Controversies in Chronic Pain

www.fisiokinesiterapia.biz
Nerve root pain is Chemical
## Useful Tests in Back/Neck Pain

### TABLE 4-8

<table>
<thead>
<tr>
<th></th>
<th>Conventional</th>
<th>Computed Tomography</th>
<th>Magnetic Resonance Imaging</th>
<th>Precision Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Examination</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>X-ray</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Muscle</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Ligament</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Joint</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Diagnostic blocks</td>
</tr>
<tr>
<td><strong>Disc</strong></td>
<td>No</td>
<td>No</td>
<td>Maybe</td>
<td>Disc stimulation</td>
</tr>
</tbody>
</table>

Bogduk 2005
Back Pain Chronicity

• Previously assumed 80-90% cases resolve in 6 weeks, 5-10% persistent.

• Prevalence of low back pain:
  32% to 79% at 3 months and 35% to 75% at 12 months (Manchikanti L. et al, Pain Physicain, 2003).
Sciatica
Jensen 2006; 2007

• Leg pains, muscle weakness, reflexes.

• 1/3 no MRI Disc Protrusion

• 1/2 had MRI imaged nerve root compression.

• 1/10 MRI’s normal.
Sciatica Disc Types

- Big Disc
- Lateral Disc
- Bulges
- Nothing to see
Bulging Discs

• 3/4 MRI bulging discs normal.

• 1/2 persistent sciatica MRI’s show only a bulge

• 10% will show nerve root compression.

• 10% of acute “bulging discs” sciaticas improve in 14 months
Disc Tests

Milette 1990; Cohen 2005

• 50% of Painful Discs Missed by CT.
• 2/3 asymptomatic have back MRI abnormalities.
• CT discography -sensitivity up to 85% but false positives.
• Poor man’s test - lie on bad side, press kg/cm², 2 sec X 2-4; sens - 64%; sp - 44%.
TNF treatments

• Enbrel (Etanercept) - 2 shots counter inflammation for 3 months

• Moron study - one shot little effect
TNF treatment of Sciatica

Sciatica TNF Inhibition

<table>
<thead>
<tr>
<th>Pain VAS</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

Two perispinal Enbrel
ONE IV Infliximab

Tobinick, 2004
Korhonen, 2005
Sources of LBP

- Disc – about 40% of patients
- Facet Joints – 20% – 40% of patients
- Sacroiliac Joint – about 20%
Neuro-Vascular Rim Pain

Kuslich S., 1991

• “LBP similar to preoperative symptoms was noted in 70% of patients after stimulation of the posterior annulus or posterior longitudinal ligament (PLL). Local anesthetic injection obliterated the pain”
High Density Zone Generators
Inflammatory chemicals
HIZ lesion can show the ingrowth of vascularized granulation tissue
Neuropathic Back Pain

• Kali, M. 2006 - Leeds
  Neuropathic Pain Scale

• 54.7% fit neuropathic pain placement
Facet Joints

• 10-15%; only 3% both disc + facet
• Failure duplicate physical findings
• Review: “In summary, no historic or physical examination finds can reliably predict response to diagnostic facet blocks” Cohen S. et al 2007
• Meaning - could just have back pain not aggravated by movements - ie - no objective findings except tender
Facet Joint Pain Imaging


• Reviewed 56 years of Research:
  “CT was found to be unreliable in the identification of painful FJ (102), and MRI has not been investigated in regard to that matter.”
• Hypertrophied joints less likely to hurt.
Facet trauma real but undetectable

• Over 2 dozen reports of facet dislocations after traffic accidents.
• Autopsy: - 35% occult fractures, 77% cartilage or capsular damage (Twomey L., 1989): facet damage common
• No significant relation Imaging findings and facet pain (Cohen S. et al, 2007).
Causes of Chronic Neck Pain

Bogduk, 1993 - Selective Blocks

- Facet alone - 23%
- Disc alone - 20%
- Disc and facet - 41%
- ? - 17%
Neck Pain Chronicity

• Chronicity also has been demonstrated with neck pain with chronic persistent pain resulting in 26% to 44% of the patients after an initial episode of neck pain or whiplash (133-136, 156-158) (Manchikanti et al Pain Physician 2003)
Neck Exam

• There is no specific historical or physical examination finding for the diagnosis of whiplash-associated disorders. (Panagos et al. 2007).
Anatomical studies of victims of major collisions - vertebral end plates and structures around the facet and uncovertebral joints (Taylor 1993, 1996).

