

Pain Management in Osteoporosis- Case study
OSTEOPOROSIS 2019
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Case History

- 75 year old lady – accidental fall in Nov 2018. 3 weeks later develops severe acute pain upper back (corresponding to thoracic 7/8 spine). Pain so severe that she could not walk. VAS 8/10
- GP prescribes pain relief medications- paracetamol, codeine and requests for X ray.
- Patient diagnosed with osteoporosis in 2005 following DEXA scan and declared high risk for OP fractures.
- Past history of OA and wedge fracture of T7, Low back pain, bilateral hearing loss.

X-ray Thoracic Spine- Dec 2018

- Old T6 wedge fracture
- New T8 wedge fracture
- Bones appear osteopenic
- Pedicles appear intact
- Spondylotic changes are noted throughout
- There is an increase in the normal thoracic kyphosis

Acute pain due to new T8 vertebral fracture

- The acute pain settled with simple analgesics, cholecalciferol, alendronic acid and diazepam.
- Causes for acute pain-
- Fractured vertebra
- Soft tissue inflammation around the fracture
- Muscle spasm and stiffness (para-spinal)
- Nerve root pain
- Spinal cord compression- sensory/motor/bladder/bowel
- Pain referred along the dermatomes.

Chronic low back pain, osteoporosis, chronic pain

- Chronic back pain since 2004, deteriorates severe pain since the fall. The pain attack which used to last days before, has become constant recently. Standing for >15 minutes, walking and house hold activities trigger the pain. She cares for her husband who suffers from terminal illness. Mood could be very low even though she denies depression. The pain affects her social life as she could never predict when the pain will start. She used to swim and dance but now has to be helped even for walking short distances due to the pain.

Pain Chart

- Sleep is not affected
- She would like to know what causes this pain
- She hopes that the Pain clinic could help relieve the pain.

Please indicate on the body chart the position of your pain(s) and other sensations (if any).

Please use the symbols as shown below

Numbrness	Pins and Needles	Aches	Pain
=====	000000000000	xxxxxxxxxx	///////
=====	000000000000	xxxxxxxxxx	///////
=====	000000000000	xxxxxxxxxx	///////

Mark a cross on the line below to indicate the intensity of your pain:

No Pain _____ X _____ Worst Possible Pain

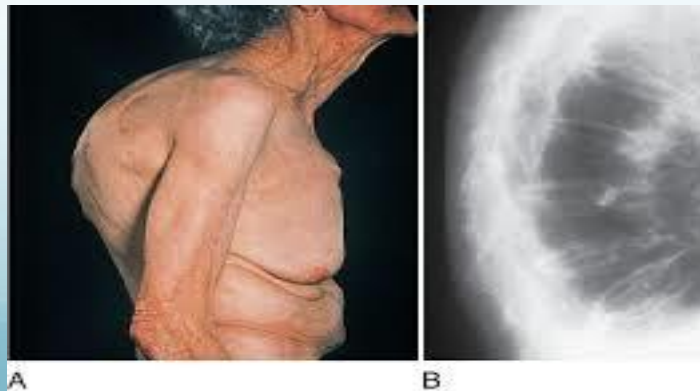
Thank you for taking the time to complete this questionnaire. The questionnaire will now be looked at by staff members of the Chronic Pain Service, and a decision will be made on which type of appointment you will receive based on how you have responded to the questions. We will then be in contact with an appointment as soon as one is available. We look forward to meeting you.

Investigations

- Investigations: U&E and ESR within normal limits. Normal kidney and liver functions.
- Recent DEXA (June 2019), T-score of -4.2 at the lumbar spine, -2.3 at femoral neck, and left total hip -2.8, 10 year risk of major OP fracture 19%, 10 year risk of hip fracture 6.2%. Fracture risk is lower due to alendronic acid.
- Conclusion: The T-Scores at the lumbar spine and total left hip are in the osteoporotic category.
- Old DEXA scan (July 2013), T-score of -4.0 at the lumbar spine and left total hip -2.4. 10 year risk of major OP fracture 27%, 10 year risk of hip fracture 17%.

