Case Presentation 1

- 34 years old female presents to clinic with complaint of severe LBP with right groin pain for 3 months
- She was thrown against a wall while she was practicing martial arts
- She went to ER and pelvis 3 views x-rays were taken
- She was told everything was WNL
- No evidence of fracture was reported

Case Presentation 1

- Deep, aching, stabbing pain
- 10/10 with VAS
- Sitting and walking make the pain worse
- Standing and bed rest make it better
- She came to clinic with her mom
- Severely limited in her ADL

She has tried Advil 600 mg 3 times a day for a week → didn’t get any relief
She hasn’t tried any other NSAIDs
She has had PT
She hasn’t had any injections
Case Presentation 1

- PMH: asthma and too many sports injuries
- Medications: no medication for pain
- Allergies: Sulfa, septra
- PE:
  - She prefers to stand up during the PE
  - ROM is severely limited with moderate pain in every direction
  - Paraspinal muscle spasm
  - Neurologically intact
Treatment Options for Chronic LBP

- Medications
- Physical Therapy
- Injections
- CAM
- Cognitive Behavioral Treatments
- Multidisciplinary rehabilitation

Medications

- NSAIDs
- Muscle relaxants
- Antidepressants
- Topical medications
- Opioids

NSAIDs

- Evidence supports the efficacy of NSAIDs in the treatment of chronic LBP
  - Based on 6 randomized controlled trials
  - Pain, disability, and mobility improved in 50-85% of patients chronic LBP within 2-8 weeks
  - Various type of NSAIDs are equally effective
  - Limited evidence shown that NSAIDs are more effective than acetaminophen

Schnitzer et al, 2004

Muscle Relaxants and Benzodiazepines

- There is a good evidence that muscle relaxants can provide short term relief
  - 64% in tetrazepam vs. 29% in placebo
  - Carisoprodol (Soma), drug abuse and dependency
  - Short term use in acute exacerbations
  - Metaxalone (skelaxin) least sedating
  - Sleep assistive medication
  - Baclofen or tizanidine (zanaflex)
  - Don't use benzodiazepines with opioids

Arbus et al, 1990
Antidepressants

- Based on 7 RCT
- Produce moderate symptom reduction with Chronic LBP
- Analgesic effects
  - Tricyclic antidepressants
  - SSRIs are not beneficial
- This effect is independent of patient's depression status

Staiger et al 2003

Physical Therapy

- Exercise therapy
- Thermal modalities
- Traction
- TENS
- Massage therapy
- Back School
- Lumbar supports

Exercise Therapy

- Does it matter which exercise?
  - Multicentered RCT
  - Directional preference of patients were identified
    - Repeated lumbar flexion
      - Extension
      - Side glide rotation
  - Randomized to 3 groups
    - Directional exercise matching their preference
    - Exercise opposite to their DP
    - Evidence based care
  - The matched group had statistically significant improvement than others in pain intensity, disability, medication use, recovery, work interference

Long et al 2004

Back School

- Education on anatomy, body mechanics, muscle function and posture, advice on physical activity
- 5 RCTs evaluated back school compared to other conservative treatments
- Better short and intermediate term pain relief and improvement

Cochrane Review, 2005
Case Presentation 1

- Lumbar spine MRI was ordered
- Flexeril 10 mg tid
- Diclofenac 50 mg tid for a week trial
  - She will let us know how she is doing in a week
- PT
  - Stabilization of lumbar spine
  - Improving flexibility of lower extremity muscles
  - Improving cardiovascular fitness
  - Back school
  - Home exercise program

T1 sagittal images

T2 sagittal images

T2 axial image at L2-3
Case Presentation 1

- T2 axial image at L4-5

Case Presentation 1

- T1 axial image at L2-3

Case Presentation 1

- T1 axial image at L4-5

Case Presentation 1

- Amitriptyline
- She stopped taking Flexeril
- 2 months after trying all conservative treatments
- Still limited in her ADL because of bilateral groin and left hip pain
- She had bilateral L2 TFE at L2-3 and left L4 TFE at L4-5
- Started pilates
- The pain is completely gone for 15 months
Case Presentation 1

- She was 100% back to ADL for 15 months
- She stopped taking all the medications
- She started to experience another flare up
- Mainly left hip pain with mild buttock pain.
- The pain gets worse with sitting
- She started taking amitriptyline and diclofenac
- She couldn’t exercise because of the pain

