CLINICAL CASES

Case 1: Mr. DPN

Case: Mr. DPN

- Mr. DPN is a 50-year-old electrician who has had type 2 diabetes for 6 years
- For the last 6 months, he has felt burning pain and numbness in his feet at night
- He tried an over-the-counter analgesic but it did not work
- A1C = 6.8%
- Questions about quality of life and productivity indicate he is anxious because he is afraid he will lose his feet

A1C = glycosylated hemoglobin

Case: Mr. DPN (cont'd)

- Comorbidities:
  - High blood pressure (135/92 mmHg treated)
  - Dyslipidemia (treated)
  - Overweight (92 kg, BMI of 31 kg/m^2)
  - Anxiety
  - Problems sleeping due to pain
- Current treatment:
  - Metformin
  - DPP-4 inhibitor
  - ACE inhibitor
  - Statin

ACE = angiotensin-converting enzyme; BMI = body mass index; DPP = dipeptidyl peptidase

Mr. DPN: Questions for Discussion

- What are some indications Mr. DPN might be suffering from neuropathic pain?
- What further history would you like to know?

Mr. DPN: Clinical Description of Pain

- Burning pain in his feet
  - Sometimes feels worse at night
- Sometimes he cannot feel the soles of his feet (numbness)
- Feet cold like ice from time to time
- Tingling pain when putting on socks or when walking on cold surface

Mr. DPN: Questions for Discussion

- What key words suggest Mr. DPN suffers from neuropathic pain?
- Based on the information collected, what would you look for in the physical exam?

Mr. DPN: Clinical Examination

- No sign of cutaneous abnormality
- No clinical signs suggestive of peripheral vascular disease
- Normal temperature of the feet (skin is warm to touch)
- Normal capillary filling time
- Light touch hypoesthesia of both feet
- Severe cold hypoesthesia of the feet
- Loss of ankle reflex
- Monofilament test positive
- No other somatic disturbance
- No abnormality in the upper limbs
- No sign of motor deficit in the lower limbs

Mr. DPN: Discussion Question

- Would you suggest additional investigations?
- What would be your diagnosis for this patient?

Mr. DPN: Diagnosis

- Based on the history and your investigations, you conclude Mr. DPN is suffering from painful diabetic peripheral neuropathy

Mr. DPN: Discussion Question

- What treatment strategy would you recommend for his painful diabetic peripheral neuropathy?

Mr. DPN: Conclusion

- First-line therapy is initiated for Mr. DPN
- Pain and dysesthesia improve within 1 week, with patient reporting improvement in terms of pain scale and sleep in the first week
- Medication is well tolerated and is titrated for maximum benefit

Mr. DPN: What If Scenarios

- How would your assessment and treatment strategy change if…
  - Mr. DPN were 75 years old instead of 50 years old?
  - Mr. DPN had an A1C of 9.0% instead of 6.8%?
  - Mr. DPN's pain had started 3 weeks ago instead of 6 months ago?
  - Mr. DPN had been taking codeine and acetaminophen his wife was prescribed for dental surgery and thinks it might be helping?
  - Mr. DPN had not seen a physician in 10 years and had not been diagnosed with diabetes?
  - Mr. DPN had a history of non-adherence to medication?

A1C = glycosylated hemoglobin

Case 2: Mrs. PHN

Mrs. PHN: Case Presentation

- 70-year-old housewife
- Comes to your office complaining of an intense shooting pain that started 4 days ago

Mrs. PHN: Medical History

Comorbidities

- Hypertension
- Dyslipidemia
- Osteopenia
- Had an intense itchy rash 8 weeks ago that lasted for about 2 weeks

Current medications

- ACE inhibitor
- Diuretic
- Statin

ACE = angiotensin-converting enzyme

Mrs. PHN: Discussion Questions

- What further history would you like to know?
- What tests or examinations would you conduct?