These defects were not easily observed on imaging studies.

Patients with significant whiplash dying of unrelated causes - same unobserved defects at autopsy.
Cervical Rim Lesions
Symptoms Whiplash

Table 1. The Frequency of Symptoms and Associated Features in 50 Consecutive Patients With Chronic Pain After Whiplash Injury

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neck pain</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Disturbance of concentration or memory</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>Headache</td>
<td>28</td>
<td>58</td>
</tr>
<tr>
<td>Paresthesia in the upper limb</td>
<td>28</td>
<td>56</td>
</tr>
<tr>
<td>Weakness or heaviness in the arms</td>
<td>27</td>
<td>54</td>
</tr>
<tr>
<td>Dizziness</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Visual disturbance</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Back pain</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

Barnsley 1995
Peripheralization

Lesion

Peripheral Perpetuators
Peripheral Sensitization

• Sensory endings spilling irritating nerve transmitters.

• Nerves exiting the marginally damaged leading to muscle hypersensitivity and neurogenic inflammation.

• Tissues knotted, woody indurated, spastic.
Neurogenic Inflammation
Sensory Nerves Gone Bad
MAST CELL
PUBLIC ENEMY #1
Arthritis is part neurologic?

James, 2007; Cavanaugh, 1997

• Neuronal Sensitization.
• Mice with mechanically induced knee arthritis will cause degenerative spinal nerve changes which initiate neurogenic inflammation.
• Rabbit facets
• Injured facets - heightened pain sensitivity.
• Tight Muscles secondarily bring facets into play.
Myofascial Pain Back

Long et al, 1996; King et al. 1976; Rees, 1971

- 2\textsuperscript{nd} cause of back pain.
- Satisfactory relief in 53% of myotomy group vs. 27% facet denervation
- Forerunner of facet rhizotomy - did bilateral muscle cuts that were supposed to cut facet nerves - 998/1000 successful
- Always a player
- Poorly or not examined
Example Trigger Injection

![Graph showing pain VAS over months with different treatments](image)

- **Dry Needle**
- **Lidocaine**
- **Botox**

Pain VAS over 8 months:
- **0 Months**
  - Dry Needle: 7
  - Lidocaine: 6
  - Botox: 2

- **2 Months**
  - Dry Needle: 6
  - Lidocaine: 5
  - Botox: 2

Kamanli A. 2005
- * p = 0.005
- + p = 0.012
Effects of Repeated Botox on Back Pain

Pain VAS

Months

Ney J., Spine 2006
Nerve Micro-Entrapments

A. Nystrom, 2006; M. Duffy, 2004

• Fascia about small sensory nerve roots “triggerpointectomy”.

• Migraine: 92% at least 50% reduction headache.

• Neck Whiplash: microsurgery on subcutaneous nerves.
Cluneal Nerve “Triggers”
Spinal Instability

• 3.7% in Long’s Study.
• History of trauma, chronic frequent.
• Suspected in much more but imagining <5 mm unreliable.
• Giving way, catching, locking, with trick movements (esp. getting erect from flexion).
• Needs to pop back.
• Needs back support or brace.
Spinal Sensitization

• Normally spinal pain blockers.
• Persistent intense pain overloads these circuits and with help Glial cells develops “facilitative” circuits that magnify pain.
• Failed backs - cut L4, L5 spinal muscle nerves - pretreat with lidocaine nerve blocks prevented animal model of FBS.
Nerve Root Ganglion Centre Set Too High

