

# 신경과 의사가 알아야 할 경추 및 어깨의 질환



한 영 수

아름다운신경과의원

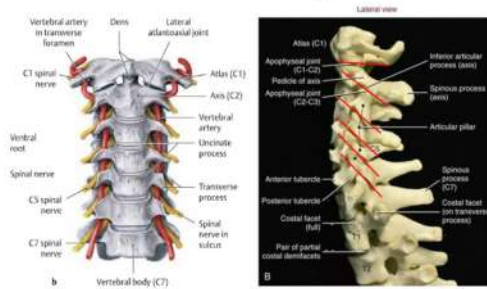
## Clinical diagnosis of the cervical spine, shoulder diseases

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Beautiful Neuro-Clinic

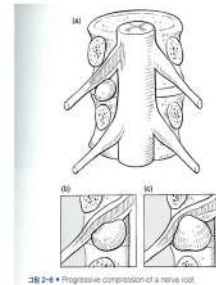
아름다운신경과의원 • 뇌신경센터

### The cervical spine



### Behaviour of nervous tissue during pressure

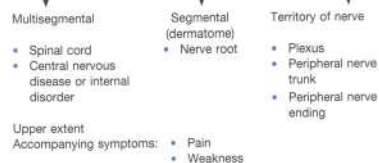
1. Pain- epidural sheath
2. Paraesthesia  
& muscle fasciculations
3. weakness, numbness  
Loss of function
  - Ischemic change  
(blood-nerve barrier loss)
  - Wallerian degeneration



### Paraesthesia

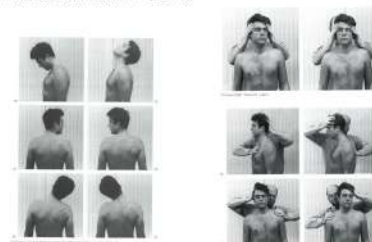
#### Paraesthesia

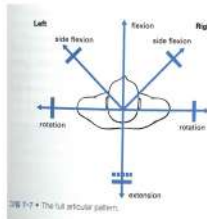
Localization:



### Exam of Neck movements

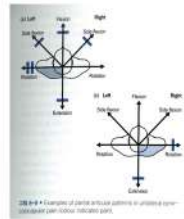
1. Active movements 능동운동
2. Passive movements 수동운동
3. Resisted movements 저항운동





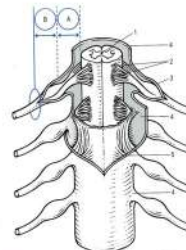
#### Painful- full articular pattern

- Ankylosing spondylitis
- Rheumatoid arthritis
- Recent fracture or luxation
- Postconcussional syndrome
- Bone disease
- Upper cervical complex



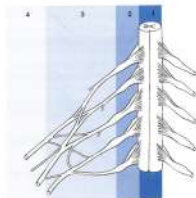
#### Limited-partial articular pattern

- Displacement of disc fragment with discodural or discoradial
- Convergent type or divergent type-facet arthrosis



236 2-5 • Course of spinal nerve: 1, intrathecal part of the nerve root; 2, extradural part of the nerve root; 3, spinal cord; 4, vertebral and dorsal rootlets; 5, spinal ganglion; 6, dura mater; 7, arachnoid.

B. 8-1 Findings on examination		
	Symptoms	Signs
Dural	Multisegmental pain Multisegmental tenderness (pain on coughing)	
Articular	Pain on movement/posture Twinges	Deviation Partial articular pattern Painful arc Crisp end-feel
Root	Segmental pain Segmental paraesthesia Segmental numbness	Motor deficit Sensory deficit Sluggish reflex
Cord	Paraesthesia in all limbs Lhermitte's sign Sensory disturbance in feet	Gait disturbance Spastic palsy lower limbs Hyperreflexia - clonus Positive Babinski - Hoffmann



236 2-3 • Anatomy of the peripheral nervous system: 1, spinal cord; 2, nerve root; 3, nerve plexus; 4, peripheral nerve; 5, peripheral nerve branches.

