Therapeutic Management of Back Pain

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Physiatry in Low Back Pain

Physiatrists are trained in musculoskeletal and neuromuscular pathology.
Low back pain often is a combination one or both types of pathology.
– Lumbar strain
– Herniated disc

The goal of the Physiatrist in LBP is to coordinate the rehabilitation, medical, and diagnostic aspects of the patients care to facilitate return to work and pre-morbid functional capabilities.
Low Back Pain Outline

- Frequency
- Societal impact
- Etiologies
- Time of Events
- Initial Assessment

- Physical examination and Diagnostic work-up
- Clinical Care Methods
- Medications
- Therapeutic Interventions
Frequency

80% of all adults will experience low back pain in their lifetime.

It is the second leading reason for patients to visit a physician in ambulatory medicine

(Cypress 1983 Am J Public Health)

90% of the time it is self limiting (6-12 weeks)

5% working population will be affected per year
Societal Impact

• Despite this, the annual direct medical costs in the US is $33 billion and total costs at over $100 billion. The translates into $10.75 per person per month as the economic cost for each US individual.

• It is the most common cause of disability in those <45
Etiologies

- Acute Lumbosacral Strain
- Discogenic Pain
  - herniated disc
- Spinal Stenosis
- Spondylosis
- Facet Syndrome
- Diffuse Idiopathic Skeletal Hyperostosis
- Rheumatological Disease
- Spinal Tumors
- Failed Back Syndrome
- Non-Organic
Time of Events

- Acute pain
- Subacute pain
- Prechronic
- Chronic
Initial Assessment

• History
  Age
  Gender
  Symptoms
    unilateral/bilateral
  Quality
  Duration
  Intensity
  Impact on ADL’s

What exacerbates the pain
What relieves the pain
Night pain
Previous history
Previous treatment
Psychosocial deterrents
Adverse lifestyle behaviors
smoking, drugs, ETOH
Physical Examination

- General Observation
- Regional Back Examination
- Neurologic Evaluation
- Physical Measurements of L-S Spine
- Gait Analysis
- Non-organic Analysis
Nonorganic Physical Signs

• Symptoms
  – whole leg pain
  – tailbone pain
  – whole leg numbness
  – whole leg giving way
  – never free of pain
  – intolerance of therapy
  – emergency visits

• Signs
  – superficial tenderness
  – nonanatomic pain
  – pain with axial load
  – pain with axial rotation
  – distraction tests
  – regional sensory loss
  – non-myotomall weakness
Diagnostic Work-up

- Radiographs
- Physical Measurements
- Electromyography
- Magnetic Resonance Imaging
- Somatosensory examination
Functional Anatomy

• Lumbar region
  – Vertebral body
  – Zygapophyseal joints
  – Intervertebral foramen
  – Intervertebral disc
  – Ligamentum flavum
  – PLL
  – ALL
Disc
IVF
Zygapophyseal
Disc
Zygapophyseal
What Can We Treat Non Operatively

Pathoogenesis of LBP

- Posterior degeneration
- Synovial reaction
- Cart. Deg.
- Capsular laxity
- Subluxation
- Osteophytes
- Facet Hyper

- 3-joint complex
- Post Jt syndrome
- Herniation
- Dyn. Lat. Sten
- Deg. Spondylisthesis
- Fixed Lat Sten
- Central Sten
- Multi. Spondylosis

- Disk Degeneration
- Circumferential tears
- Radial tears
- Internal disruption
- Disk Narrowing
- Osteophytes
- Vert. Hyper

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Clinical Care Methods

- Identify co-morbid risk factors
- Educate about the disease process
- Set goals and time frames
- Work on coping skills
- Eliminate adverse lifestyle habits
- Restore appropriate sleep
- Therapeutic interventions
Treatment
Overview of Management

• Low back pain differs from the traditional model of problem-solving. The assessment differs in that the physical examination frequently does not allow the determination of a precise diagnosis. Therefore the key to management of the patient with low back pain is education and cooperation. In industrial rehabilitation the cooperation of employers is paramount. Making transitional work available increases the rate of return and decreases the risk of chronicity.
Definitions

• Generalized disc bulge
  – is a circumferential, diffuse, symmetric extension of the annulus (>3mm) beyond the adjacent vertebral endplates.