Case Presentation 1

- She had left L4 TFE at L4-5 for both diagnostic and therapeutic purposes
- 100% relief from the injection for 6-7 weeks
- She started PT in 3 days after the injection
- The pain came back as both left hip and buttock pain
- She had left L4 and L5 TFE at L4-5 and L5-S1 levels
- She is again pain free

Case Presentation 2

- 80 years old female presents to clinic with complaint of LBP with mainly left anterior thigh pain
- Sharp, throbbing, constant pain
- 8-10/10 with VAS
- Severely limited in her ADL
Case Presentation 2

- Very nice, highly educated lady
- Very bad historian

PMH: unremarkable

Allergies: Opioids

PE:
- Muscle strength: 4/5 in all lower extremity muscles
- SLR was negative bilaterally

T2 axial image at L2-3

T2 axial image at L3-4
Case Presentation 2

T2 axial image at L4-5

T2 axial image at L5-S1

T2 sagittal images

T1 sagittal images
**Dermatomes**

- Study on dermatomes by mean of selective nerve block
  - Block nerve roots with 1.5cc 2% lidocaine
  - Identified the boundaries with tactile method
    - L4 88%
    - L5 82%
    - S1 83%

  Spine 1993;18(13):1782-6

**Case Presentation 2**

- Left L2 and L3 TFE was performed
- She didn’t get any relief from the injection
- PT was also prescribed
- Meanwhile she started to complain about not able to think clearly.

**Case Presentation 2**

- She was seen by Neurology
- CBC, RFT, LFT, Ca, P, Mg, TSH, RPR, free T4, B12, EEG, MRI: All WNL
- Because of incredible fear, anxiety and depression, she was not able to think clearly
- She was very worried she would never walk again
- She was also very worried that she would run out of money soon if she was not able to return to work

**Cadaver Studies**

- Sensory rootlets have unusual segmental arrangement in many cases which is less common in motor rootlets

Case Presentation 2

- Left L4 and L5 SNRB was performed
- She experienced concordant pain during L5 SNRB
- She had 100% relief from the SNRB for one day

Response to steroid is a predictor of Surgical Outcome

- Retrospective clinical study
- 71 patients with radicular pain
- 1-2 ml 2% lidocaine and 6 mg betamethasone
- Patients who had 80% relief from the ESIs had greater than 95% success in achieving average of 90% leg-pain relief after decompression

Indications for Selective Nerve Root Blocks

- Atypical extremity pain
- Patients with equivocal imaging studies
- Patients with equivocal neurologic examination
- Patients with multilevel imaging abnormalities, to be able to define affected level
- For anomalous innervations
- Patients with transitional vertebrae
- Postoperative unexplainable or complex recurrent pain
- Patient with known cause of pain whom would get benefit from temporary pain relief
Case Presentation 3

- 31 years old female presents to clinic with complaint of severe back with left buttock pain for 6 weeks
- 8/10 with VAS
- Sharp, shooting, stabbing, penetrating, numbing pain which is worse in the morning
- Numbness in the genital area and in the toes on the left side
- Wakes up at night because of the pain
- Sitting and walking make the pain worse
- Severely limited in her ADL
- She can't work
- She was recommended to have discectomy

Case Presentation 3

- Ibuprofen 800 mg tid
- Lortab 5/500 qid
- She has had ESI → didn’t get any relief
- She hasn’t had PT

Case Presentation 1

- PMH: healthy
- Medications: Ibuprofen, lortab and birth control pills
- Allergies: No known drug allergies
- PE:
  - ROM is moderately limited with moderate pain in every direction
  - Paraspinal muscle spasm
  - Neurologically intact
Pharmacologic Treatment for Neuropathic Pain

- TCA
- Other antidepressants
- Gabapentin
- Other anticonvulsants
- Tramadol
- Topical drugs
- Nonsteroidal anti-inflammatory medications
- Steroids
- Opioids
- NMDA receptor antagonists
- Others: Baclofen, Clonidine

TCA

- Analgesia is independent of antidepressive effect
- Analgesia is often achieved at lower dosage and faster
- Initiate treatment with amitriptyline and switch to alternative TCA if some pain relief is achieved, but side effects are troublesome
- Initial dose is 10-20 mg qhs and then titrate every 3-7 days by 10-25 mg/day up to 75-150 mg/day as tolerated
- NNH for withdrawal for TCA was 14.7
- 20% of participants with drew because of intolerable side effects