Jung P., 2004

• Pulsed Radiofrequency - Nondestructive 42° C. pulsed current to effect dorsal nerve root ganglion.
• Minimally invasive and nondestructive 64% cases 50% reduction pain still at 6 months of back and sciatic pain.
• Theorized resets pain level at ganglion level
• New and Controversial.
Complex Regional Pain Syndrome

• Reflex Sympathetic Dystrophy (RSD)
• Trivial injury/ surgery (wrist # with □ Vit. C)

Pain too:

  Big
  Bad
  Colorful/Different
  Weak, stiff, tremoring

• Sympathetic Nerve Block
Complex Regional Pain Syndrome

- Dysfunction of the nervous system that normally runs blood vessels.
- Neurogenic Inflammation from normally sensory nerves.
- Heightens pain excessively in area effected.
- Imagining only helpful in early phases.
Example CRPS

- Trivial fractured wrist
- Low Vitamin C environment (3-5 times) ?smokers
- IV Pamidronate TWO infusions - Kubalek I., 2001 - 86% better after 3 weeks
- Disabling mechanical back pain
- smokers 2.7 X likely to develop back pain
- Pappagallo M, 2003 - 90 mg/month X3
- Persistent 41% reduction pain
Chronic Pain Pathways
Kulkarni B. et al 2007 - Arthritis Pain:

• Different from acute.
• Involve Emotional Circuits.
• Thalamus - relay station.
• Anterior Cingulate - “care” center - lesion feel pain but don’t care.
• Amygdala - seat of emotion.
Commonly Missed Problems

- Vitamin D deficiency
- B12 deficiency
- Sleep disorders
- Comorbid Depression
Disc or Chemical Sciatica

- History helps ?prior reflex motor changes
- Did physio ever find:
  - centralization/peripheralization;
  - Lateral shift
  - Spurling sign
- Electric toothbrush
- Neuropathic score, pain just too severe
- Lots of knots that won’t go away
- Response Epidural or Enbrel shots
Facet Pains

- Common in neck - 50+% 
- Physio find?
  Tenderness
- Pain out of proportion to expected
Sacroiliac

- Unilateral L5 belt line

- Physio find 3/5 or more provocative tests positive?

- Diagnostic injection
Joint Instabilities

• Checklist of historical factors

• Checklist of Physio factors
Complex Regional Pain/RSD

- Pain out of proportion
- Neuropathic + color changes
- Response to Blocks
Occipital Nerve Entrapment

- Disabling pain and headache
- Tenderness at base of skull radiating
- Not uncommon after even trivial MVA
- Do not get better on own;
- Injection even once can cause long lasting relief
- Will not work if headaches coming from C2/3 facets or C5/6 disc or in tension headaches
Occipital Neuralgia Delineate

- Pain way out of proportion - disabled
- Very tender base skull
- Neuralgic but often not get numbness
- Nerve block diagnostic
Thoracic Outlet Syndrome
Canadian TOS Study

• “Thoracic outlet syndrome after motor vehicle accidents in a Canadian pain clinic population.”

Mailis A, 1995 - Toronto

• 87% - musculotendinous
• Pain, paresthesias - most
• 41% discoloration
• 20% improved conservatively
Roos TOS test - Surrender

Fig. 1

Patient in the ‘Roos’ or surrender position. Note the pale, ischaemic left hand, venous engorgement of the limb and prominent forearm veins.
Radial tunnel

Tennis elbow tenderness

Radial tunnel tenderness
Piriformis Syndrome
Piriformis workup

- Buttock pain radiating down - pseudosciatica
- 10% occurrence after MVA
- If Entrapping Neuropathic - try form
- Physio testing? Often L5 nerve or SI joint too
- Rectal exam
- Response to injection
Myofascial Pain