Chronic Pain-kyphosis

- Pain persists beyond the healing time-
- Ligament strain
- Muscle spasm
- Dowager's hump/ kyphosis/ painful secondary OA
- Disc degeneration
- Non-union
- Neuropathy



Chronic pain- hip fracture

- Pelvic tilt
- Scoliosis
- Low back pain
- Nerve root irritation
- Secondary OA in # hip or opposite hip & knee
- Shoulder pain

Other causes of chronic pain

- Confidence
- Social Isolation
- Depression
- Ability to manage the condition
- Pain threshold

Differential diagnosis as for the cause of pain

- Osteomalacia
- Hyperparathyroidism
- Vit D deficiency
- Malignancy- myeloma, metastasis
- Infection
- Severe degenerative disc disease

MDT approach

- Physiotherapy
- Physical therapies
- Psychotherapy
- Pharmacological
- Falls prevention
- Occupational therapy
- Pain clinic support
- Interventional therapy
- Exclusion of other causes
- Orthopaedic/Spinal Surgery
- Orthogeriatric care
- Surgery

Physiotherapy

- To preserve or increase bone mass
- Reduce chronic pain
- Improve function
- Gradual progression of difficulty
- Avoiding bending and twisting of spine
- Complementary methods- Yoga, Pilates help
- Exercise based treatment- spinal OP- Less pain, better quality of life, strength and balance. Simple back extension, general weight-bearing exercises, balance activities and stretches that were combined with upper limb, trunk and lower limb strengthening.

Physical Therapies

- Brief bed rest
- Early mobilization
- Hot/Cold compress
- Massage
- TENS
- Acupuncture
- Hydrotherapy
- Adjuvant analgesics and muscle relaxants

Psychological Therapy

- **CBT**- deeper understanding of pain, self-control, coping strategies (extinguishing maladaptive behavior and reinforcing positive reactions to pain)- improves pain and QOL, reduces disabilities in chronic pain- strong therapeutic effects against chronic LBP.
- **Mindfulness-based interventions** are based on separation of the sensory and emotional aspects of pain and the promotion of awareness of bodily and psychological sensations within the body.
- **Mindful awareness and meditation**- thoughts on pain-discrete events rather than as a problem. 2 hour session for every week for a minimum of 10 weeks- awareness of body, proprioceptive signals, breath and physical sensations and develop mindful activities (eating, walking and standing).

Analgesia

- NSAIDS and opioids-
- OP- negative effects on bone metabolism.
- NSAIDS/Celecoxib-profound effect on skeletal health/ healing of skeletal tissue by modulating inflammatory response.
- Acetaminophen- increased risk of fractures
- Ibuprofen-peripherally acting can reduce chronic pain of OP more effectively than centrally acting drug like tramadol.
- Moderate-Severe OP pain- Opioids
- Not first line, Close monitoring, Short periods
- 50% will experience one side effect and >20%discontinue treatment due to various side effects like constipation, nausea, vomiting, pruritus, delayed gastric emptying, dizziness, sedation, tolerance and addiction.
- Moderate Pain- Codeine, Tramadol, Long acting MST, transdermal patches of opioids