• Disc protrusion
  – is a focal, asymmetric condition in which a segment of the IVD contour extends beyond the margin of the adjacent vertebra

• Extrusion
  – violates the entire annulus/posterior longitudinal ligament complex

• Sequestration
  – a disc that migrates within the spinal canal and is totally detached from the annulus
Intervertebral Disc Disease

• Natural History
  – herniated material will tend to reabsorb over time.
  – Saal demonstrated that the larger the disc protrusion the greater reabsorption
  – The limiting factor is pain
  – and surgical indications are progressive neurologic deficit, persistent intractable pain, or cauda equina syndrome, HNP with stenosis

• Saal (1990) demonstrated that with a dynamic lumber stabilization program 92% of patients returned to work in 3.8 months at their previous job status
Prognostic Factors for Positive Outcome

• Favorable
  – absent crossed SLR
  – no leg pain in extension
  – large extrusion
  – relief or >50% reduction in leg pain in 6 weeks
  – + response to steroids
  – limited psych issues
  – self employed
  – motivated

  – education > 12 yrs
  – good fitness
  – absence of spinal stenosis
  – progressive neurological return in 12 weeks
Prognostic Factors for Positive Outcome

- Neutral
  - degree of SLR
  - response to bed rest
  - response to passive care
  - gender
  - age
  - neurologic deficit degree (except for progressive deficit or cauda equina)
Prognostic Factors for Negative Outcome

• Unfavorable
  – positive crossed SLR
  – leg pain in extension
  – small LDH
  – lack of 50% reduction of leg pain in 6 weeks
  – negative response to steroids
  – overbearing psychosocial issues
  – worker’s comp
  – unmotivated
  – illiteracy
  – unreasonable expectations
  – spinal stenosis
  – progressive neurologic deficit
  – cauda equina syndrome
Prognostic Factors for Negative Outcome

- Questionable
  - actual size of LDH
  - canal position of LDH
  - spinal level of LDH
  - multi-level abnormalities
  - LDH material
Degenerative Disc Disease

- Chronic, Cumulative, recurrent
  - Annular tears - Circumferential/radial
  - Endplate ridging
  - Disc herniation, bulging, extrusions
  - Loss of disc height --> Abnormal motion
  - Facet joint pain, arthrosis
  - Ligamentum thickening
  - Osteophyte formations
Risk Factors For Degenerative Disc Disease

- Age
- Gender
- Familial
- Anthropometrics
- Work related
  - heavy loading, twisting loads, prolonged sitting, body vibration
- Trauma - MVA
- Cigarette smoking ?
- Diabetes Mellitus
- Deconditioning
- High protein diet
Therapeutic Interventions

- Relative rest
- NSAID’s, muscle relaxants
- Modalities
  - Trigger point injections
  - Physical therapy and physical medicine
- Ergonomics
- Epidural injections
Facet Mediated Arthropathy

- Axial pain with radiation to buttock or sclerotomal pattern
- Pain generally increased by extension and extension combined with rotation
- Diagnosed by MRI and radiographs
Candidates for Facet Corticosteroid Injections

- Poor response to oral medication and therapy
- Inability to tolerate pain
- Pain that is axial or radicular but not to leg
- No evidence of neurologic deficit.
Candidates for Medial Branch Blocks

- Patient with partial response to facet joint injections
- Patient who are considering rhizotomy
- Patient with severe hypertrophy of the facet joint where exact placement can not be obtained.
Candidates for Rhizotomy

- Persistent pain in the region
- Positive response to medial branch blocks and facet joint injections.
Return to Work Patterns

• McGill 1968
  – Predicting disability
  • Workers out for 6 months- 50%
  • Workers out for 1 year- 25%
  • Workers out for 2 years- 0%

• Frymoyer 1992
  – Predicting disability
  • work environment
  • perception of compensability
  • duration
  • not associated with MMPI
Occupational LBP Rehabilitation

• Action limit maximum weight 39 kg (86 lbs.)
  – load on L5-S1 = 760 lbs.
  – exceeding this weight implied 1% risk of injury in males and 25% in females

• Maximum Permissible Limit = 3 times action limit
  – load on L5-S1 = 1550 lbs.
  – exceeding this limit implied 75% injury in males and 99% in females
Occupational LBP Rehabilitation

- Optimal Lifting conditions
  - object held so center 15cm from body
  - vertical distance no greater than 25 cm
  - maximum height of object lifted <75cm
  - frequency of object lifted in no greater than 1 every 5 minutes
  - avoid one handed lifting
General Conclusions

- Lumbar LDH as a favorable prognosis
- The larger the disc the greater the reabsorption
- Active care appears to be more effective than passive care
- In acute incidents, pain reduction is the primary goal
- Non-specific back pain tends to recur without proper education
- Rehabilitation should be started early and not when pain is relieved
- Exercises should be specific and graded with regards to activity
- Manipulative treatment seems to be effective in acute low back pain of nonspecific origin
- Pharmacological treatment should consist of NSAID’s primarily and occasional use of muscle relaxers and narcotics in a certain population

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