• ? 80% Myofascial
• Major pain contributors:
  Subscapularis under scapula - frozen shoulder
  Psoas in abdomen - can’t flex back
  Levator scapula, Trapezius at shoulder tip
  Quadratus lumborum flank muscle - rib impinge even
Subtle Spondylitis

• Back Arthritis
• Stiffness in AM, worse if rest, response to arthritis medication
• Associated bowel problems some wrongly diagnosed “Irritable bowel syndrome” - Microscopic colitis; ?subclinical celiac
• Imaging <50%;
• blood - slight ESR elevation maybe;
• stool - ? Leukocytes; no longer available
Hip Rotator Cuff

- 10% by age 50 - gradual
- Lateral hip/buttock
- Stairs, uphill
- Pain with standing on affected leg after 10-30 sec. “virtually always present”
- Trendelenberg sign
- French study - never diagnosed
- Ultrasound maybe
- Guided injection by radiologist
Femoro-Acetabular Syndrome

- Hip impingement
- anterior displacement onto hip rim
- Worsening catching pains
- Worse if lays on back drops leg over and gets pushed down further
- Xray negative

- Dr. Garbuz, Vancouver
TMJ

• Common after MVA’s
• Headaches, jaw, facial pain
• Complex
• 3 finger mouth test = restricted opening
• May need an orthodontist and physio interested in such
mTBI


• MR imaging, single-photon emission CT, and neurocognitive performance after mild traumatic brain injury.

• 77% brain lesions healing with scarring

• No cognitive correlation
It’s just Fibromyalgia.
FM: Diagnosis of Exclusion

- 3+ months

- Widespread pain covering 3 quadrants+ body

- At least 11/18 points tender.
Problems with Diagnosis I

• Only 20% Widespread Pain meet criteria.

• Need algometer.

• Exclusion issue - damaged areas develop regional pain problems and cannot be included.
Uncountable Trigger Points Common

- Gerwin, R.D. and J. Dommerholt
  Myofascial trigger points in chronic cervical whiplash syndrome (abstract).
- J Musculoskeletal Pain, 1998. 6(Suppl 2): p. 28.)
- “When we looked at whiplash patients, 100% had clinically relevant trigger points”
Problems with Diagnosis II

- 73% agreement (Katz & Wolfe 2006).

- Only 12% patients referred for FM actually had it (Fitzcharles, 2003).

- Even in best hands, there is a 20% false positive rate (Cohen 1999).
Promoting Diagnosis

- Fatigue
- Sleep disturbance
- IBS/IC
- Headaches
- TMJ
- Subjective Swelling
- Paresthesia- will have to define!
Subtle Sleep Apnea

• Most cases will show average of 8 nocturnal oxygen desaturations/hr (Sergi, 1999; Gold, 2004).

• Subtle upper airway obstruction or periodic breathing.

• Sleep Disordered breathing “increases markedly at menopause” (Eichling, 2004).
FM Components

• Neurogenic + Central nervous system hypersensitivity.

• Sympathetic NS hypertonicity.

• Peripheral hypersensitivity, myofascial pain

• Mast Cell/neurogenic inflammation syndromes - IBS, IC
Fibromyalgia Pain Levels High

- Acute Headache
- Fibromyalgia
- Post Herpetic Neuralgia
- Atypical Facial Pain
- Labor
- Musculoskeletal Pain
- Post Surgical
- Arthritis
- Mucositis
- Rheumatoid Arthritis
- Chronic Cancer
- Angioplasty Sheath Removal

Pain Levels Various Diseases
FM SPECT Perfusion

Guedj, 2007
Grey Matter Loss

Kuchinad, 2007
Comparative Death Rates

Ingemar, 2004
Malingering Testing
“Despite this lack of objective findings, there is no doubt that chronic pain patients are suffering”

“Despite this reality, since chronic pain sufferers are impaired by a condition that cannot be supported by objective findings, they have been subjected to persistent suspicions of malingering on the part of employers, compensation officials and even physicians”
How honest are honesty tests?