Mrs. PHN: Pain History

- Intense, shooting pain in torso started 4 days ago
- Pain worsens if lightly touched
- Mrs. PHN cannot sleep because of the pain
- She finds it difficult to do daily chores like cleaning the house and buying the groceries

Mrs. PHN: Discussion Question

- What would be your diagnosis for this patient?

Mrs. PHN: Discussion Question

- What treatment strategy would you recommend?

Mrs. PHN: Diagnosis and Treatment

- You conclude Mrs. PHN is suffering from postherpetic neuralgia
- You prescribe a first-line therapy
- When you see Mrs. PHN again 2 weeks later, she says the pain is less intense and she is able to get some sleep, although she still wakes occasionally at night due to the pain

Mrs. PHN: Discussion Question

- How would your treatment strategy change?

Mrs. PHN: What If Scenarios

- How would your assessment and treatment strategy change if…
  - Mrs. PHN were 92 years old?
  - Mrs. PHN presented with a painful rash that had appeared 2 days ago?
  - Mrs. PHN suffered from comorbid osteoarthritis?
  - Mrs. PHN suffered from comorbid depression?
  - Mrs. PHN suffered from comorbid diabetes?

Case Template

Patient Profile

- Gender: Male/female
- Age: # years
- Occupation: *Enter occupation*
- Current symptoms: *Describe current symptoms*

Medical History

Comorbidities

- *List comorbidities*

Measurements

- BMI: # kg/m^2
- BP: #/# mmHg
- *List other notable results of physical examination and laboratory tests*

Social and Work History

- *Describe any relevant social and/or work history*

Current medications

- *List current medications*

BMI = body mass index; BP = blood pressure

Discussion Questions

BASED ON THE CASE PRESENTATION, WHAT WOULD YOU CONSIDER IN YOUR DIFFERENTIAL DIAGNOSIS?

WHAT FURTHER HISTORY WOULD YOU LIKE TO KNOW?

WHAT TESTS OR EXAMINATIONS WOULD YOU CONDUCT?

Pain History

- Duration: *When did pain begin?*
- Frequency: *How frequent is pain?*
- Quality: *List descriptors of pain*
- Intensity: *Using VAS or other tool*
- Distribution and location of pain: *Where does it hurt?*
- Extent of interference with daily activities: *How does pain affect function?*

Clinical Examination

- *List results of clinical examination*

Results of Further Tests and Examinations

- *List test results, if applicable*

Discussion Question

WHAT WOULD BE YOUR DIAGNOSIS FOR THIS PATIENT?

Diagnosis

- *Describe diagnosis*

Discussion Question

WHAT TREATMENT STRATEGY WOULD YOU RECOMMEND?

Treatment Plan

- *List both pharmacological and non-pharmacological components of management strategy*

Follow-up and Response to Treatment(s)

- *Describe pain, function, adverse effects, etc., at next visit*

Case Template: Discussion Question

- Would you make any changes to therapy or conduct further investigations?

Other Investigations

- *List results of further investigations, if applicable*

Changes to Treatment

- *Outline changes to therapy, if applicable*

Conclusion

- *Describe pain, function, adverse effects, etc., at next visit*

What If Scenarios

- How would your diagnosis/treatment strategy change if…
  - *List what if scenarios*

Additional Clinical Case

MR. A

Mr. A: Patient Details and Initial Presentation

- 30-year-old male, soldier in the army
- Presented to the emergency room complaining of sudden onset of low back pain following a military training exercise
- He cannot stand or sit without pain, which also radiates to the left leg
- He is not able to sleep because of this severe pain

Mr. A: Discussion Question

WHAT ADDITIONAL INFORMATION WOULD YOU LIKE TO KNOW?

Mr. A: Medical History

- Back pain described as initially being “dull, heavy pressure” and rated as 7/10 on the VAS
- Later patient experienced “tingling” and “numbness” in the left leg and foot associated with intense pain in the left buttock and thigh
  - Described as sometimes being an excruciating “electric shock-like” and “burning” sensation
- Also experienced sudden motor weakness in his left leg with exacerbation of his back pain

VAS = visual analog scale

Mr. A: Discussion Question

BASED ON THE INFORMATION COLLECTED, WHAT WOULD YOU LOOK FOR ON THE PHYSICAL EXAM?

