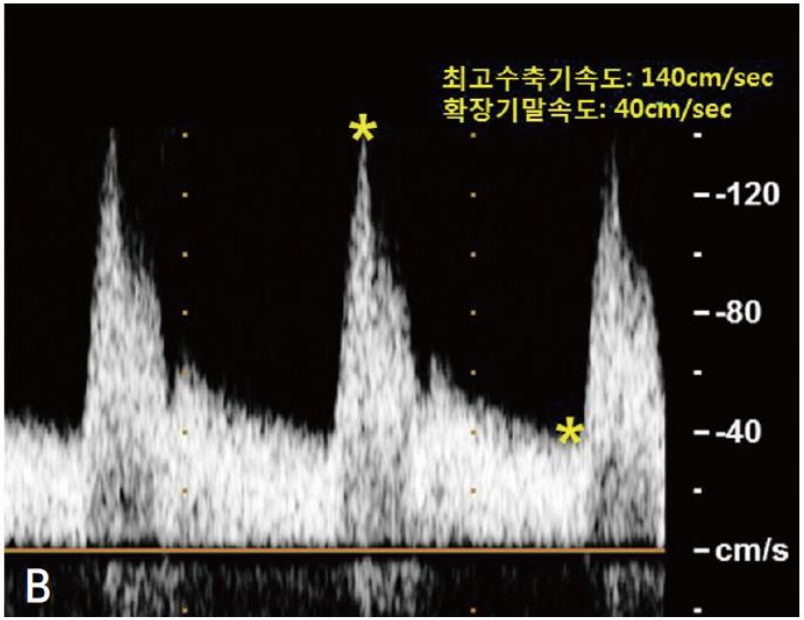


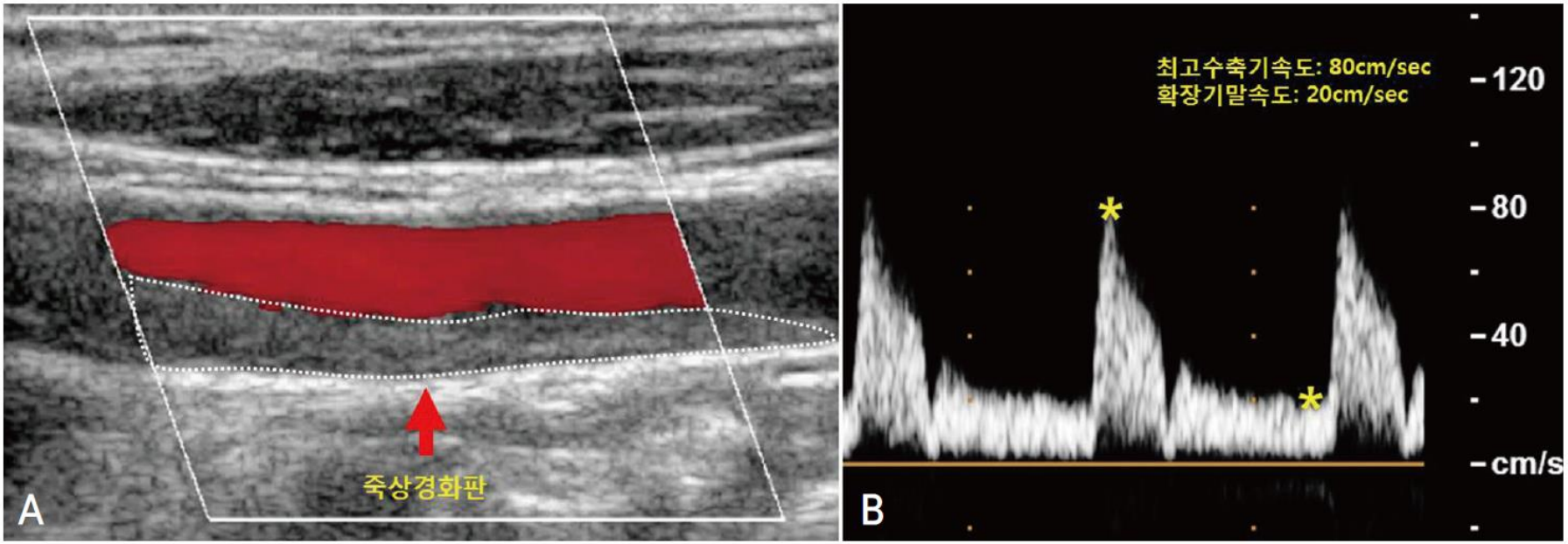
섬유화 죽상경화반

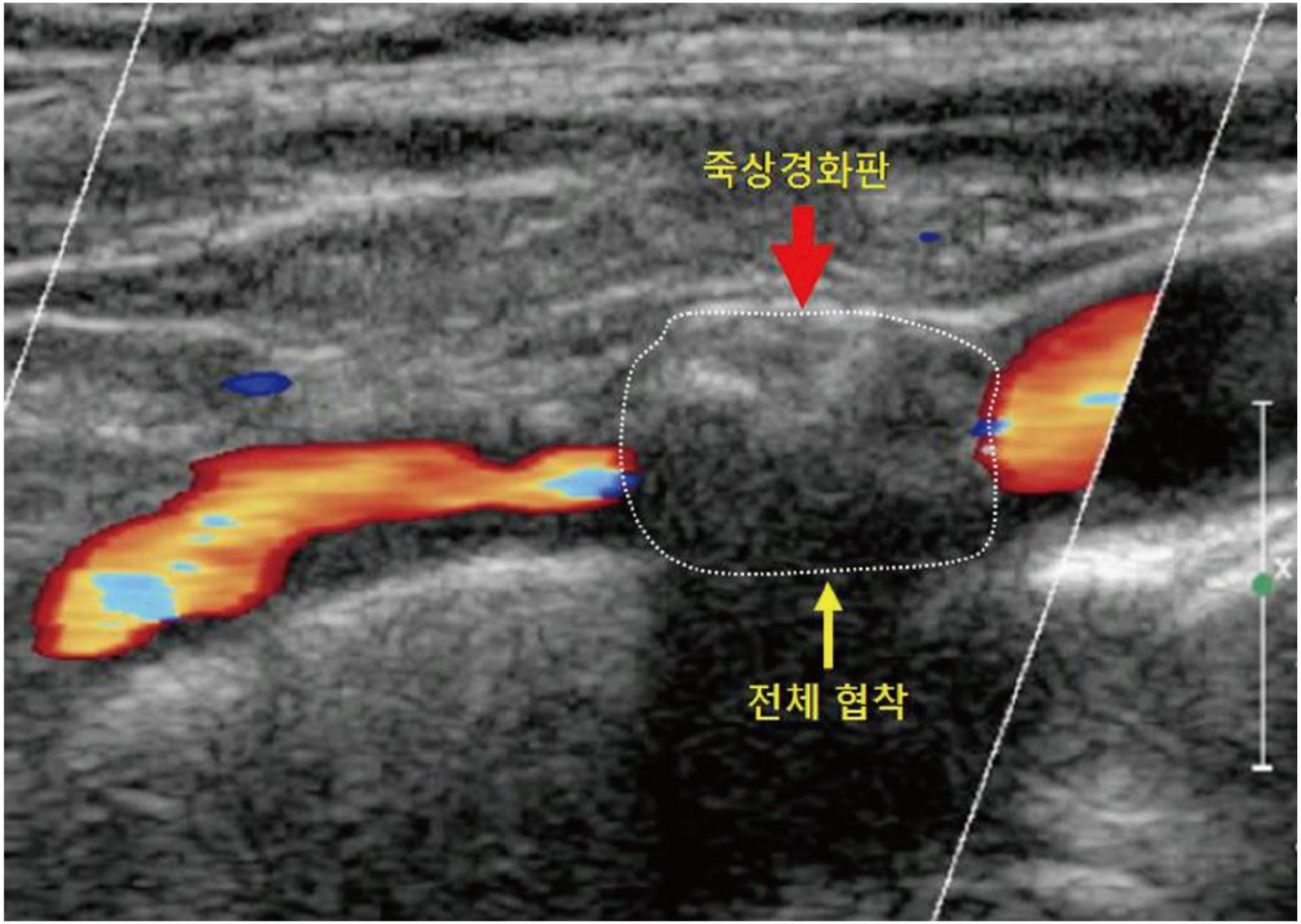


비균질한 죽상경화반


죽상경화판
협착부위
A


최고수축기속도: 140cm/sec
확장기말속도: 40cm/sec
120
80
40
cm/s
B


죽상경화판
A
최고수축기속도: 80cm/sec
확장기말속도: 20cm/sec
120
80
40
cm/s
B


죽상경화판
전체 협착