• Waddell Signs:
  - signs of disease severity.
  - 20% of patients without benefit elicit. Fishbain, 2004: Cases actually worse off.

• Pain drawings:
  - mice go extra-dermatomal
  - no association with psychological state (Ginzberg, 1989).
Malingering

• Nova Scotia WBC consultant’s recommendations (2004):
  “An injured worker’s credibility should not be the focus of the assessment”

• Straight Leg Raising - 3 studies of interobserver reliability poor.

• Consistency testing - Inconsistency highlights that pain is severe enough to interfere.
Symptom Magnification

• People who have been disbelieved feel compelled to put on their “best face”.

• Symptom magnification may be nothing but a reaction to persecution they perceive.

• Assessor variable on their conclusions making assessments “inconsistent”.
Malingering Tests Not Valid

- Fishbain 1999: findings were “inconsistent”. (Hand grip etc. not valid). Claims of such “should be viewed with caution”.


- Nova Scotia Consultants review 2004:
“The WCB is not impartial and therefore should not be making decisions about a worker’s credibility… Scoring credibility is not considered appropriate in a workers’ compensation environment”

“Judging a worker’s credibility is subjective and can make consistency in decision-making challenging as the credibility score is based on an individual opinion… As a result, the WCB will not score credibility as part of the Pain-Related Impairment assessment”
“Psychogenic Pain”

“since there is nothing wrong with your body, there must be something wrong with you”

• Based on approaches that will only determine 15% of cases problems if no disc herniation/nerve deficit evident.
Pain is An Emotional Experience

• Chronic Pain Def’n (IASP)

• An unpleasant sensory and emotional experience

• associated with actual or potential tissue damage, or described in terms of such damage.
Vulnerability

• Previous Health a Risk Factor
• Somatizations
• Literature stereotyping: Subgroups skew data.
• Twin Study: pain, anxiety & depression 60% genetic (Reichborn-Kjennerud et al., 2002).
  (Not sure twin belongs here? Not psyc, is psyc but genetic 2 diff arguments)
• Thin Skull Rule.
Psychological Literature

• Merskey, 1987 - screen for pre-morbid conditions - weak relationship suggesting impact of pain on psychological

• Hendler et al - found 98% of psychosomatic cases had organic causation for their pain. Estimated only 1/3000 “psychogenic” pain
Overlooked Physical Diagnoses in Chronic Pain Patients with Litigation

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Presence at Referral</th>
<th>Presence at Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myofascial disease</td>
<td>9</td>
<td>36</td>
</tr>
<tr>
<td>Facet disease</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Peripheral nerve entrapment</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Radiculopathy</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td><em>Thoracic outlet syndrome</em></td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

Hendler et al 1992
Pain Severity Rules

Pain Intensity

Catastrophizing

Kinesiophobia, Health Anxiety
PAIN AND DEPRESSION

A COMPLEX RELATIONSHIP
Table 1. Depression in Patients With Comorbid Medical Illness

<table>
<thead>
<tr>
<th>Comorbid Medical Illness</th>
<th>Prevalence Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Disease</td>
<td>17–27 (Rudisch and Nemeroff 2003)</td>
</tr>
<tr>
<td>Cerebrovascular Disease</td>
<td>14–19 (Robinson 2003)</td>
</tr>
<tr>
<td>Alzheimer’s Disease</td>
<td>30–50 (Lee and Lyketsos 2003)</td>
</tr>
<tr>
<td>Parkinson’s Disease</td>
<td>4–75 (McDonald et al 2003)</td>
</tr>
<tr>
<td>Epilepsy</td>
<td></td>
</tr>
<tr>
<td>Recurrent</td>
<td>20–55 (Kanner 2003)</td>
</tr>
<tr>
<td>Controlled</td>
<td>3–9 (Kanner 2003)</td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>Self-reported</td>
<td>26 (Anderson et al 2001)</td>
</tr>
<tr>
<td>Diagnostic interview</td>
<td>9 (Anderson et al 2001)</td>
</tr>
<tr>
<td>Cancer</td>
<td>22–29 (Raison and Miller 2003)</td>
</tr>
<tr>
<td>Pain</td>
<td>30–54 (Campbell et al 2003)</td>
</tr>
<tr>
<td>Obesity</td>
<td>20–30 (Stunkard et al 2003)</td>
</tr>
<tr>
<td>General Population</td>
<td>10.3 (Kessler et al 1994)</td>
</tr>
</tbody>
</table>