Mr. A: Physical Examination

- Reduced sensitivity to light touch (tactile hypoesthesia) over the side of the left leg and foot
- Laségue sign positive at ~30º
- Diminished reflexes
- Positive spring test: reproduction of axial back pain with direct pressure over the suspect spinous process

Mr. A: Discussion Question

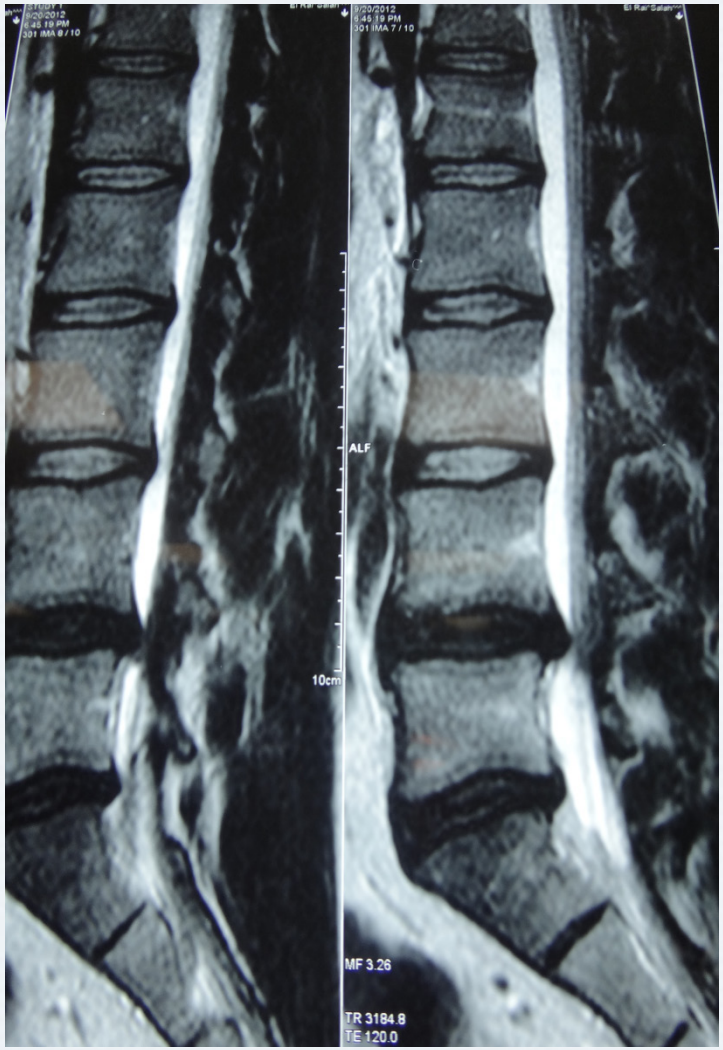
WHAT IMAGING OR LABORATORY TESTS WOULD YOU ORDER?