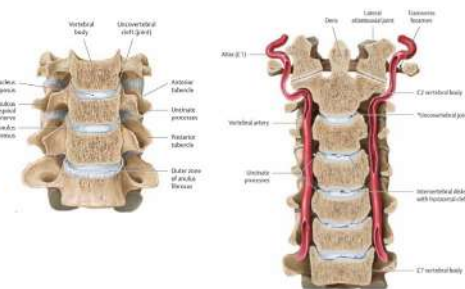
**Pressure on nerves- Summary**

Peripheral nerve: Numbness > paraesthesia > pain  
Clearly delineated area  
Paraesthesia > numbness > pain  
Vaguely delineated area  
Release phenomenon  
- The pins and needles appear after the compression has ceased  
- There is a direct relation between the interval of onset and duration of compression  
Pain > paraesthesia > numbness  
Segmental distribution of symptoms  
Chronological sequence of symptoms  
Compression phenomenon  
- The pins and needles appear during the compression  
Completely painless (sometimes dural pain)  
Extrasegmentally and bilaterally distributed paraesthesia  
Positive neck flexion

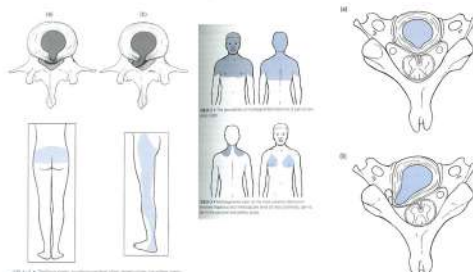
Nerve trunk:  
Numbness > paraesthesia > pain  
Clearly delineated area  
Paraesthesia > numbness > pain  
Vaguely delineated area  
Release phenomenon  
- The pins and needles appear after the compression has ceased  
- There is a direct relation between the interval of onset and duration of compression  
Pain > paraesthesia > numbness  
Segmental distribution of symptoms  
Chronological sequence of symptoms  
Compression phenomenon  
- The pins and needles appear during the compression  
Completely painless (sometimes dural pain)  
Extrasegmentally and bilaterally distributed paraesthesia  
Positive neck flexion

Nerve root:  
Numbness > paraesthesia > pain  
Clearly delineated area  
Paraesthesia > numbness > pain  
Vaguely delineated area  
Release phenomenon  
- The pins and needles appear after the compression has ceased  
- There is a direct relation between the interval of onset and duration of compression  
Pain > paraesthesia > numbness  
Segmental distribution of symptoms  
Chronological sequence of symptoms  
Compression phenomenon  
- The pins and needles appear during the compression  
Completely painless (sometimes dural pain)  
Extrasegmentally and bilaterally distributed paraesthesia  
Positive neck flexion

Spinal cord:  
Numbness > paraesthesia > pain  
Clearly delineated area  
Paraesthesia > numbness > pain  
Vaguely delineated area  
Release phenomenon  
- The pins and needles appear after the compression has ceased  
- There is a direct relation between the interval of onset and duration of compression  
Pain > paraesthesia > numbness  
Segmental distribution of symptoms  
Chronological sequence of symptoms  
Compression phenomenon  
- The pins and needles appear during the compression  
Completely painless (sometimes dural pain)  
Extrasegmentally and bilaterally distributed paraesthesia  
Positive neck flexion



## Cervical disc displacement



236 8-4 • Pressure on the dura mater (a) causes when the disc moves laterally and compresses the nerve root (b).

## Cervical disc displacement

- Cartilaginous displacements  
C6-7, C5-6 > C4-5, C7-T1 > C2-3, 3-4

Posteroventral - PLL compression  
discodural interaction  
- central and/or bilaterally  
- multisegmental

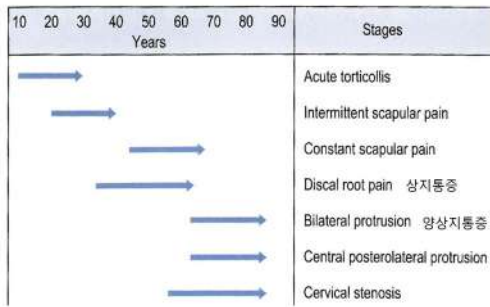
Posterolateral - nerve root canal compression  
discoradicular interaction

**secondary** - multisegmental neck pain은 사라지고  
segmental root pain이 생긴다.










236 8-4 • Pressure on the dura mater (a) causes when the disc moves laterally and compresses the nerve root (b).