AIDS, acquired immune deficiency syndrome; HIV, human immunodeficiency virus. 

Evans D. et al 2005
Biochemistry

- Chronic pain:
  - Ascending circuits - NMDA receptor related
  - Endorphin pain blocking circuits - Serotonin and NE
  - Relief with NMDA blocking

- Depression:
  - Serotonin and Norepinephrine circuits
  - Chronic unremitting - 70% relieved for 3-7 days by Ketamine NMDA blockage 40 min. X 2
Left DLPFC - Happy Zone
Brain Anatomy- DLPFC

Chronic pain:
- Damage to Dorsolateral Prefrontal cortex (DLPFC) seen in Chronic back pain and CRPS
- TMS to area reduces pain

Chronic Depression:
- DLPFC changes
- Successful ECT DLPFC changes
- Damage to DLPFC caused by interferon treatment can cause depression.
- Mania - excessive
- TNS reduces depress.
Hippocampus Damage

Depression

- Hippocampal damage 20% right
- Depression improves only after Hippocampal recovery begins
- Memory Effects

Chronic Pain

- Hippocampal Neurogenesis lower in animal model (Duric C., 2006)
- Associated decrease cell count
- □BDNF & NK-1
Neuralgic Mice Develop Anxiety and Depression Symptoms

- Sciatic nerve ligation
- Movement, activity patterns, sleep and circadian rhythms same
- Max hypersensitivity day 2 - 7
- Started at 15 days and obvious by day 30
Prospective Study

• Elderly followed 2 years:

• Chronic pain a risk factor for depression.

• Depression a risk factor for chronic pain
Prospective Whiplash study - No Correlation

- High Psychological Distress  1.0
- Hectic Work  0.7
- Stressful work  0.5
- Seldom make decisions  0.6
- V dissatisfied with supervisor  0.8
- V dissatisfied with colleagues  1.0

Wynne-Jones, 2006
Do Psychiatric Disorders First Appear Preinjury or Postinjury in Chronic Disabling Occupational Spinal Disorders?

J. Dersh et al.
Spine, April 2007
• 38.7% of the present cohort had at least one preexisting major psychiatric disorder
• 57.9% developed one or more psychiatric disorders for the first time after injury onset (when “pain disorder” excluded)
• Five times more Major depression after
• Ten times more opioid dependence
• “psychiatric disturbance is not a risk factor for developing a CDOSD”
PAIN AND DEPRESSION

A COMPLEX RELATIONSHIP
Table 1. Depression in Patients With Comorbid Medical Illness

<table>
<thead>
<tr>
<th>Comorbid Medical Illness</th>
<th>Prevalence Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Disease</td>
<td>17–27 (Rudisch and Nemeroff 2003)</td>
</tr>
<tr>
<td>Cerebrovascular Disease</td>
<td>14–19 (Robinson 2003)</td>
</tr>
<tr>
<td>Alzheimer’s Disease</td>
<td>30–50 (Lee and Lyketsos 2003)</td>
</tr>
<tr>
<td>Parkinson’s Disease</td>
<td>4–75 (McDonald et al 2003)</td>
</tr>
<tr>
<td>Epilepsy</td>
<td></td>
</tr>
<tr>
<td>Recurrent</td>
<td>20–55 (Kanner 2003)</td>
</tr>
<tr>
<td>Controlled</td>
<td>3–9 (Kanner 2003)</td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>Self-reported</td>
<td>26 (Anderson et al 2001)</td>
</tr>
<tr>
<td>Diagnostic interview</td>
<td>9 (Anderson et al 2001)</td>
</tr>
<tr>
<td>Cancer</td>
<td>22–29 (Raison and Miller 2003)</td>
</tr>
<tr>
<td>Pain</td>
<td>30–54 (Campbell et al 2003)</td>
</tr>
<tr>
<td>Obesity</td>
<td>20–30 (Stunkard et al 2003)</td>
</tr>
<tr>
<td>General Population</td>
<td>10.3 (Kessler et al 1994)</td>
</tr>
</tbody>
</table>