Analgesia

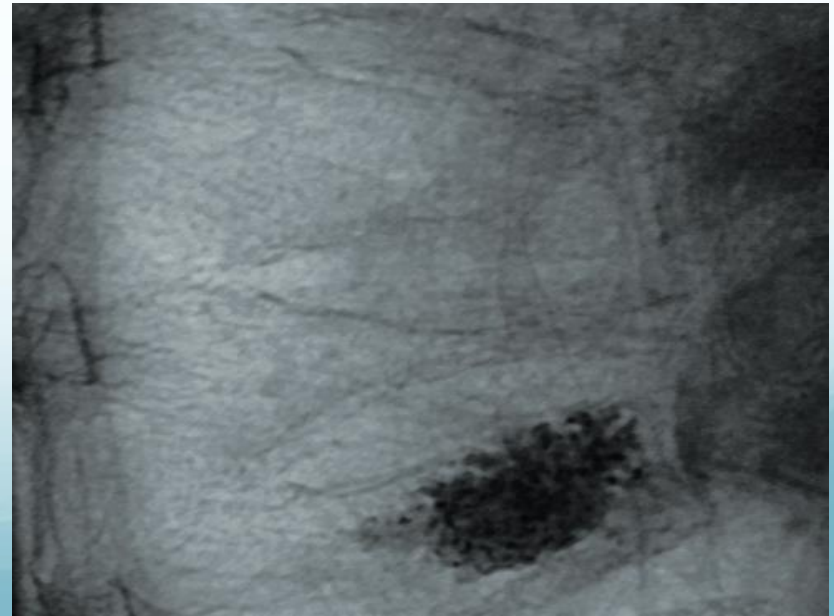
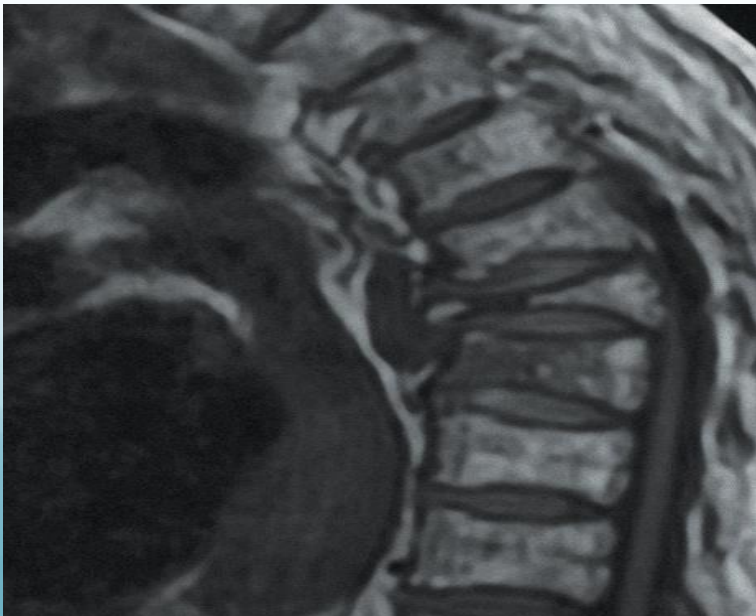
- Neuropathic Medications- Amitriptyline, Gabapentin
- Tapentadol
- Lidocaine and Ketamine infusions/ oral ketamine
- Lidocaine plasters
- Capsaicin 0.025%-0.075% topical application
- Qutenza 8% patch for topical application
- Calcitonin
- IV Pamidronate infusion

Interventional Neuromodulation

- Trigger points of pain injection with steroid or botox to ease muscle stiffness
- Nerve root blocks
- Intra-articular joint injections
- Facet joint nerve blocks
- Pulsed Radiofrequency and Radiofrequency nerve ablation and neuromodulation

Interventional radiology

- Vertebroplasty- for failed conservative therapy- Cement injected through the pedicles in to the vertebral body.
- Kyphoplasty- balloon is inserted in to the vertebral body, which is inflated and filled with cement.



Surgery

- General principles in the management of fractures apply
- Hip fracture fixation is vital for early mobilisation
- Severe secondary osteoarthritis– surgical replacement of joint
- Spinal fusion to relieve severe low back pain
- Rib and Pelvic fractures

Osteoporosis Treatment

- Bisphosphonates- alendronate, risedronate, etidronate, ibandronate, pamidronate
- Selective oestrogen receptor modulator-raloxifine
- Dual action bone agent-strontium ranelate
- Parathyroid hormone- teriparatide
- Adjuvant calcium and vitamin D supplementation
- Lifestyle modification – avoidance of tobacco use and alcohol abuse, regular weight bearing exercise and adequate calcium intake.

Pain in Older People and Osteoporosis

- Age- age related increase in OP and sarcopenia, number and size of muscle fibres.
- Partial or complete age related immobilization
- Debilitating postural changes
- Muscle loss—skeletal changes
- Pain- skeletal deformities, joint imbalance, tension in muscular structures
- Age-Severe intolerable back pain- OP (link-)
- Multiple fractures-continuous contraction of paravertebral muscles-muscle fatigue and pain.
- Age related perception and response to pain changes, pain threshold increases in elderly patient.
- Frequency of chronic pain and age.
- Perceptive dis-coherence-loss of ability to integrate sensory information.
- Widely distributed network in the brain- causes pain
- Pain- sensory, affective, cognitive-memory, expectation and emotions

Thank you

ACKNOWLEDGEMENTS:

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