## Stage of cervical DISC displacement



## Root syndrome

ROOT	SIGNS		NERVE FIBERS		DIFFERENTIAL DIAGNOSIS
	Pain	Paresthesia	Motor deficit	Sensory deficit	
C2 (rare a disc)			None	None	Dural reference Osteophyte at the atlanto-axial joint
C3			None		Dural reference
C4		None	None (proximal muscle!)		Dural reference

## Root syndrome

ROOT	SIGNS	NERVE FIBERS			DIFFERENTIAL DIAGNOSIS
	Pain	Paresthesia	Motor deficit	Sensory deficit	
C5		None	Triceps muscle Interscapular muscle Shoulder joint Deltoid muscle Pectoralis major muscle Biceps brachii muscle Brachialis muscle Brachioradialis muscle Extensor digitorum Extensor indicis Extensor carpi ulnaris Extensor carpi radialis Flexor digitorum profundus Flexor digitorum superficialis Flexor pollicis longus Flexor pollicis brevis Flexor carpi ulnaris Flexor carpi radialis Pronator teres Pronator quadratus Pronator flexor Pronator quadr		

## Root syndrome

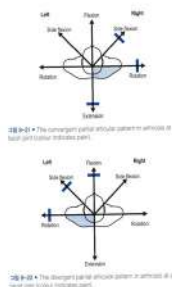
ROOT	SIGNS	NERVE FIBERS			DIFFERENTIAL DIAGNOSIS
	Pain	Paresthesia	Motor deficit	Sensory deficit	
C8			Extensor and flexor carpi ulnaris Extensor and abductor pollicis Extensor digitorum communis (Finger)		Proximal to the median nerve in the upper limb Part of the lesion in the brachial plexus

## Arthrosis of a facet joint

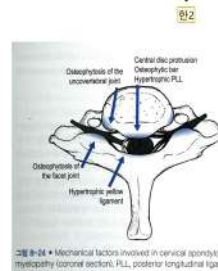
- 50세 이상—degeneration
- adhesion → self-perpetuating inflammation
- sprain of an arthritic joint capsule

Unilateral localized pain  
No dural symptoms  
Partial articular pattern  
-convergent or divergent

Diagnostic lidocaine infiltration



## Cervical spondylotic myelopathy



### Factors involved in cervical spondylotic myelopathy

- Developmentally narrow canal (< 13 mm)
- Mechanical factors

#### Static

- Central disc protrusion
- Osteophyte bar
- Osteophyte of the uncovertebral and facet joints
- Hypertrophy of the yellow and posterior longitudinal ligaments

#### Dynamic

- Spondylolisthesis
- Compression during flexion and extension
- Traction via the dentate ligaments
- Vascular factors
- Ischaemia of the anterior spinal artery
- Ischaemia of the radicular arteries

## The shoulder



## Shoulder examination

### Summary of the basic functional examination of the shoulder

#### Elevation

1. Active elevation of both arms
2. Passive elevation
3. Painful arc

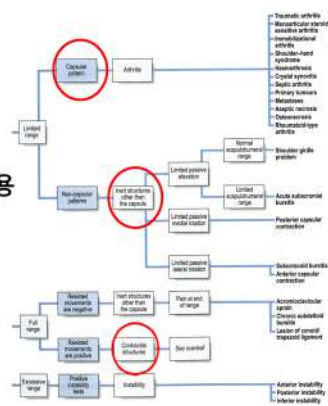
#### Glenohumeral joint

4. Passive scapulohumeral abduction
5. Passive lateral rotation
6. Passive medial rotation

#### Resisted movements

7. Adduction
8. Abduction
9. Lateral rotation
10. Medial rotation
11. Flexion of the elbow
12. Extension of the elbow

## 어깨 진찰의 적용



## Elevation

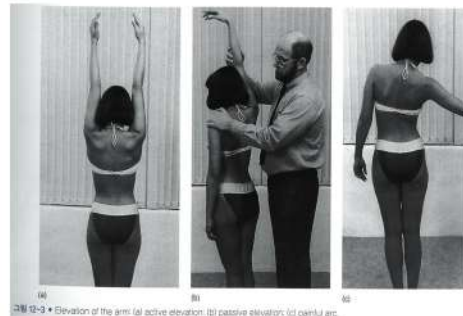
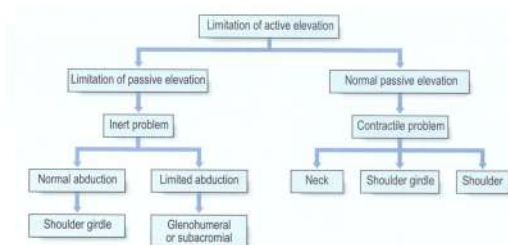


그림 12-3 • Elevation of the arm: (a) active elevation; (b) passive elevation; (c) painful arc.