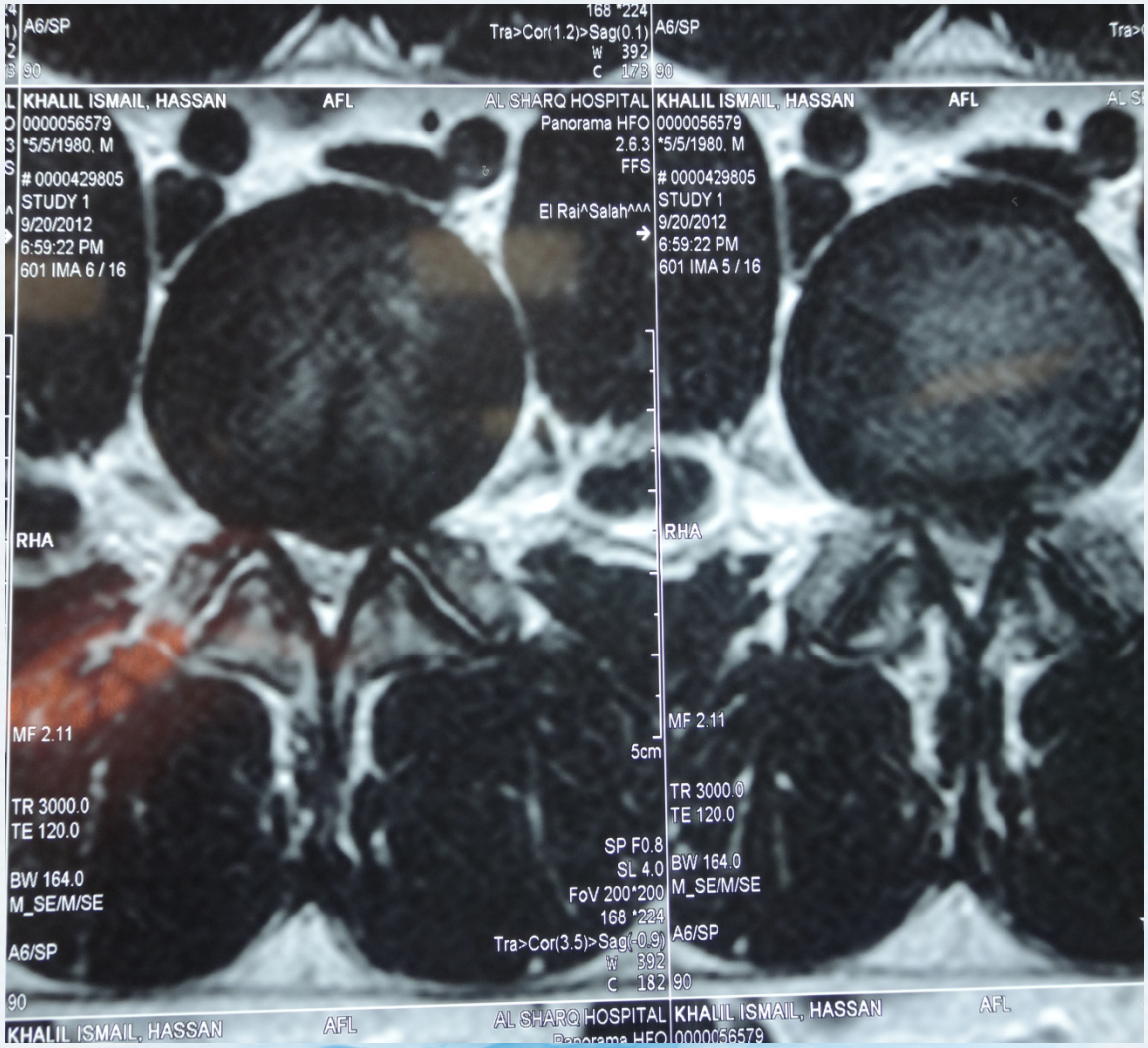
Mr. A: Investigations

- Plain X-ray of spine
- MRI
- EMG

EMG = electromyography; MRI = magnetic resonance imaging

Mr. A: MRI Results





Mr. A: Discussion Question

BASED ON THE MRI RESULTS, WHAT WOULD BE YOUR NEXT STEPS?

Mr. A: Action Plan

- Herniated disc at the L4–L5 space was confirmed by MRI
- Patient was submitted to surgery

Mr. A: Post-operative Pain Management

- Immediately after surgery:
  - Acetaminophen 1g IV/6 hours
  - IV coxib
  - IV opioid, adjusted according to VAS
- Sedation score was assessed
- Patient-controlled analgesia started in the PACU
  - No continuous rate

Coxib = COX2-inhibitor; IV = intravenous; PACU = post-anesthesia care unit; VAS = visual analog scale

Mr. A: Post-operative Pain Management (cont'd)

