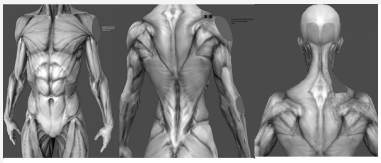
Disc Herniations

- More likely to occur posterolaterally
- Hard Disc Derangement = older patient with degenerative changes
- Soft Disc Derangement = young pts, trauma commonly benign
- Look out for C8,T1 lesions , disc herniations are rare - could be non-mechanical
- At the Cx lordosis, discs are thinner posteriorly
- IV Foramina decrease in size caudally from C2-C3 - C6-C7

Affected Root

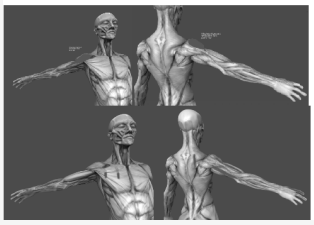
Root	Symptoms
C5	Pain lateral upper arm to elbow, medial scapula border
C6	Pain in the lateral forearm, thumb and index finger
C7	Neck pain, medial scapula down to middle finger
C8	Neck pain, radiating to the shoulder, ulnar side of forearm and little finger
T1	Pain in shoulder and axilla to olecranon

Trps that can mimic Radioculopathy



Supraspinatous

Levator Scapula



Infraspinatous

Scalenes

- **Supraspinatous** - C5
- **Infraspinatous** - C5-7
- **Scalenus Anterior** - C5-C7
- **Levator Scapulae** - C8,T1

Hx findings

- Sharp, Aching pain in neck radiating into arm
- Sensory Changes in dermatonal fashion , tingling, numbness, loss of sensation
- Bakody's sign (abducting the shoulder and placing hand on their head) reduces symptoms
- Coughing, Sneezing/straining (Valsalva) worsens pain
- Stiffness of neck with decreased ROM

Hx findings (cont)

- Myotomal weakness in muscles supplied by effected nerve root
- Pain may wake up patient at night (common in neurological pain)
- If Lx, **Consider Cauda Equina - urinary/bowel/erection issues, can you feel between you legs when you wipe after the toilet? Bilateral leg symptoms**
- Tell patient "I'm going to ask some questions, they may be personal but I want to make sure the nerves to your bowel and bladder are workin-g."

Exam Findings

- Pt head tilts away from side of radicular pain
- AROM reduced in Extension, rotation and lateral flexion - flexion relieves pain
- Tenderness of paraspinal cx muscles, Trps in muscles
- Cx spine compression & Doorbells +ve, Cx distraction relieves pain
- SMR affected (Diminished & Asymmetrical)
- Gait, LL reflexes & Hoffmans and Babsinki for suspected myelopathy
- - +ve SLR, Braggards, WLR, +ve Femoral stretch (L2/3, L3/4 NR), Slumps test, Bowstrings, +ve Valsalva
- Assess for segmental instability (McGills)

Red Flags

- Hx of cancer
- Fever
- Chills
- Recent unexplained weight loss
- Immunosuppression
- Corticosteroid use
- Suspicion of infection/f#
- Cauda Equina
- Symptoms >6 week durations/progressive neurological deficit
- Imaging must be taken (MRI/CT)

DDx

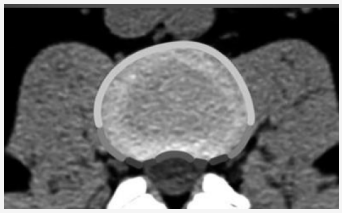
- Infection
- Tumour
- F#
- Spondylosis
- Peripheral Neuropathy
- Piriformis syndrome
- Hip/knee pathology
- Herpes Zoster