AIDS, acquired immune deficiency syndrome; HIV, human immunodeficiency virus.

Evans D. et al 2005
Biochemistry

• Chronic pain:
  • Ascending circuits - NMDA receptor related
  • Endorphin pain blocking circuits - Serotonin and NE
  • Relief with NMDA blocking

• Depression:
  • Serotonin and Norepinephrine circuits
  • Chronic unremitting - 70% relieved for 3-7 days by Ketamine NMDA blockage 40 min. X 2
Left DLPFC - Happy Zone
Brain Anatomy - DLPFC

Chronic pain:
- Damage to Dorsolateral Prefrontal cortex (DLPFC) seen in Chronic back pain and CRPS
- TMS to area reduces pain

Chronic Depression:
- DLPFC changes
- Successful ECT DLPFC changes
- Damage to DLPFC caused by interferon treatment can cause depression.
- Mania - excessive
- TNS reduces depression.
Hippocampus Damage

**Depression**
- Hippocampal damage 20% right
- Depression improves only after hippocampal recovery begins
- Memory Effects

**Chronic Pain**
- Hippocampal Neurogenesis lower in animal model (Duric C., 2006)
- Associated decrease in cell count
- BDNF & NK-1
Neuralgic Mice Develop Anxiety and Depression Symptoms

• Sciatic nerve ligation
• Movement, activity patterns, sleep and circadian rhythms same
• Max hypersensitivity day 2 - 7
• Started at 15 days and obvious by day 30
Prospective Study

• Elderly followed 2 years:

• Chronic pain a risk factor for depression.

• Depression a risk factor for chronic pain
Prospective Whiplash study - No Correlation

- High Psychological Distress 1.0
- Hectic Work 0.7
- Stressful work 0.5
- Seldom make decisions 0.6
- V dissatisfied with supervisor 0.8
- V dissatisfied with colleagues 1.0

Wynne-Jones, 2006
Do Psychiatric Disorders First Appear Preinjury or Postinjury in Chronic Disabling Occupational Spinal Disorders?

J. Dersh et al.
Spine, April 2007
Answer: After

• 38.7% of the present cohort had at least one preexisting major psychiatric disorder
• 57.9% developed one or more psychiatric disorders for the first time after injury onset (when “pain disorder” excluded)
• Five times more Major depression after
• Ten times more opioid dependence
• “psychiatric disturbance is not a risk factor for developing a CDOSD”
Functional Capacity Evaluation (FCE)
Reenen et al., Pain 2007

• Reviewed 26 Physical Capacity Assessment studies.

• Categorized tests as:
  - Strong evidence
  - Moderate
  - Inconsistent
  - No evidence
Specific Tests

• Trunk Strength - No relation to future pain

• Trunk endurance - 75% No

• Lumbar mobility - 8- No, 1- Y;

• Neck Physical capacities - inconsistent
Canadian Experience

Padvaiskas et al. (2004), Canmore Pain Clinic

Predictive Validity of Functional Capacity Evaluations

• “The studies reviewed have demonstrated a lack of clear empirical support relating FCE results and prediction of return to work”.
University of Alberta

- "The validity of Functional Capacity Evaluation's purported ability to identify claimants who are "safe" to return to work is suspect" (P. Gross, M. Battee, Spine, 2004).