- Patient-controlled analgesia was continued for 48 hours along with:
  - Acetaminophen 1g/6 hours
  - IV coxib
- Patient-controlled analgesia discontinued after 48 hours and relayed with oral opioid

Coxib = COX2-inhibitor; IV = intravenous

Mr. A: Results of Surgery

- Anatomical results of the surgery were considered to be very satisfactory
- Patient experienced a significant reduction in radicular pain and sensory loss
- However, there was limited reduction in back pain, which increased progressively

Mr. A: Follow-Up

- Persistent back pain 6 months after surgery
- Mainly lumbar pain, but occasionally electric-type pain in the same leg

Mr. A: Discussion Questions

HOW WOULD YOU ASSESS MR. A'S PAIN?

WHAT ELSE WOULD YOU LIKE TO KNOW?

Mr. A: Pain Assessment

DN4 questionnaire resulted in a score of 5/10, indicating the presence of neuropathic pain.

Q1	**Does the pain have one or more of the following Characteristics:**	
	1. Burning?	✓
	2. Painful cold?	✓
	3. Electric shocks?	
Q2	**Is the pain associated with one or more of the following symptoms in the same area:**	
	4. Tingling?	
	5. Pins and needles?	✓
	6. Numbness?	
	7. Itching?	
Q3	**Is the pain localised in an area where the examination may reveal one or more of the following characteristics?**	✓
	8. Hypoaesthesia to touch?	
	9. Hypoaesthesia to pinprick?	
Q4	**In the painful area, can the pain be caused or increased by:**	
	10. Burning?	✓

Yes = 1 point
No = 0 points

Patient score: 5/10

Mr. A: Comorbid Symptoms

- Major sleep disturbance
- Increasing feelings of isolation and depression
- Long duration of sick leave and delayed job promotions

Mr. A: Depression and Anxiety

- Depressive and anxiety symptoms as scored by the Hamilton Rating Scales:
  - Anxiety score of 13
  - Depression score of 15

Mr. A: Discussion Question

BASED ONLY ON THE CLINICAL HISTORY AND PHYSICAL EXAMINATION, WHAT WOULD BE THE MOST PROBABLE DIAGNOSIS?

Mr. A: Diagnosis

- Patient has lumbar radiculopathy

Mr. A: Discussion Question

WHAT ARE THE ELEMENTS THAT SUPPORT YOUR DIAGNOSIS?

Mr. A: Diagnosis

- Diagnosis was based on:
  - History of disc herniation with lumbar pain and surgery (failed to relieve the pain completely)
  - Verbal descriptors and sensory changes suggesting nerve involvement
  - Topographical distribution of pain and sensory changes (L4/L5)
  - Pain refractory to conventional analgesics

Mr. A: Discussion Question

WHAT OTHER ELEMENTS OR EXAMS/TESTS DO YOU NEED TO CONFIRM THE DIAGNOSIS?

Mr. A: Other Examinations

- Imaging did not show recurrence of disc herniation
- Somatosensory evoked potentials were normal
- EMG showed denervation in the L5 territory

EMG = electromyography

Mr.A: Previous Pain Treatments and Outcomes

- nsNSAID therapy
  - Proved ineffective
- Local infiltration with lidocaine
  - Initially provided satisfactory relief of lumbar pain and paraspinal muscle spasm, but the duration of effect shortened over time
- Acetaminophen and tramadol
  - Proved ineffective
- Opioids
  - Induced a significant reduction in lumbar pain but only a slight improvement in radicular burning pain
  - Opioid treatment was discontinued because of adverse events including nausea, constipation and somnolence.

nsNSAID = non-selective non-steroidal anti-inflammatory drug

Mr. A: Discussion Question

WHAT WOULD BE YOUR TREATMENT PLAN?

Mr. A: Treatment and Outcome

- Treatment with TCA
  - Induced some reduction in burning pain
- $\alpha_2\delta$ ligand was added
  - Induced a further decrease in burning pain
  - Reduced the percentage of pain paroxysms
  - Treated his sleep disturbances

TCA = tricyclic antidepressant