0 • Differential diagnosis of limitation of active elevation of the shoulder.

## Glenohumeral joint

4. Passive scapulohumeral abduction
5. Passive lateral rotation
6. Passive medial rotation



## Capsular pattern of shoulder

- Scapulohumeral joint 의 세가지 passive movement에서 제한이 비례적으로 나타나는 것
- 외회전(++) > 외전(+) > 내회전

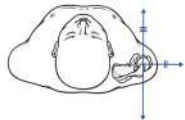


FIGURE 14-1 • The capsular pattern for passive rotation of abduction. There is a 2:1 ratio of lateral rotation and loss of medial rotation.

**Table 14-1: Capsular pattern: different degrees of limitation**

Severity of limitation	Lateral rotation	Scapulohumeral abduction	Medial rotation
Mild	30°	45°	Full range but painful
Medium	10°-20°	30°	10°-15°
Severe	10°-20°	15°-30°	10°-20°

From Table 14-1, p. 15.

### Classification of 'frozen shoulder' / shoulder arthritis

- Classification of 'frozen shoulder'**
- With apparent aetiology
    - Rheumatoid/infectious/crystalline
    - Osteoarthritis
    - Without apparent aetiology
    - Post-traumatic frozen shoulder
    - Primary frozen shoulder

- Cyriax's Classification of shoulder arthritis**
- Traumatic arthritis
  - Immobilization arthritis
  - Monoclonal 'steroid-sensitive' arthritis
  - Shoulder-hand syndrome
  - Rheumatoid-type arthritis
  - Haemarthrosis
  - Crystal synovitis
  - Septic arthritis
  - Primary tumours
  - Metastases
  - Aseptic necrosis
  - Osteoarthritis
  - Neuropathic destructive arthropathy

synovitis

## Resisted movements



내전(adduction)



외전(abduction)

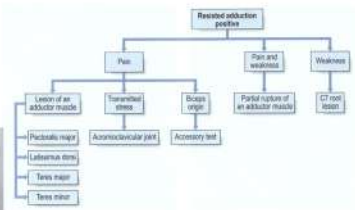


외회전(lateral rotation)

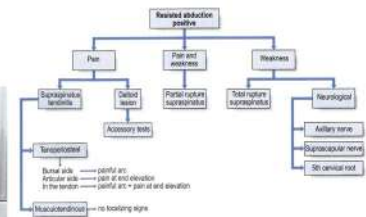


내회전(medial rotation)

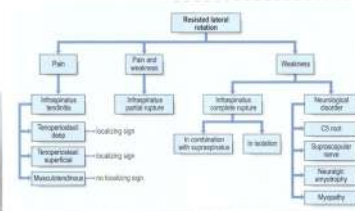
## Contractile structures resisted adduction is positive



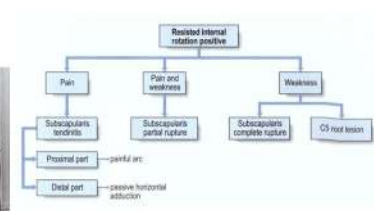
## Contractile structures resisted abduction is positive



## Contractile structures resisted lateral rotation is positive



## Contractile structures resisted medial rotation is positive





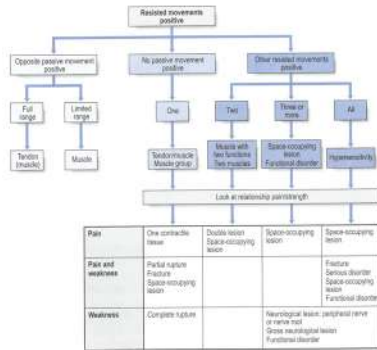


그림 4-12 • Interpretation of resisted and passive movements