TCA

- Na channel blockers
  - inhibit ectopic discharge in nociceptive fibers
- Inhibit reuptake of NE and serotonin
  - responsible for partial restoration of inhibitory controls
- Increase expression of leu-enkephalin
  - mimic therapeutic opioid effects
- Amitriptyline, Imipramine, Clomipramine
  - balanced serotonin and noradrenaline reuptake blocker
  - NNT: 2.1
- Nortriptyline, Desipramine
  - mainly inhibit noradrenaline reuptake blocker
  - NNT: 2.5

TCA

- TCAs must be used cautiously in patients with a history of cardiovascular disease, glaucoma, urinary retention, autonomic neuropathy, seizure and bipolar disorders
- Side effects: dry moth and eyes, blurry vision, urinary constipation, constipation, weight gain, erectile dysfunction, night sweats, orthostatic hypotension, palpitation, cardiac arrhythmias
- Block the effect of certain antihypertensive drugs like clonidine or guanethidine
- Increase side effects of thyroid supplements
- Increase sedative effects of alcohol and other sedatives
Gabapentin

- 13 RCT
- 8 provides evidence for the effectiveness of gabapentin
- 2 studies compared gabapentin with amitriptyline
  (Morello 1999, Dallocchia 2000)
- NNT was 4
- NNH for minor side effects was 3.7
- NNH for withdrawal was 26.1
  (Cochrane review 2005, Finnerup 2005)

Tramadol

- 13 RCT
- 8 provides evidence for the effectiveness of gabapentin
- 2 studies compared gabapentin with amitriptyline
  (Morello 1999, Dallocchia 2000)
- Effective dose is 200-400 mg/day
- NNT was 4
- NNH for minor side effects: 3.7 and withdrawal: 26.1
- Side effects: dizziness, dry mouth, constipation and somnolence
- Decrease seizure threshold
- Serotonergic syndrome with other serotonergic medications
  (Cochrane review 2005, Finnerup 2005)

Gabapentin

- Initial dose is 100-300 mg qhs or tid and then titrate every 1-7 days by 100-300 mg/day up to 1,800 mg/day as tolerated
- An adequate trial would be include 3-8 weeks for titration plus 1-2 weeks at the max tolerated dosage
- Side effects: dizziness 24%
  somnolence 20%
  headache 10%
  diarrhea 10%
  confusion 7%
  nausea 8%
  mild peripheral edema
  (Cochrane review 2005, Finnerup 2005)

Case Presentation 3

- Amitriptyline was prescribed
- We told her that she would sleep like a baby with amitriptyline
- She called back in 3 days complain about not able to sleep at all
- Amitriptyline increases the effect of caffeine
Results of TFE

- Prospective, randomized, double blinded clinical trial
- 182 patients with radicular pain
  - One study compared TFE, interlaminar ESI and paravertebral local anesthetic
- TFE was more effective than interlaminar ESI (68% versus 53%)
- Patients were assessed at 3 weeks and 3 months

Kraemer et. al. Eur Spine J 1997; 6: 357-361

Results of TFE

- A case control study
- 40 patients with single level disc herniation confirmed with MRI
- All patient had radicular symptoms
- TFE was more effective than interlaminar ESI (70% versus 45%)
- TFE resulted in fewer long term surgical intervention than interlaminar ESI


Case Presentation 3

- She had left L5 and S1 TFE
- She started PT in 4 days after the injection
- PT
  - Stabilization of lumbar spine
  - Improving flexibility of lower extremity muscles
  - Improving cardiovascular fitness
  - Back school
  - Home exercise program
- In 2 weeks
  - numbness is completely gone
  - 3/10 with VAS
  - still takes ibuprofen, amitriptyline and Lortab
  - back to work part-time with limitations
  - still limited in her ADL
- She had another left L5, S1 TFE
- Continue with PT and medications
Case Presentation 3

- In 3 weeks
  - 2/10 with VAS
  - stop taking Lortab
  - Takes ibuprofen pm
  - Continue with PT, ibuprofen and amitriptyline

Case Presentation 3

- In 6 weeks
  - No pain
  - stop taking all the medications
  - She has started pilates
  - She is back to work full time

Thank you