Investigations

Presentation	*Imaging recommendations*	*Comments*
Adult patient with acute uncomplicated* neck pain of < 4wks duration	Radiographs and special investigations not routinely indicated	Acute neck pain is usually due to conditions which will not show any findings on plain x-ray. Consider further investigations in the absence of expected treatment response or worsening after 4 weeks.
Adult patient with non-traumatic neck pain *and* radicular symptoms	Radiographs indicated	May be due to disc herniation, spondylosis, and rarely other pathological processes (e.g. tumour, abscess). X-ray will not directly show soft tissue causes.
	MRI may be indicated	MRI provides more useful information than plain x-ray. Co-management or specialist referral or MRI recommended, even if plain x-rays are unremarkable: 1. After failed conservative therapy (4wks) 2. Where there are major neurological deficits at onset, disabling radicular pain or progression of neurological deficits 3. For preoperative planning
Adult patient with uncomplicated* subacute (4-12 wks) or persistent (>12 wks) neck pain with, or without, arm pain	Radiographs not *initially* indicated	There is little association between neck pain and the severity of degenerative change (disc or joint), or degree of anterolisthesis .
Adult patient re-evaluation in the absence of expected treatment response or worsening after 4 wks	Radiographs indicated	
	MRI may be indicated	Co-management or specialist referral or MRI recommended, even if plain x-rays are unremarkable: 1. If plain x-rays reveal suspected pathology 2. After failed conservative therapy (4wks) 4. If neurological status is deteriorating (disabling radicular pain or progression of neurological deficits) 5. If clinical signs suggest subaxial cervical spine instability 6. For preoperative planning
Adult patient with complicated** neck pain and indicators of contraindication to SMT	Radiography, MRI, MRA, or CT as appropriate to the suspected diagnosis (please see notes on conditions for more information or Bussières et al. 2008)	Clinicians should be careful not to be falsely reassured by plain x-ray since it does not identify all important causes of neck pain, especially in the early stages. Where there is a high clinical suspicion of such a disorder the patient should be referred for further imaging and investigations as appropriate to the suspected diagnosis.
Suspicion of cervical arterial dissection (VAD, CAD), TIA (VBI, carotid artery ischemia), stroke	Emergency referral without imaging	Urgent referral to A&E via emergency services should be made for appropriate investigation and treatment (initial investigations often include CT scan).

- MRI gold standard, CT + Myelography.
- Must correlate with patient's symptoms

Disc Areas



Red = Central
Blue = Subarticular
Green = Foraminal
Orange = Lateral
Yellow = Anterior

Cx and Lx discs

- In Lx spine, a L4/5 paracentral disc will affect the L5 NR
- A L4/5 Far Lateral Disc will affect the L4 NR
- In Cx spine, both a Forarminal and Central Disc will affect the NR on the same level - horizontal anatomy
- Lx - disc herniations more likely to occur at L4/5 or L5/S1

Classfications

Disc Bulge - >25% of the disc circumference	Disc Protrusion - <25% of circumference , base wider than herniation
Disc Extrusion - <25% of disc circumference - base narrower than herniation	Disc Sequestration - free fragment of the disc material, no connection of the disc

Pfirrman grades

0 - Normal

1 - Disc touches NR

2- Disc displaces NR

3 - NR compression

NR = Nerve Root

Risk Factors

- Sedentary Lifestyle/occupation
- Driving motor vehicles
- Vibration
- Smoking
- Previous full-term pregnancy
- Increased BMI
- Increased sacral base angle
- Tall stature
- Genetics
- Aging (degradation of discs molecular structure - more vulnerable to mechanical injury, however discs can dehydrate over time - less nuclear material for herniation)
- More common in men

Management

- Ice for 10-15 minutes and every 2-3 hours
- NSAIDs
- Anti inflammatory nutrition advice
- Reduce compressive forces on NR - rest, avoiding positions that aggravate the arm symptoms
- Manual Traction
- Myofascial Therapy - Trigger points on QL, lx erectors, psoas, piriformis, gluteals, TFL
- Electrical stimulation to help with muscle spasm
- Flossing and tensioning of Nerves when tolerated
- Full ROM and flexability needs to be considered after pain and inflammation has subsided
- PIR
- Home stretching 1-2 times a day for 30 seconds
- The size of the herniation is not associated with effectiveness with conservative treatment
- Avascular structure of the disc can prolong recovery times
- Extension/flexion biased exercises
- Core exercises (cat/camel, bird dog, dead bug, side bridge)
- Advice for weight loss if overweight,stoping smoking, sleep, workstation posture, lifting, footwear

CPR for Traction

Sudden onset of symptoms

Short duration of symptoms

No segmental hypomobility

Limited Lx ext

Low fear avoidance beliefs

- >3 of the above predictors = doubles likelihood of great improvement with lumbar traction

Prognosis

- Local LBP patients had a better prognosis than pts with leg symptoms and NR involvement after 2 weeks
- Local LBP alone (77% improvement)
- LBP + pain above knee (72% improvement)
- LBP + pain below knee (61%)
- LBP and +ve NTT/neurological findings (40%)