2006 - Shoulder pain - Weak - 11% maybe
Poor Inter-rater Reliability

Durand 2004 (Quebec)
lower agreement on the observation of the physical signs
Could be a Funeral Director
Canadian Experience
Evaluation of the Canada Pension Plan Disability Vocational Rehabilitation Program 2004:

• Without completing a vocational rehab program, only 11/112 employed.

• only 9/112 gained substantial gainful employment.
Transferable Skills Analysis

• Hennessey & Muller (1995) - job counselling by itself had no impact on return to work.

• Dunn et. al (2000): “there has been no research that has addressed the validity of TSA or placement outcomes resulting from the use of TSA”.

Bonde et al, 2005 - “low-cost counselling program... did not improve vocational outcomes”
TSA issues

• Training Competence
• Cursory Diagnostic Information
• “Cherry picking”
• FCE’s not valid indication
• Hidden job factors ie. sedentary- high levels reaching (Patton, 2004).
• Never intended to be used that way
• Validity not proven
Amendments

CPP disability had to amend its provisions to include chance of:

- **Substantial Gainful Occupation**
- **Geographic Availability**
“Thus a ‘handicap’ may be the result of a physical limitation, an ailment, a social construct, a perceived limitation or a combination of all of these factors. Indeed it is the combined effect of all these circumstances that determines whether the individual has a ‘handicap’ for the purposes of the Charter”.
“Shakedown”

• Many patients with chronic pain admit they would go back to work if left with no choice though suffering may be immense.

• Despite Supreme court decisions not requiring objective findings, patients told can work if “nothing is found”
Biased Assessment

- Health Professionals regularly underestimate chronic pain – this increases and pain increases, and when there is no ‘evidence’.

- “Insurers recruit experts who are not necessarily dishonest, but whose philosophies agreed with their own, resulting in bias” Rand report, 2005

- Secondary gain: conflict of interest
Working on a Feeling

Experts, who judge back complaint unsubstantial, without interventional testing is like an Obstetrician tell sex of baby by feeling abdomen
Chronic Pain Stresses

Smart & Smart: "Biomedical Model"

• defective, biologically inferior,
• responsible - too fat, mentally ill, deconditioned, no motivation
• prey on vulnerabilities - fear avoidant, catastrophizers, poor copers, mentally ill
• Subject to poor services and job prejudice.
Legitimized Prejudice

• Their fault - embarrassed
• Victims of the false precision of medical diagnosis
• Victims of disability ratings that do not consider full impact of chronic pain and lack of accommodation - without any recourse
• Subjected to “Try Harder syndrome” counseling “help”
Are You Helping?

Victims twice over: perceptions and experiences of injured workers.

Beardwood BA, Kirsh B, Clark NJ.

• “Interviewees believed that the process victimizes them and renders them powerless and dependent on others. Furthermore, they considered that health professionals and bureaucrats impede their rehabilitation.”
History of Chronic Pain
Human Rights

1987 Workers' Compensation Appeals Tribunal Decision 915

“Victims of the failure or limitations of medical science”

- Thin skull rule
- Vulnerable to effects of pain eligible
- Secondary gain - cannot bar compensation
AMA Guide Use

• 2003 - Chronic Pain syndrome declared exists in Canada (Martin vs WCB Nova Scotia)

• 2005 - Chronic pain syndrome compensatable in Canada (Valic vs WCB NWT)

• AMA Guide 5th 2000 used but modified by many
AMA Guide Limitations

• Just a Guide – Other factors need consideration

• Imperfect - based on consensus, old small studies

• OLD - Does not consider diagnosis from newer interventional techniques

• Considers Solely Chronic Pain Unrateable
Working with the Guide

- Confirm accreditation (ABIME)
- California Modifications
- Second opinions
- Mild pain: extra 3% by default
- Importance of compensation for high pain levels.
- Secondary Mental aspects
- Undetermined chronic pain compensatable